



MOTOROLA

Level 1 and 2 Service Manual

V635

Digital Wireless Telephone



GSM 900/1800/850/1900 MHz, GPRS

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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. 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 V635 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 V635 telephones, and also provides procedures and processes for repairing the phones at Level 1 and 2 service centers including:

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

Conventions

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



Note: Emphasizes additional information pertinent to the subject matter.




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



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



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

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

Warranty Service Policy

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

Out-of-Box Failure Policy

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

Product Support

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

Customer Support

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

Parts Replacement

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

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

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

Accessories and Aftermarket Division (AAD)

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

U.S.A.

Phone: 800-422-4210

FAX: 800-622-6210

Outside U.S.A.

Phone: 847-538-8023

FAX: 847-576-3023

For EMEA spare parts call +49 461 803 1638.

For Asia spare parts call +65 648 62995.

Specifications

General Function	Specification
Frequency Range GSM 850	824-848 MHz Tx 869-893 MHz Rx
Frequency Range GSM 900	880-915 MHz Tx (with EGSM) 925-960 MHz Rx
Frequency Range DCS 1800	1710-1785 MHz Tx 1805-1880 MHz Rx
Frequency Range PCS 1900	1850-1910 MHz Tx 1930-1990 MHz Rx
Channel Spacing	200 kHz
Channels	174 EGSM, 374 DCS, 374 PCS, 124 GSM 850 carriers with 8 channels per carrier
Modulation	GMSK at BT = 0.3
Transmitter Phase Accuracy	5 Degrees RMS, 20 Degrees peak
Duplex Spacing	45 MHz
Frequency Stability	± 0.10 ppm of the downlink frequency (Rx)
Operating Voltage	+3.2V dc to +5.5V dc (battery) +4.8V dc to +6.5V dc (external connector)
Transmit Current Drain	101-260 mA average talk current drain
Stand-by Current drain	5 mA (DRX2), 2 mA (DXR9) typical
Temperature Range	-10° C to +55° C (+15° F to +130° F)
Dimensions, with 780 mAh Li Ion battery	47.8 mm x 88.2 mm x 24.9 mm (1.88 inches x 3.47 inches x 0.98 inches)
Size (Volume)	85 cc (5.18 in ³), with battery
Weight	118 grams (4.16 oz), with battery
Battery Life, with standard 820 mAh Li-Ion Battery	Talk Time 230 - 425 minutes Standby time 179 - 235 hours All talk and standby times are approximate and depend on network configuration, signal strength, and features selected. Standby times are quoted as a range from DRX=2 to DRX=9. Talk times are quoted as a range from DTX off to DTX on.
Battery Charge Time	4 hours to 90% of 700 mAh capacity
Alert volume	Max 95 dB @5cm, 0.5 Watts input

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

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

Speech Coding Function	Specification
Speech Coding Type	Regular pulse excitation/linear predictive coding with long term prediction (RPE LPC with LTP)
Bit Rate	13.0 kbps
Frame Duration	20 ms

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

Product Overview

Motorola V635 telephones are small and lightweight global system for mobile communications (GSM) general packet radio service (GPRS) wireless application protocol (WAP)-enabled mobile phones. The V635 incorporates an icon based interface (UI) for easier operation, allows short message service (SMS) text messaging, and includes personal information manager (PIM) functionality. It is a quad band phone that allows roaming within the GSM 900 MHz, (DCS) 1800 MHz digital cellular system, the GSM 850 MHz, and PCS 1900 MHz bands.

V635 telephones support GPRS and SMS in addition to traditional circuit switched transport technologies.

V635 telephones have a clam form factor. They feature an anodized aluminum housing with titanium knuckles and have an externally viewable 96 x 32 pixel transreflective reversed display for caller identification with date/time, an internal 176 x 220 pixel display, and the speaker located in the flip. The bottom part of the clam (front housing) contains the keypad, transceiver printed circuit board (PCB), microphone, flex connection, external accessory connector, smart button, volume buttons, and voice button. The standard 700 mAh Lithium Ion (Li Ion) battery fits behind a removable back cover.

The phone accepts both 3V subscriber identity module (SIM) cards which fit into the SIM holder underneath the battery. The antenna is a fixed stub type antenna. Inexpensive direct connection to a computer or handheld device via USB for data and fax calls, and for synchronizing phonebook entries with TrueSync® software, can be accomplished by using the optional data cable and soft modem.

Features

V635 telephones use advanced, self-contained, sealed, custom integrated circuits to perform the complex functions required for GSM GPRS communication. Aside from the space and weight advantage, microcircuits enhance basic reliability, simplify maintenance, and provide a wide variety of operational functions.

Features available in this family of telephones include:

- GSM 850/900/1800/1900 MHz GPRS (2U/4D)
- Built in VGA Camera (640x480 pixels)
- External COLOR Caller ID (96x80, 4k CSTN)
- 176 x 220 65K TFT Active Color Display
- Polyphonic Speaker
- Speaker Phone
- Bluetooth™
- Metal Housings
- Video Clip Playback
- 5MB User Memory
- 1.2 Megapixel camera with flash
- Bluetooth
- High speed data exchange via EDGE
- Removable memory card
- Video capture/playback (H.263, 15fps)

Speaker Dependant Voice Activation and Voice Note Recording

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

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



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



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

V635 telephones also include a voice note recorder that allows up to 2 minutes of personal messages to be recorded. This feature has a complete set of record, playback, and management tools that make it easy to store and maintain a list of personal memos.

Wireless Access Protocol (WAP) 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.



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



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

SIM Application Toolkit™ - Class 2

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

Features

Detailed descriptions of V635 features can be found in the appropriate V635 telephone user’s guide listed in “Related Publications” near the end of this manual.

General Operation

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

The V635 telephone's controls are located on the sides of the device and on the keypad. Indicators, in the form of icons, are displayed on the LCD (see Figure 2). V635 phones have an audible alert transducer on the top and I/O connectors, consisting of a headset jack and an accessory port, located on the top and bottom of the phone. See Figure 1.



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Figure 1. Telephone 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 menu key opens the initial menu structure, or allows access to a submenu whenever \equiv appears on the display. See Figure 3 for details of the V635 menu structure.

Color Liquid Crystal Display (LCD)

The color LCD provides a 4096 color backlit display for easy readability in all light conditions. The large bit-mapped 128 x 128 pixel display provides 3 lines of text, 1 line of icons, and 1 line of prompts.

Display zoom allows setting the phone's display to show either three lines or two lines of text plus soft key labels. Three lines of text display more information, while two lines increase text size for improved visibility.

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

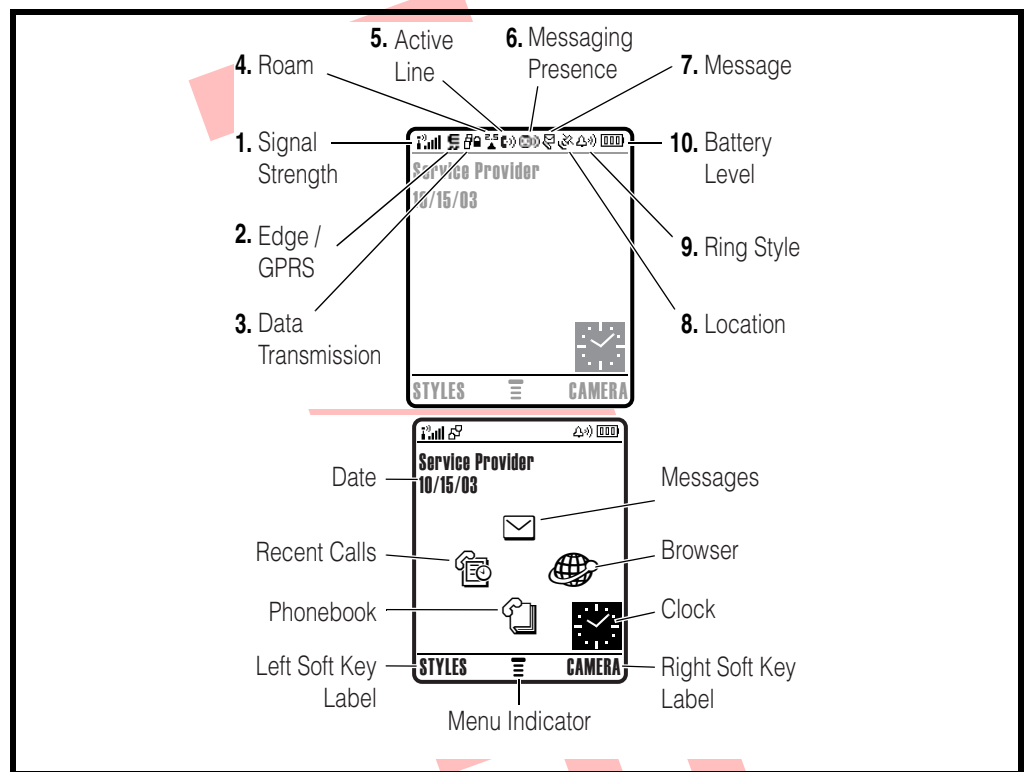


Figure 2. Icon Indicators



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

Figure 2 shows some common icons displayed on the LCD.

- **Signal Strength Indicator.** Shows the strength of the phone's connection with the network. Calls cannot be sent or received when the "no signal" indicator is displayed.
- **Edge / GPRS Indicator.** Shows that your phone is using a high-speed General Packet Radio Service (GPRS) or Edge network connection.
- **Active Line.** Appears when a call is in progress.
- **Roam Indicator.**⁵ Appears when the phone uses another network system outside the user's home network. When leaving the home network area, the phone

roams, or seeks another network.

- **Message Waiting Indicator.**⁵ Appears when the phone receives a text message. This is a network-dependent feature.
- **Voice Message Waiting Indicator.**¹ Appears when a voicemail message is received. This is a network-dependent feature.
- **Battery Level Indicator.** Shows the amount of charge left in the battery. The more segments visible, the greater the charge. Recharge the battery as soon as possible when the Low Battery warning message appears.
- **Ring Style Indicator.** Shows the current selected ring style. The default ring style is a ring tone.
- **Location Indicator.** Your phone may be able to send location information to the network during an emergency call.

