MOTOROLA

Level 1 and 2 Service Manual

6809499A19-B

A1200 A1200i

Digital Wireless Telephone

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

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789 International Parkway
Room S2C
Sunrise, FL 33325-6220

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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 which enable customers to meet requirements for reliable, continuous communications.

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

Product Identification

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

Product Names

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

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, and
- 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.

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About This Service Manual

Using this service manual and the suggestions contained in it assures proper installation, operation, and maintenance of A1200 and A1200i telephones. Refer questions about this manual to the nearest Customer Service Manager.

Audience

This document aids service personnel in testing and repairing A1200 and A1200i 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 document 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

The scope of this document is to provide the reader with basic information relating to A1200 and A1200i telephones, and also to provide 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

Special characters and typefaces, listed and described below, are used in this publication 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 appears in the display. For example, ALERTS or ALERTS or ALERTS.

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

Warranty Service Policy

The product will be sold with the standard 12 months 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 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). 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 should be arranged 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 ordering crystals or channel elements, specify the Motorola part number, description, crystal frequency, and operating frequency desired.

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

Website: http://businessonline.motorola.com

EMEA

Phone: +49 461 803 1404

Website: http://emeaonline.motorola.com

Asia

Phone: +65 648 62995

Website: http://asiaonline.motorola.com

Specifications

General Function	Specification
Frequency Range GSM 850	824-849 MHz Tx 869-894 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 GSM, 95 MHz DCS, 80 MHz PCS
Frequency Stability	± 0.10 ppm of the downlink frequency (Rx)
Operating Voltage	+3.0V dc to +4.2V dc (cell) +4.4V dc to +5.5V dc (external charger)
Average Transmit Current	190 mA max
Average Stand-by Current	6.0 mA avg (DRX2), 2.0 mA avg (DRX9)
Dimensions	98.8 mm x 52 mm x 22mm (3.77 inches x 2.04 inches x 0.86 inches)
Size (Volume)	82 cc (5.0 in^3)
Weight (with battery)	122 gm (4.3) oz.
Temperature Range	-10° C to +55° C (+15° F to +130° F)
Battery Life, 820 mAh Li Ion Battery	Talk time 270 - 420 minutes Standby time 160 - 200 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.

Transmitter Specification	