1. Network, subscription and SIM card or service provider dependent feature. Not available in all areas.

User Interface Menu Structure

Figure 3 shows the menu structure.

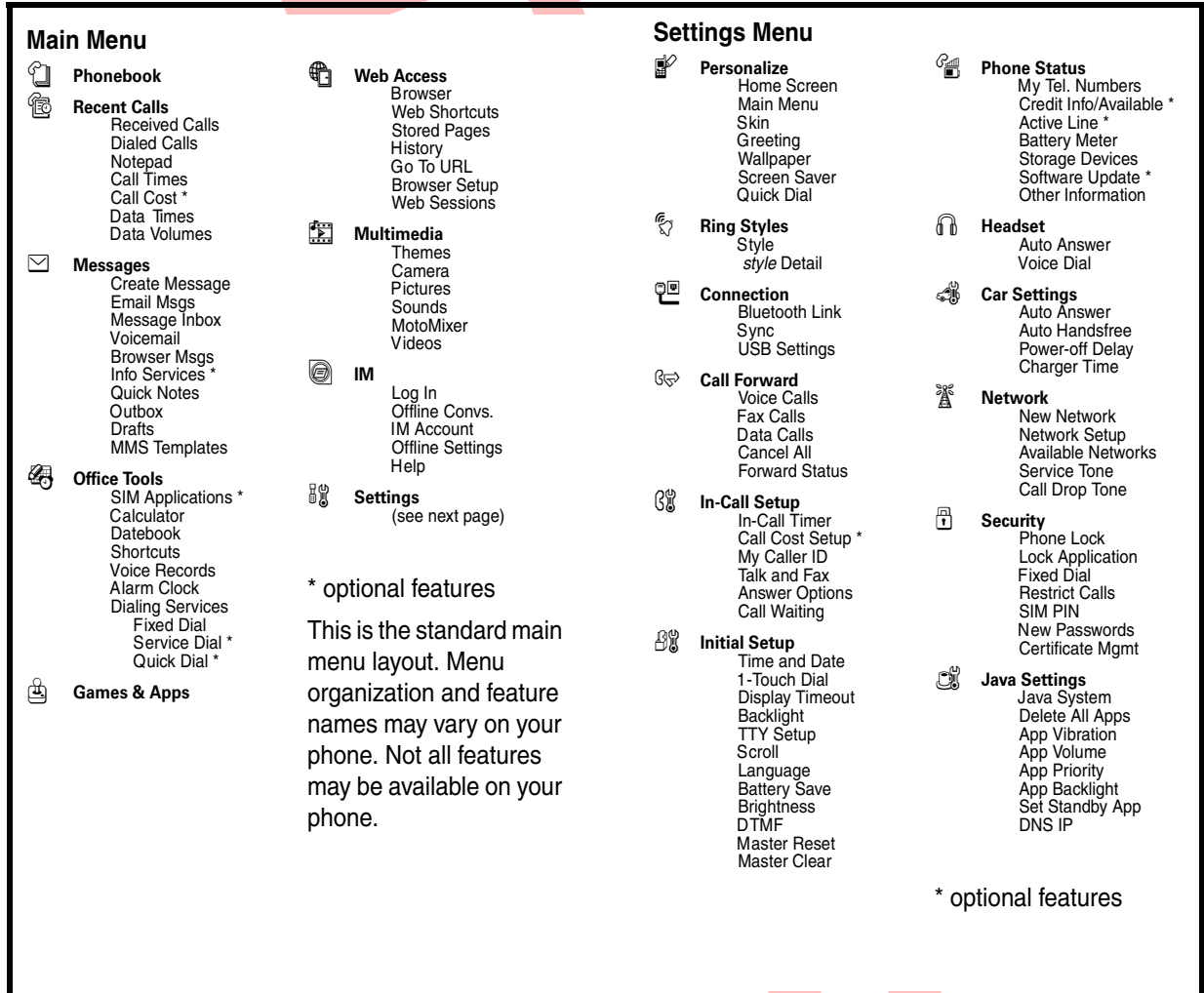


Figure 3. Menu Structure

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Alert Settings

V635 telephones include up to 32 preset ring 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.

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Tools and Test Equipment

The following table lists tools and test equipment recommended for disassembly and reassembly of V635 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
--	#0 Cross Point Screwdriver	Used to remove cross point screws in the flip assembly
—	Torque Driver Bit T-5 Plus, Apex 440-61P 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 66-80387 A95 antistatic mat, 66-80334B36 ground cord, and 42-80385A59 wrist band)	Provides protection from damage to device caused by electrostatic discharge (ESD)
6680388B67	Disassembly tool, plastic with flat and pointed ends (manual opening tool)	Used during assembly/disassembly of device
6680388B01	Tweezers, plastic	Used during assembly/disassembly
—	Digital Multimeter, HP34401A ²	Used to measure battery voltage
8102430Z04	GSM / DCS Test SIM	Used to enable manual test mode

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

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

Disassembly

The procedures in this section provide instructions for the disassembly of V635 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.



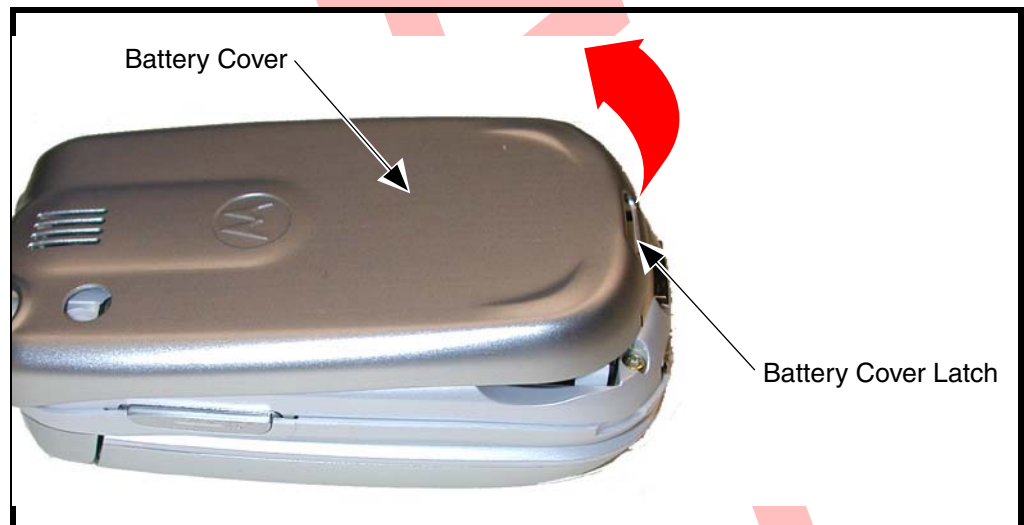
Avoid stressing the plastic in any way to avoid damage to either the plastic or internal components.

Removing and Replacing the Battery Door 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.

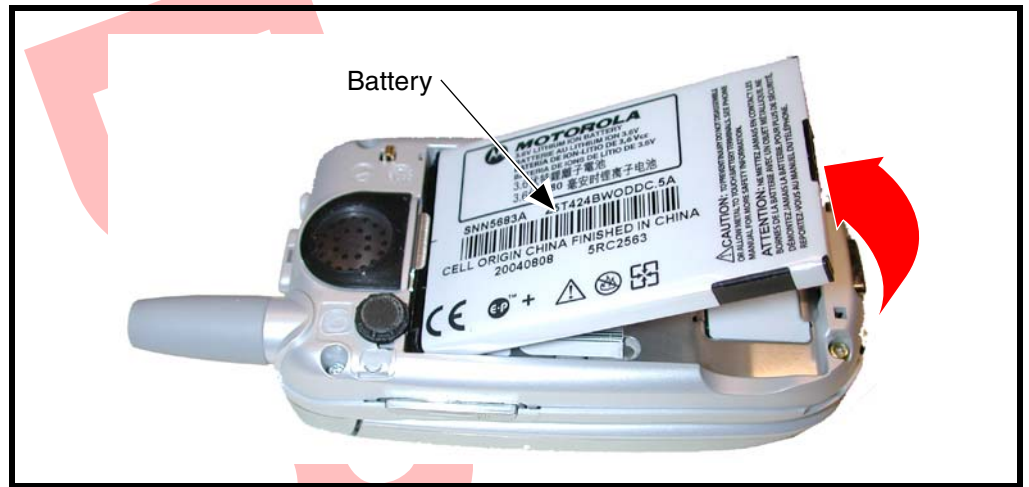


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Figure 1. Removing the battery door

3. Slide the battery cover and lift it completely off the phone.

4. Lift the end of the battery and remove it completely. 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, printed arrow first, into the battery compartment and push down.
7. Insert the ridge at the bottom of the battery housing into the base of the phone, then push the cover down and snap it into place.

Removing and Replacing the Subscriber Identity Module (SIM)

1. Remove the battery door and battery as described in the procedures.

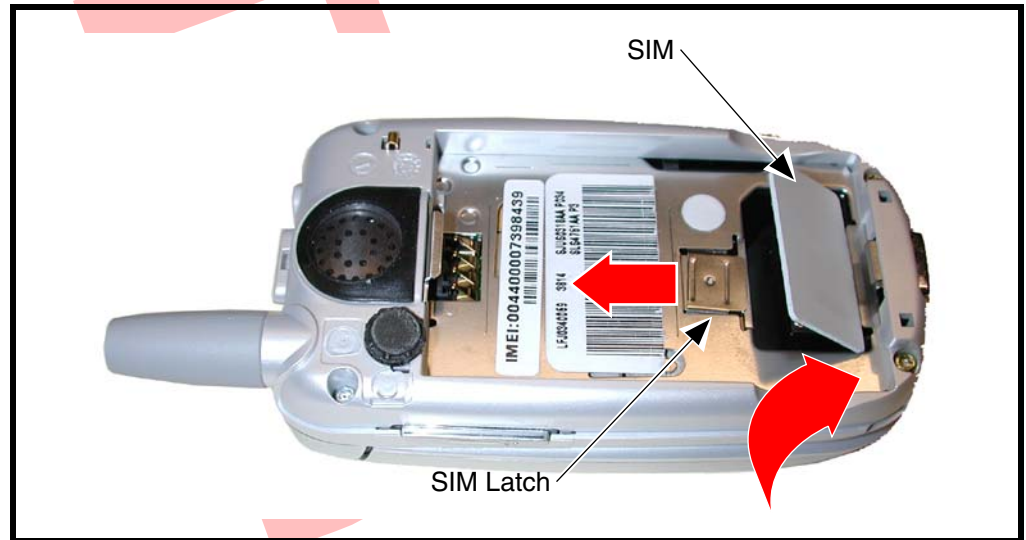


Figure 3. Removing the SIM

2. Slide the SIM holder away from the SIM to unlock as shown in Figure 3.
3. Carefully lift the SIM from its contacts.
4. To replace, insert the SIM into the holder, ensuring the keyed corner of the SIM aligns with the notch molded into the holder.
5. Slide the SIM holder over the SIM to lock.
6. Replace the battery and battery door as described in the procedures.

Removing and Replacing the Antenna

1. Remove the battery door and battery as described in the procedures.
2. By hand, rotate the antenna counterclockwise until loose. See Figure 4.

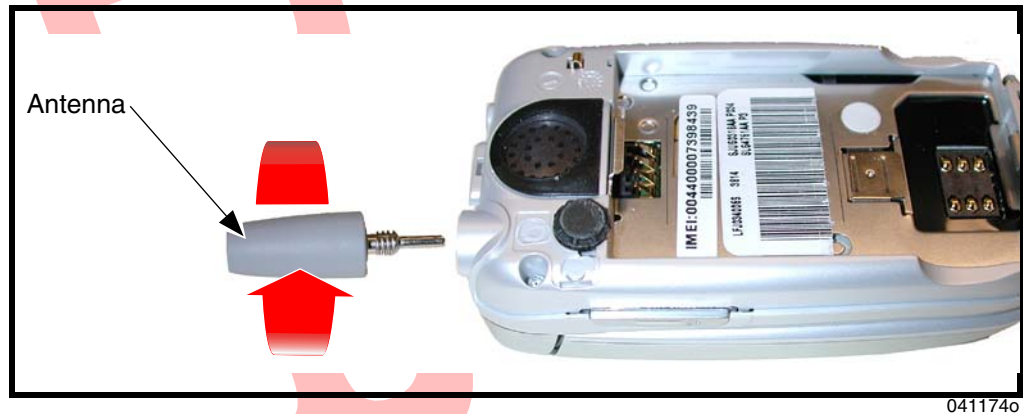


Figure 4. Removing the antenna

3. When the antenna threads are completely disengaged, pull the antenna straight out of the phone to remove.



Ensure antenna threads are properly engaged before tightening to prevent damage to the antenna or housing.

4. To replace, insert the threaded end of the antenna carefully into the housing and, after ensuring the threads are properly engaged, rotate clockwise. Tighten firmly by hand.
5. Replace the battery and battery housing as described in the procedures.

Removing and Replacing the Rear Housing



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

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



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



Housing screws in the knuckle are longer than the housing screws at the base of the V635.

2. Using a Torx driver with a T-5 bit, remove the 4 screws at each corner of the rear housing. See Figure 5.

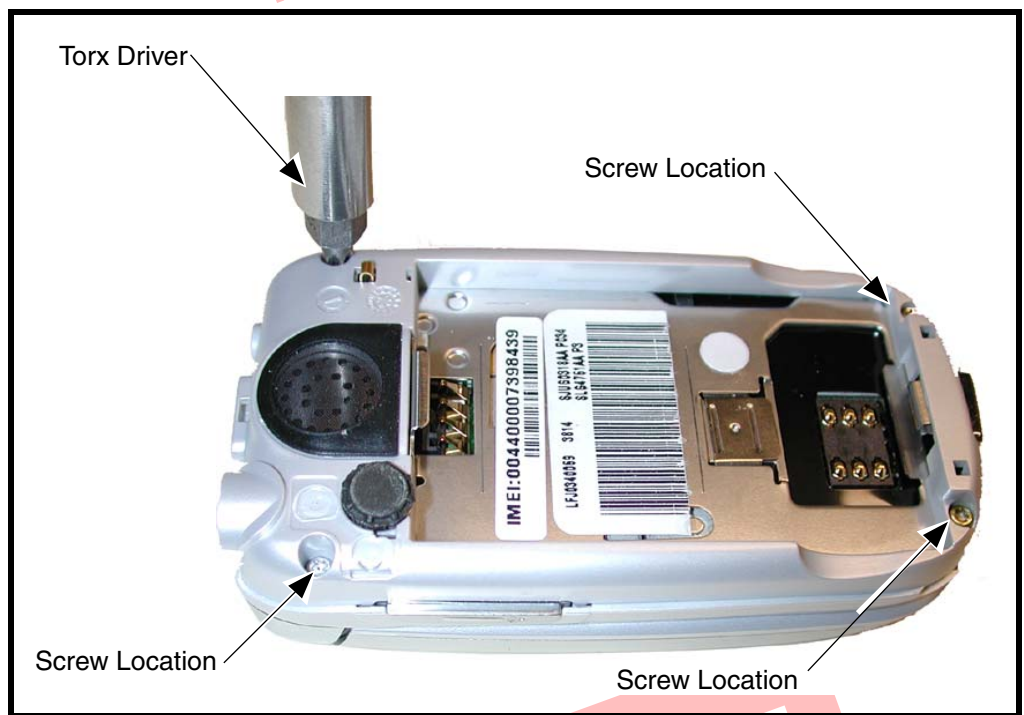
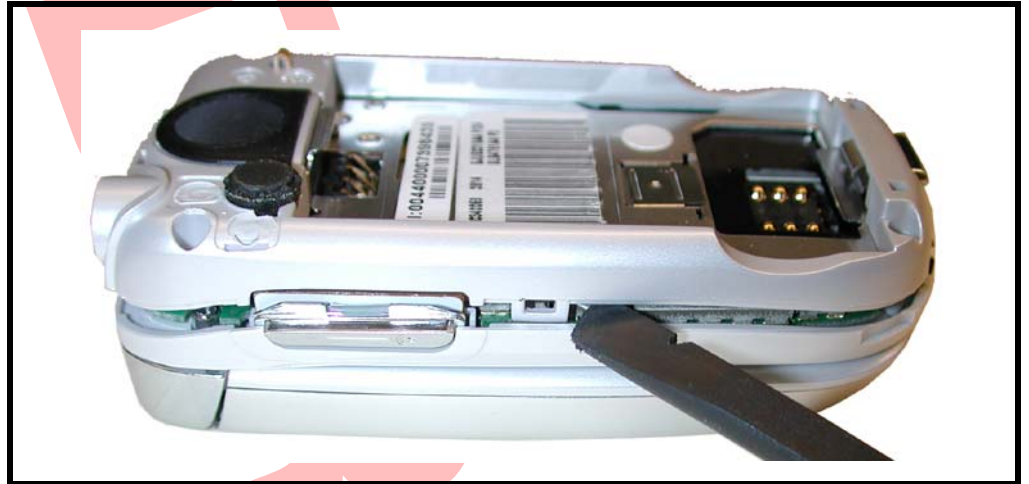


Figure 5. Removing the rear housing screws

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- Using the disassembly tool, release the housing latch on each side of the phone as shown in Figure 6.



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Figure 6. Removing the rear housing

- Carefully lift the rear housing away from the front housing and flip assembly.



The flip assembly and the front housing can also be removed at this point in the disassembly procedure.

- To replace, carefully align the rear housing to the front housing and the flip assembly, then press the rear chassis assembly down until the 2 housing catches engage with the corresponding openings on the rear chassis assembly. Press the housings together until the catches snap into place.
- Replace the 4 transceiver screws and tighten to a torque setting of 1.5 inch pounds. Do not over tighten.
- Replace the antenna, SIM, battery, and battery cover as described in the procedures.

Removing and Replacing the Transceiver Board Assembly



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

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



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

2. Carefully work the flat end of the disassembly tool under the flex connector and remove the connector from the transceiver board. See Figure 7.

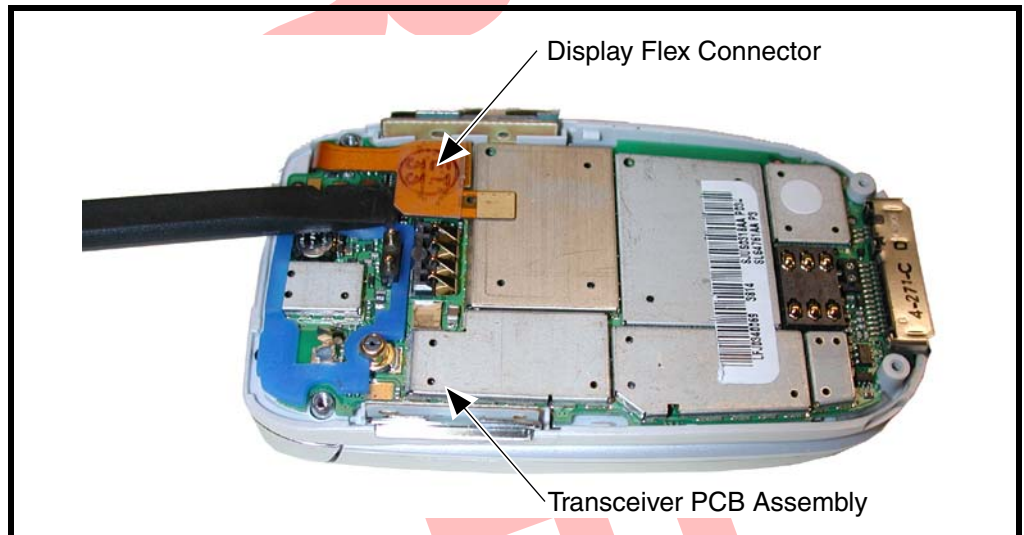


Figure 7. Disconnecting the flex from the transceiver board

3. Lift the transceiver board assembly out of the front housing. See Figure 8.

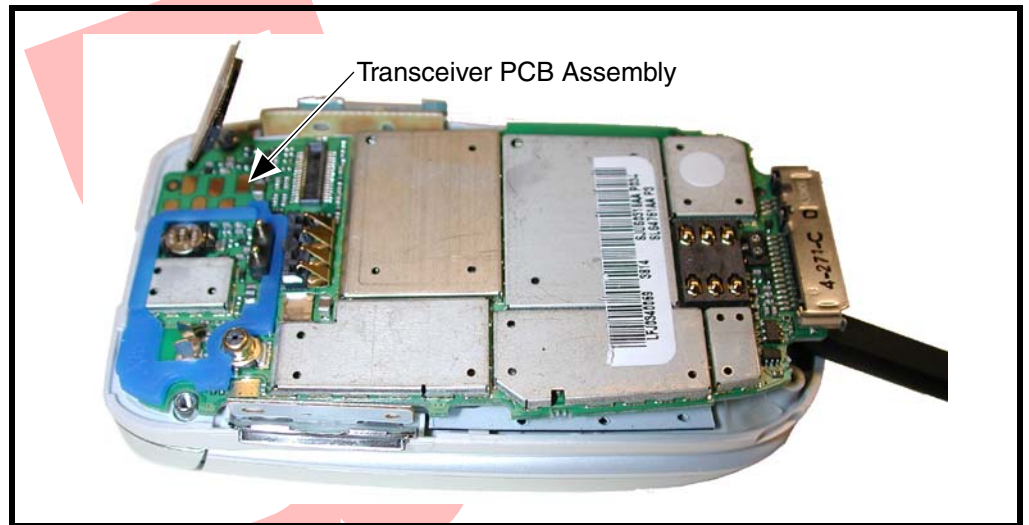


Figure 8. Removing the transceiver board assembly

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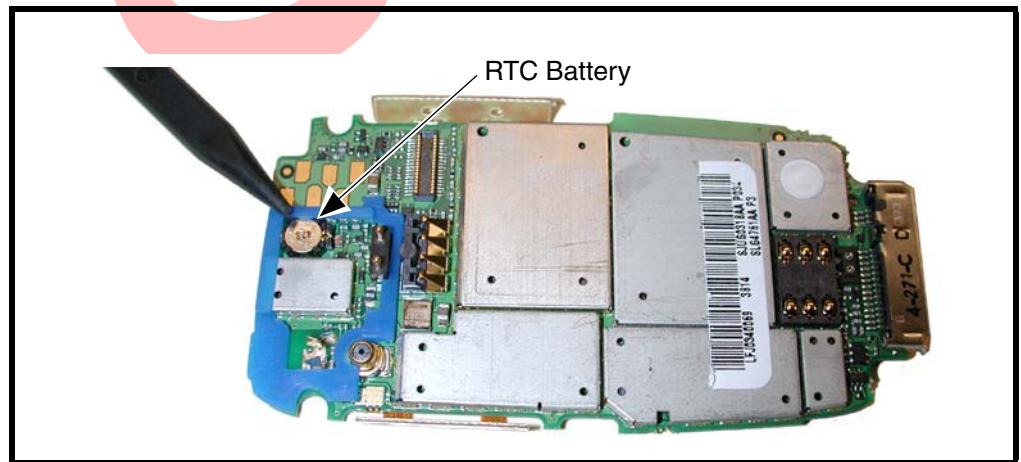
4. To replace, insert the transceiver board assembly into the front housing with the flex connector on top.

▶ *Be sure the volume/smart buttons and voice button are correctly positioned in relation to the corresponding switches on the transceiver board. Verify operation of the buttons after replacing the transceiver board and rear chassis assembly.*

5. Insert the flex connector squarely into its mating connector on the transceiver board and press firmly until it snaps into place.
6. Replace the rear housing, antenna, SIM, battery, and battery cover as described in the procedures.

Removing and Replacing the Real-Time Clock (RTC) Battery

1. Remove the battery cover, battery, SIM, antenna, rear housing, and transceiver board assembly as described in the procedures.
2. Use the disassembly tool to pry the RTC battery out of its socket on the transceiver board (see Figure 9).
3. Remove the RTC battery, while making not of the polarity



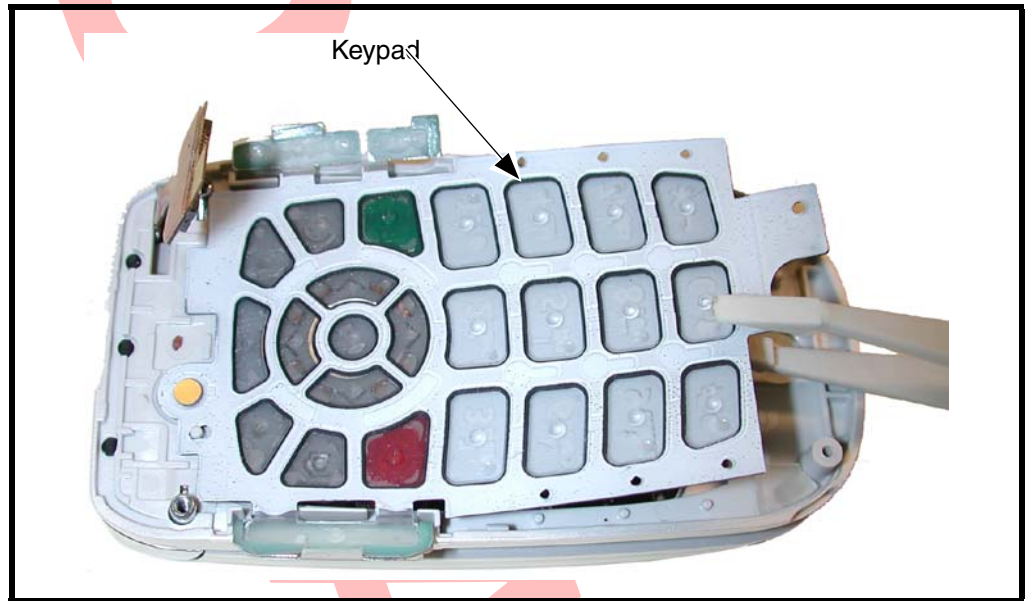
0411820

Figure 9. Removing the RTC Battery

4. To replace, align the RTC battery with it's socket on the transceiver board.
5. Press the RTC battery into its socket.
6. Replace the transceiver board assembly, rear housing, antenna, SIM, battery, and battery cover as described in the procedures.

Removing and Replacing the Keypad, Volume/Smart and Voice Buttons

1. Remove battery cover, battery, SIM, antenna, rear housing, and transceiver board assembly as described in the procedures.
2. Using the tweezers, lift the keypad assembly out of the front housing with caution (see Figure 10).



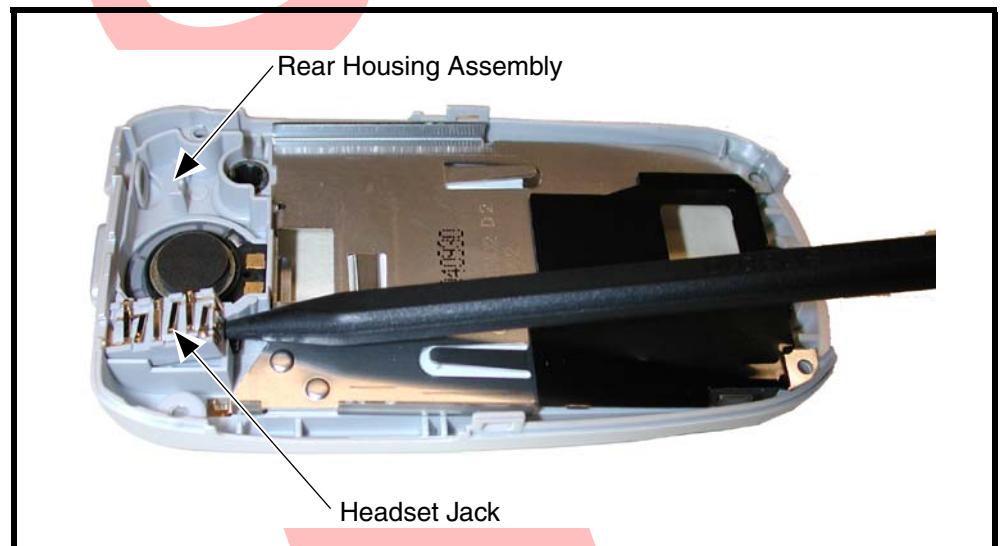
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Figure 10. Removing the Keypad

3. To replace, carefully set the keypad volume/smart buttons and voice button assembly into the front housing, ensuring the keys align properly with the openings in the front housing, and fits over the keypad guides molded into the front housing.
4. Replace the transceiver board assembly, Display flex connector, rear housing assembly, antenna, SIM, battery, and battery cover as described in the procedures.

Removing and Replacing the Headphone Speaker Jack

1. Remove the battery cover, battery, SIM, antenna, and rear housing as described in the procedures.
2. Using the disassembly tool, gently pry up on the headphone speaker jack to remove it from the rear housing as shown in Figure 11. Be careful not to damage the leads.



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Figure 11. Removing the Headphone Speaker Jack

3. To replace, align the headphone speaker jack to the rear housing assembly.
4. Insert the top end of the headphone speaker jack into the rear housing assembly.
5. Press the bottom end of the headphone speaker jack into the rear housing. Be careful not to damage the headphone jack speaker leads.
6. Ensure headphone jack speaker leads will contact the transceiver board when reassembled.
7. Replace the rear housing, antenna, SIM, battery, and battery cover as described in the procedures.

Removing and Replacing the Polyphonic Speaker Assembly

1. Remove the battery cover, battery, SIM, antenna, rear housing, and headphone speaker jack as described in the procedures.
2. Remove the speaker baffle wall as described in Figure 12A.
3. Use the disassembly tool to pry the polyphonic speaker assembly out of the rear housing as shown in Figure 12B.
4. Remove any remaining speaker adhesive residue from the rear housing assembly.

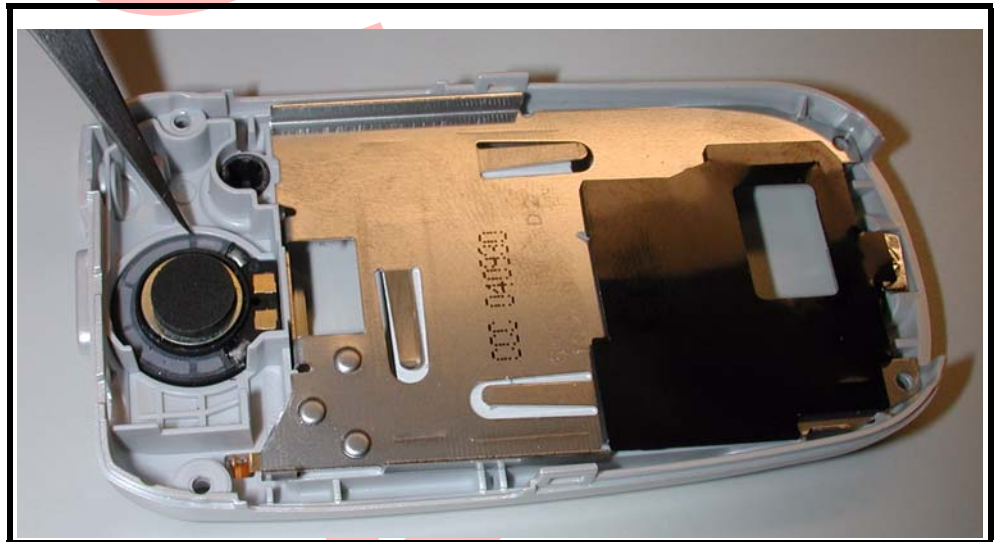


Figure 12. Removing the Polyphonic Speaker Assembly

5. To replace, remove any remaining adhesive residue from speaker cavity.
6. Remove any adhesive protection material from the speaker assembly.
7. Align the speaker assembly to the opening in the rear housing.
8. Carefully press the polyphonic speaker assembly into its cavity on the rear housing.
9. Replace the headphone speaker jack, rear housing, antenna, SIM, battery, and battery cover as described in the procedures.

Removing and Replacing the Flip Assembly

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



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

2. Remove the knuckle from the flex cable and flip assembly (see Figure 13).

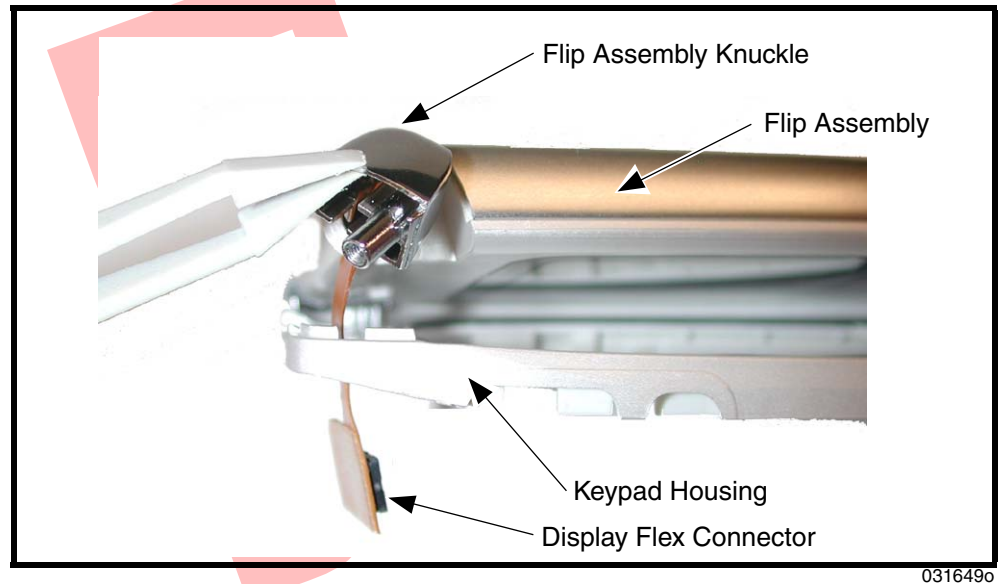


Figure 13. Removing the flip assembly knuckle

3. Carefully slide the display flex cable through the keypad housing assembly (see Figure 14). Avoid damage to the flex cable.

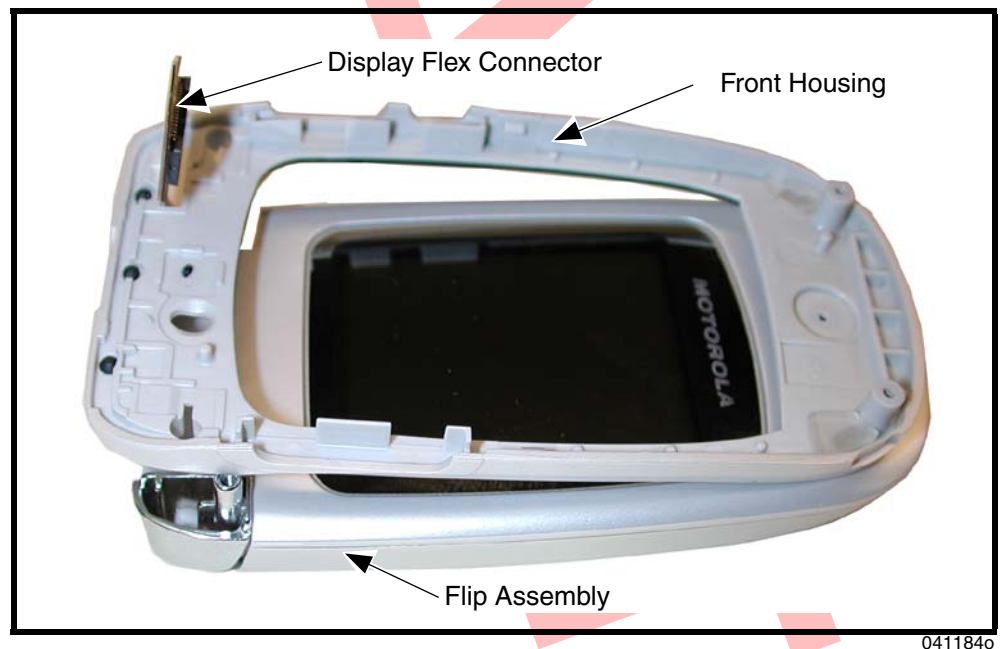


Figure 14. Removing the front housing

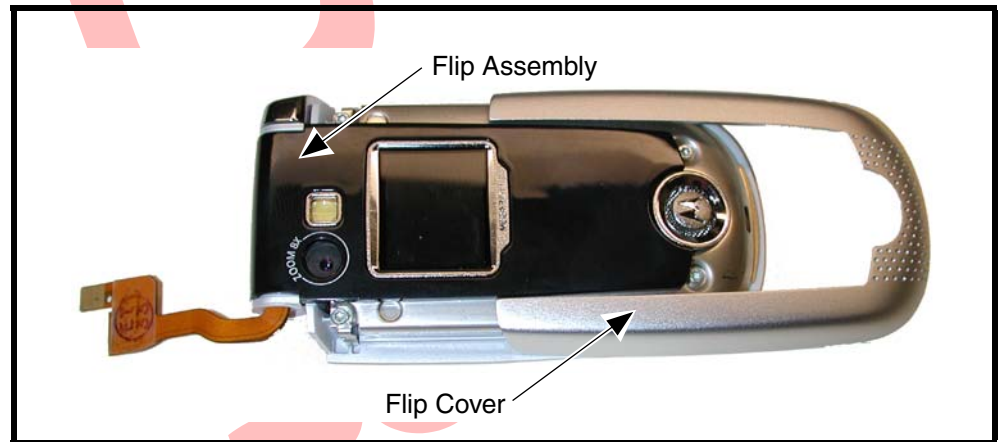
4. Lift the keypad housing assembly away from the flip assembly. Be careful not to damage the display flex cable. To replace, carefully thread the display flex

connector through the slot on the keypad housing assembly. Avoid damage to the flex cable.

5. Place the flip knuckle over the flex cable and align knuckle to keypad housing.
6. Replace the transceiver board assembly, rear housing, antenna, SIM, battery, and battery cover as described in the procedures.

Removing and Replacing the Flip CLI Lens Assembly

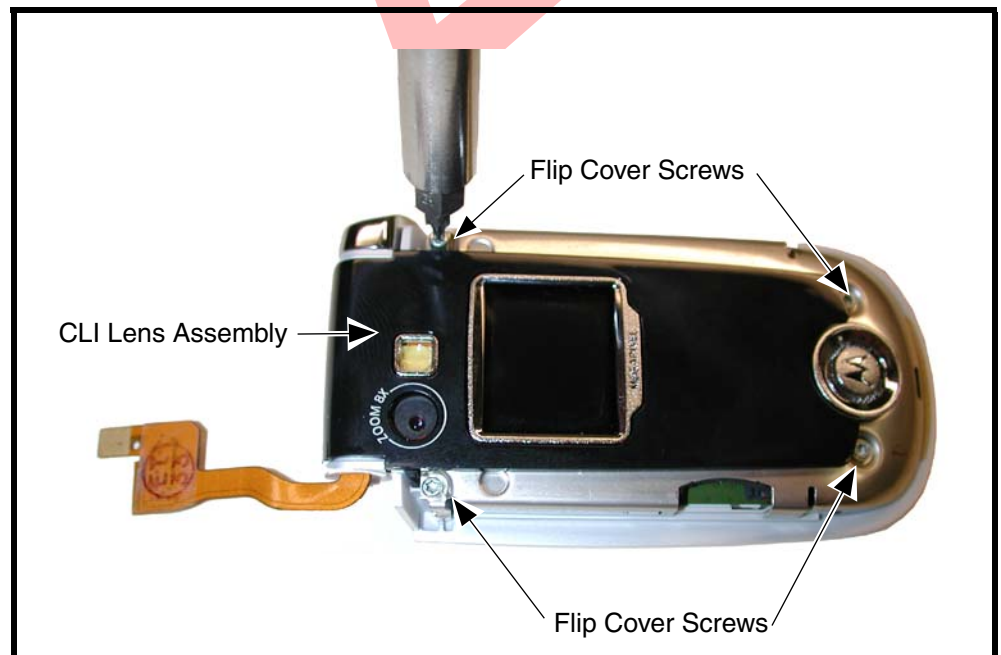
1. Remove the battery cover, battery, SIM, antenna, rear housing, and transceiver board assembly and flip assembly as described in the procedures.
2. Slide the flip assembly cover away from the flip assembly (see Figure 15).



041187o

Figure 15. Removing the Flip Cover

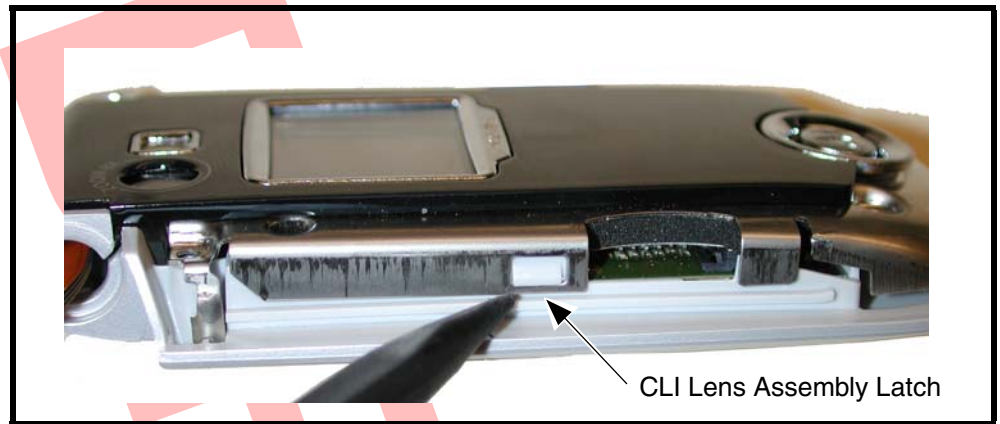
3. Remove the 4 flip assembly screws (see Figure 16). Set the screws aside for re-assembly.
4. Lift the CLI lens assembly away from the flip assembly.



041188o

Figure 16. Removing the Flip Assembly Screws

5. Release the latch on each side of the flip assembly (see Figure 17).



041189o

Figure 17. Releasing the CLI Lens Assembly Latch

6. Disconnect the CLI lens flex connector from the flip assembly PCB located under the CLI lens assembly.
7. Lift the CLI lens assembly away from the flip assembly (see Figure 18).



041190o

Figure 18. Removing the CLI Lens Assembly

8. To replace, align the CLI display lens assembly to the flip assembly.
9. Carefully press the CLI display lens to the flip assembly to lock the latches on the CLI display lens assembly. Be careful not to damage the CLI display flex or flex connector while re-assembling the CLI display lens assembly.
10. Insert and tighten the 4 flip assembly screws to torque setting of 1.0 inch pounds.
11. Slide the flip assembly cover onto the flip assembly.
12. Replace flip assembly, transceiver board, rear housing, antenna, SIM, battery, and battery cover as described in the procedures.

Removing and Replacing the Display Assembly

1. Remove the battery cover, battery, SIM, antenna, rear housing, transceiver board assembly, flip assembly, and flip CLI lens assembly as described in the procedures.
2. Remove the camera assembly boot (see Figure 19A).
3. Use the disassembly tool to gently pry the display assembly out of its space in the flip assembly (see Figure 19B).

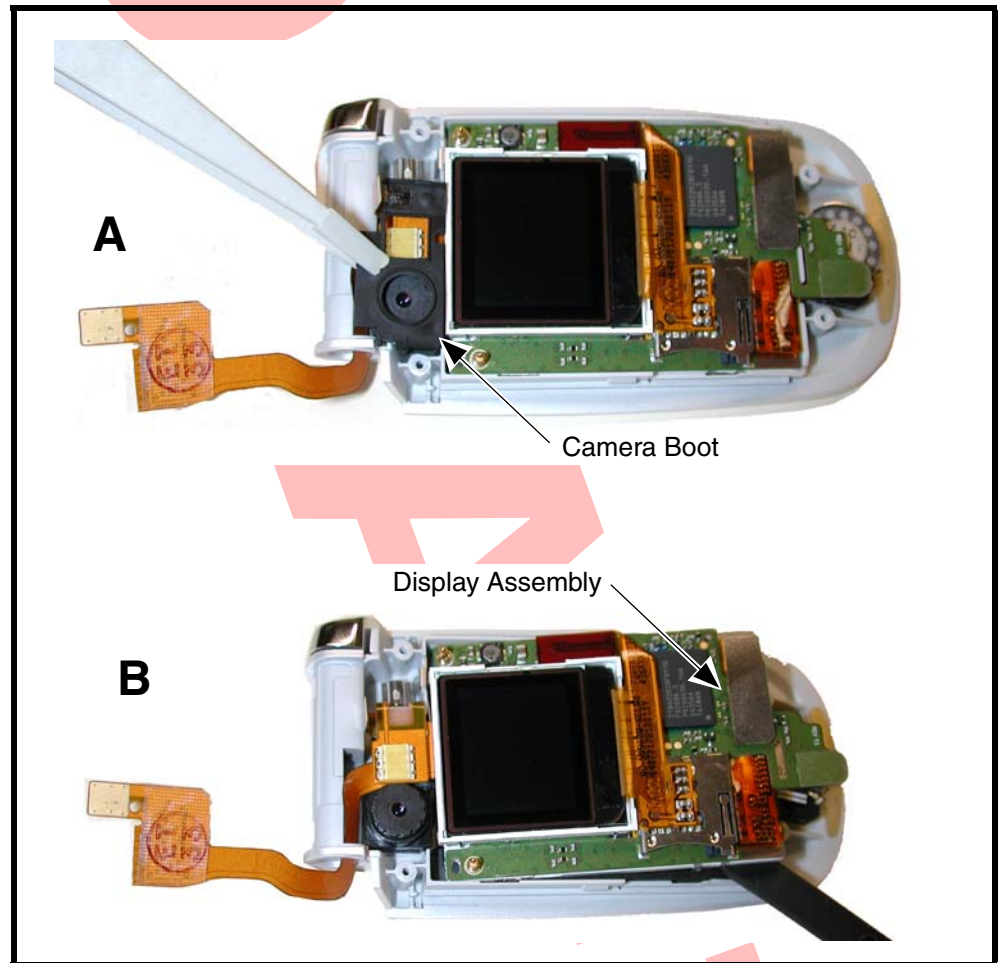


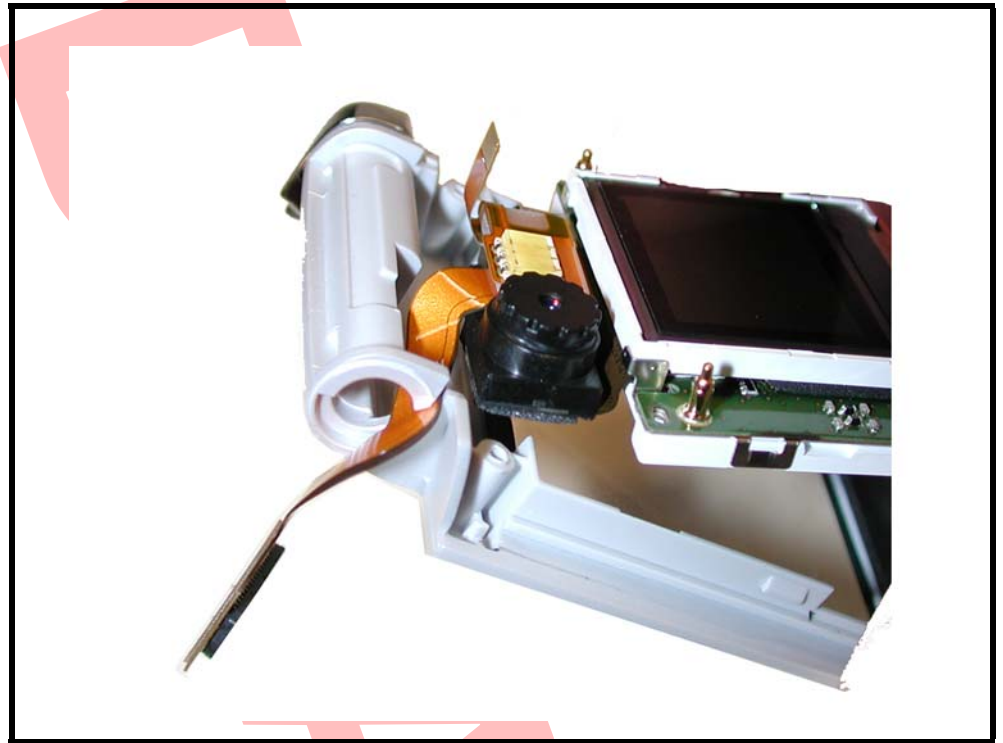
Figure 19. Display Assembly Removal

0411910 0411930



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

- Carefully slide the flex cable through the slot in the flip housing (see Figure 20).



0411940

Figure 20. Removing the Flex Cable Assembly

- To replace, carefully slide the flex cable through the slot in the flip housing.
- Carefully lower the display assembly into place in the flip assembly.
- Place the camera boot over the camera assembly.
- Replace the flip CLI lens assembly, flip assembly, antenna, SIM, battery, and battery cover as described in the procedures.

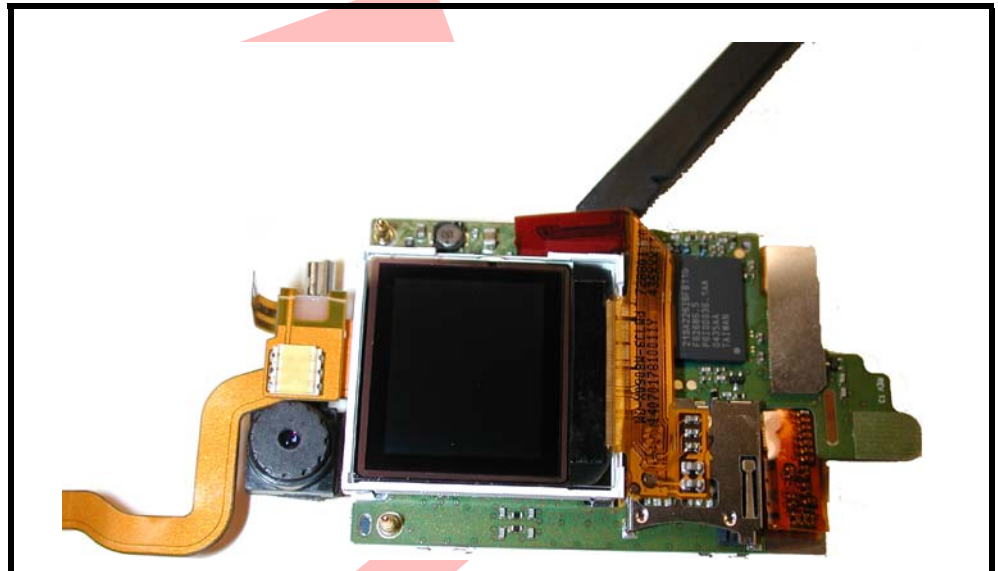
Removing and Replacing the CLI Display Module

1. Remove the battery cover, battery, SIM, antenna, flip assembly, flip display assembly, as described in the procedures..



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

2. Unseat the CLI display flex cable on the display assembly (see Figure 16).



0411920

Figure 21. Removing the CLI display flex socket connector

3. Lift the CLI up to expose the Zero Insertion Force (ZIF) connector (see Figure 22).

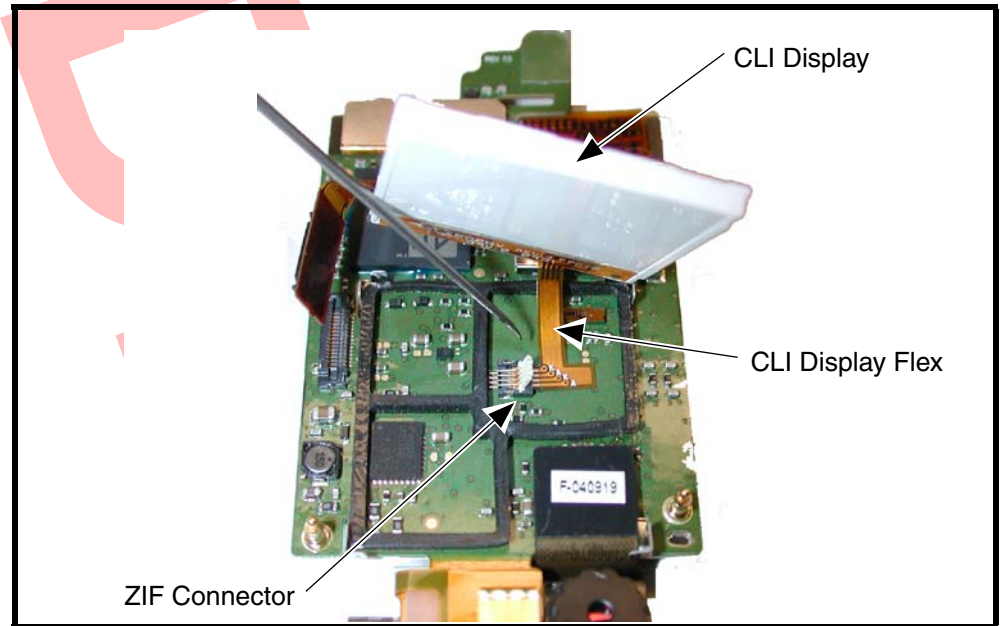


Figure 22. Removing the CLI display flex connector

4. Pull up on the ZIF connector latch to open it.
5. Carefully slide the CLI display flex cable out of the ZIF connector.
6. Lift the CLI display away from the display module.
7. To replace, place the CLI display flex connector into the ZIF connector.
8. Close the ZIF connector latch to secure the flex cable.
9. Lower the CLI display onto the display assembly.
10. Carefully and gently press the display flex connector into its socket.
11. Replace the camera assembly, flip CLI display assembly, flip assembly, antenna, SIM, battery, and battery cover as described in the procedures.

Subscriber Identity Module (SIM) and Identification

SIM Card

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

The SIM contains:

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

Personality Transfer

A personality transfer is required when a phone is express exchanged or when the main board is replaced. Personality transfers reproduce the customer's original personalized details such as menu and stored memory such as phone books, or even just program a unit with basic user information such as language selection. V635 telephones use TrueSync® synchronization software to effect a personality transfer.

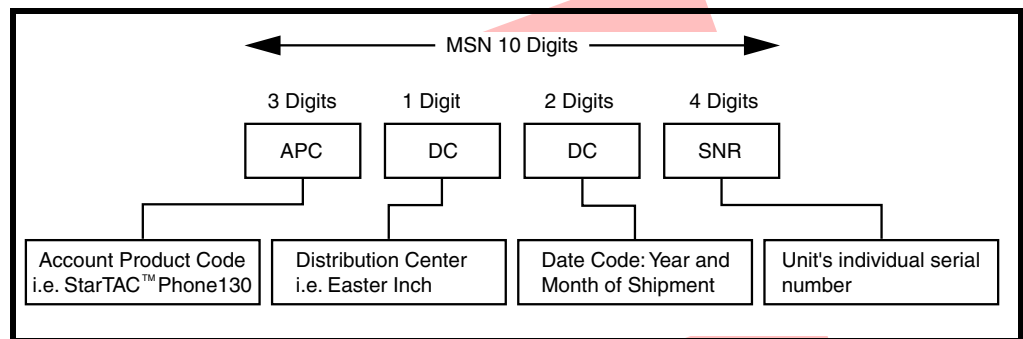
Identification

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

Mechanical Serial Number (MSN)

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

The MSN can be used to log and track a unit on Motorola's Service Center Database. The MSN is divided into 4 sections as shown in Figure 23.



000807a

Figure 23. MSN Label breakdown

International Mobile Station Equipment Identity (IMEI)

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

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

Table 2. IMEI Number Breakdown

TAC	Serial Number	Check Digit
NNXXXX YY	ZZZZZZ	A

Where

TAC Type Allocation Code, formerly known as Type Approval Code

NN Reporting body identifier

XXXX Type Identifier

YY YY is set to 00 from 01/01/2003 until 31/03/2004

ZZZZZZ Individual unit serial number

A Phase 1 = 0.
Phase 2 = check digit defined as a function of all other IMEI digits

Other label number configurations present are:

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

Troubleshooting

Manual Test Mode

Motorola V635 telephones are equipped with a manual test mode capability. This allows service personnel to verify functionality and perform fault isolation by entering keypad commands.

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

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

Manual Test Mode Commands

Table 3. Manual Test Commands

Key Sequence	Test Function/Name	Remarks
<Menu>048263*	Enter manual test mode	
"End" Key	Exit manual test mode	
54*	Suspend	Required for all Test Mode Operations
0*0*0	Select tone 0	
0*0*1	Select tone 1	
0*0*2	Select tone 2	
0*0*3	Select tone 3	
0*0*4	Select tone 4	
0*0*5	Select tone 5	
0*0*6	Select tone 6	
0*0*7	Select tone 7	
0*0*8	Select tone 8	
0*0*9	Select tone 9	
0*1*X	Disable tone X	
3*0*1	Enable vibrator	
3*0*0	Disable vibrator	
5*0*0	Set audio level 0	
5*0*1	Set audio level 1	
5*0*2	Set audio level 2	
5*0*3	Set audio level 3	
5*0*4	Set audio level 4	
5*0*5	Set audio level 5	
5*0*6	Set audio level 6	
5*0*7	Set audio level 7	

Table 3. Manual Test Commands (Continued)

Key Sequence	Test Function/Name	Remarks
5*0*8	Set audio level 8	
5*0*9	Set audio level 9	
5*0*10	Set audio level 10	
5*0*11	Set audio level 11	
5*0*12	Set audio level 12	
5*0*13	Set audio level 13	
5*0*14	Set audio level 14	
5*0*15	Set audio level 15	
6*2*2*0*0	Set Audio Path. Int Mic, IntSpk, RX unmute, TX unmute	
6*4*6*0*0	Set Audio Path. Boom Mic, Boom Spk, RX unmute, TX unmute	
10*0*3	Set band GSM 900	
10*0*4	Set band DCS 1800	
10*0*5		
10*0*6	Set dual band GSM 900 / 1800	
10*1*0	Read band	3= GSM 4= DCS 5= PCS 6 =GSM/DCS
18*0	Initialize non-volatile memory (Master Reset)	
18*1	Initialize non-volatile memory (Master Clear)	
55*2*001	Test Display. All pixels ON	
55*2*000	Test Display. All pixels OFF	
55*2*002	Test Display. Checkerboard pattern A	
55*2*003	Test Display. Checkerboard pattern B	
55*2*004	Test Display. Border pixels ON	
*#06#	IMEI Check	No Test Mode Required
Phone Set up --> Phone Status --> Other Information	Flex Version / Technology / S-W Version / Readiness Status	No Test Mode Required

Troubleshooting Chart

Table 4. Level 1 and 2 Troubleshooting Chart

SYMPTOM	PROBABLE CAUSE	VERIFICATION AND REMEDY
1. Telephone will not turn on or stay on.	a) Battery either discharged or defective.	Measure battery voltage across a 50 ohm (>1 Watt) load. If the battery voltage is <3.25 Vdc, recharge the battery using the appropriate battery charger. If the battery will not recharge, replace the battery. If battery is not at fault, proceed to b.
	b) Battery connectors open or misaligned.	Visually inspect the battery connectors on both the battery and the telephone. Realign and, if necessary, either replace the battery or refer to a Level 3 Service Center for the battery connector replacement. If battery connectors are not at fault, proceed to c.
	c) Transceiver board assembly defective.	Remove the transceiver board assembly. Substitute a known good assembly and temporarily reassemble the unit. Press and hold the PWR button; if unit turns on and stays on, disconnect the dc power source and reassemble the telephone with the new transceiver board assembly. Verify that the fault has been cleared. If the fault has not been cleared then proceed to d.
	d) keyboard assembly failure.	Replace the keyboard assembly. Temporarily connect a +3.6 Vdc supply to the battery connectors. Press and hold the PWR button. If unit turns on and stays on, disconnect the dc power source and reassemble with the new keyboard assembly.
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.

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

SYMPTOM	PROBABLE CAUSE	VERIFICATION AND REMEDY
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 connections to the transceiver board assembly defective.	Gain access to the microphone as described in the procedures. Check connections. If connector is faulty proceed to c; if the connector is not at fault, proceed to b.
	b) Microphone defective.	Gain access to microphone. Disconnect and substitute a known good microphone. Place a call and verify improvement in transmit signal as heard by called party. If good, reassemble with new microphone. If microphone is not at fault, reinstall original microphone and 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.
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) Keypad defective.	Check the keypad. If clean and free from foreign material, replace the keypad. Verify that the fault has been cleared. If fault not cleared, proceed to b.

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

SYMPTOM	PROBABLE CAUSE	VERIFICATION AND REMEDY
	b) Transceiver board assembly defective.	Replace the transceiver board assembly (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board assembly.
9. Vibrator feature not functioning.	a) Flip assembly defective	Replace the flip assembly with a known good flip 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.
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.
12. No or weak audio when using headset.	a) Headset not fully pushed home.	Ensure the headset plug is fully seated in the jack socket. If fault not cleared, proceed to b.
	b) Faulty jack socket on 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.

Programming: Software Upgrade and Flexing

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

Part Number Charts

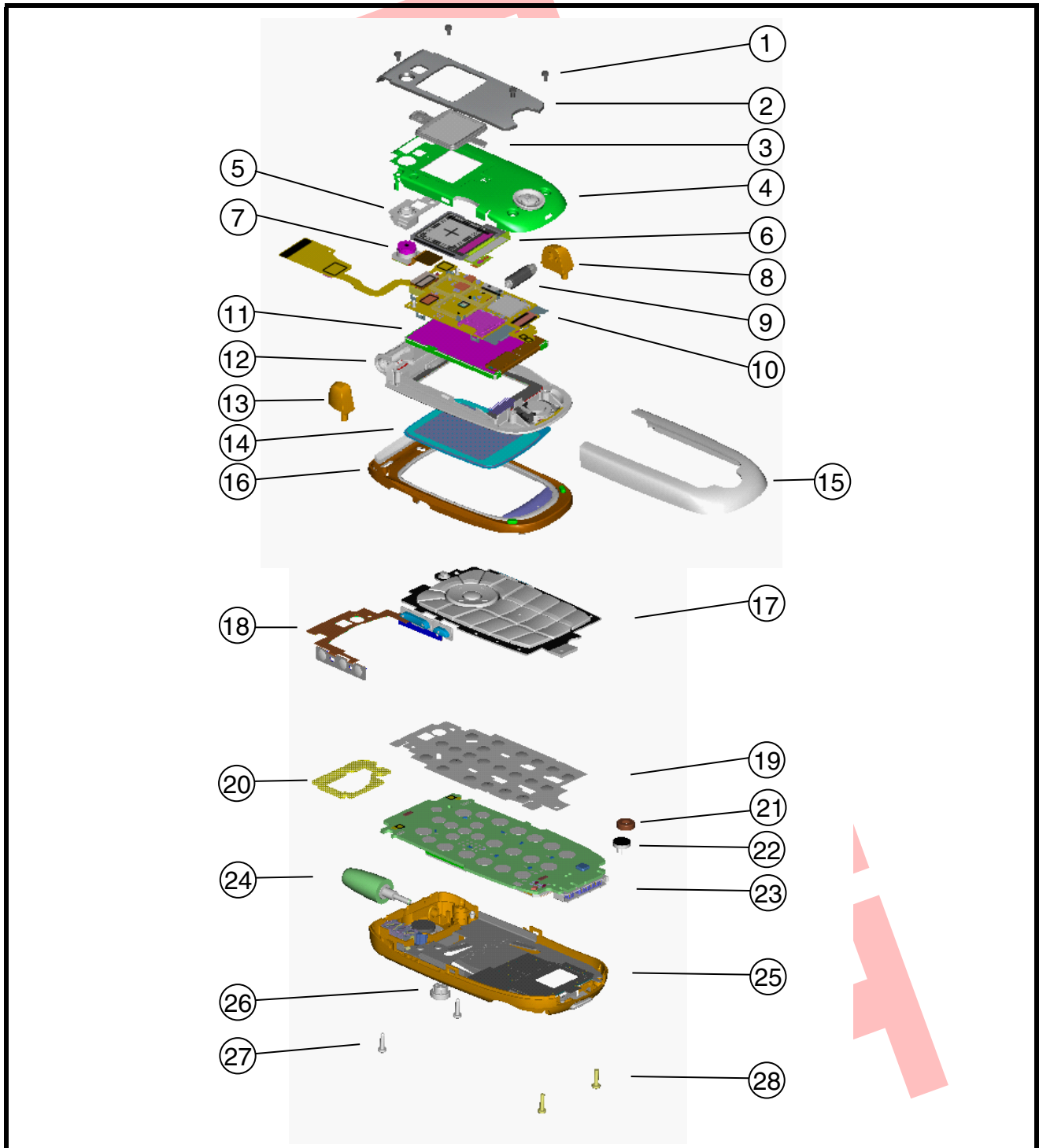
The following charts are provided as a reference for the parts associated with V635 telephones.

Related Publications

Motorola V635 User's Guide, English

68XXXXXX79

Exploded View Diagram



0411710

Figure 24. Exploded view diagram

Exploded View Parts List

Table 5. Exploded View Parts List

Item Number	Part Number	Description	Item Number	Part Number	Description
1		Flip Assembly Screws (4X)	16		Front Housing Assembly
2		Flip Front Assembly	17		Keypad
3		CLI Lens Assembly	18		Flex Side Buttons
4		Flip Chassis and Medallion Assembly	19		Popple Dome Sheet
5		Camera Boot	20		Acoustic Gasket
6		96 x 90 CSTN CLI Display	21		Microphone Grommet
7		1.3 MP Camera Assembly	22		Microphone
8		Housing Base Knuckle, Right	23		Transceiver Board
9		Hinge	24		Antenna
10		Flip Flex Assembly	25		Rear Chassis Assembly
11		176 x 220 TFT Main Display	26		RF Grommet
12		Flip inner Housing Assembly	27		Knuckle Screws (long) (2X)
13		Housing Base Knuckle, Left	28		Housing Screws (short) (2X)
14		Main Lens	-		Rear Housing Cover
15		Flip Cover	-		Battery



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.

To order parts please use the following Link:

https://wissc.motorola.com/wissc_root/main/BrowserOK.html

(Password is Required)

For information on ordering parts please contact EMEA at +49 461 803 1638.

Accessories

Table 6. V635 Accessories

Kit Number	Description
SYN7875	Headset - Neckloop
SYN8908	Headset Boom Mic Noise Cancel
SYN9350	Headset Mono Customizable
SYN8390	Headset Mono Earbud - Universal (Black)
AAYN4264	Headset Mono Earbud - Universal (Silver)
SYN9351	Headset One Touch Customizable
SYN8419	Headset One Touch w/ Send-End
SYN9050	Headset Retractable Mic - Universal
CHYN4516	Headset Stereo One Touch Earbud
SYN0943	TransFlash Card with SD Adapter - 128 MB
SYN0940	TransFlash Card with SD Adapter - 16MB
SYN0944	TransFlash Card with SD Adapter - 256MB
SYN0941	TransFlash Card with SD Adapter - 32MB
SYN0942	TransFlash Card with SD Adapter - 64MB
AAKN4011	Data Cable CE Bus/USB
SKN6311	Data Cable CE Bus/USB
S9642	Bluetooth Car Kit - Asia/Americas
S9643	Bluetooth Car Kit - Euro
SYN0945	Bluetooth Headset - Green - HS820
CHYN4590	Bluetooth Headset (Genie) - HS801
SYN9826	Bluetooth Headset Paladin - HS810
SYN9820	Bluetooth Helmet Headset - HS830
SYN0717	Bluetooth PC USB Adapter
SYN0736	Bluetooth Speaker Quadrant - HF800
SYN1107	Bluetooth Headset Paladin - HS850
SYN0986	Bluetooth Headset - HS805
SYN1084	Holster - Triplets Consumer Personalization Planned Compatibility
S9950	Professional Install Car Kit Without Hang-up Cup
SYN0888	Self Install Car Kit Universal - Mandarin
SYN0890	Self Install Car Kit Universal - Smart Car Kit
SYN1004	Smart Cable CE Bus -
SYN0689	Hang-up Cup - V300/V500/V600
SYN0707	Vehicle Power Adapter CE Bus -
SKN6180	Y Cable CE Bus -
SNN5683	Battery P2K Li Ion Slim Hi Cap
SPN5210	Desktop Charger Modular CE Bus Dual Pocket
SPN5204	Desktop Charger Modular CE Bus Single
SPN4992	Travel Charger CE Bus Mid-Rate Linear - US

Table 6. V635 Accessories (Continued)

Kit Number	Description
SPN4940	Travel Charger CE Bus Mid-Rate Switcher - US
SPN5037	Travel Charger CE Bus Mid-Rate Switcher - US
SPN5049	Travel Charger CE Bus Rapid Switcher - US

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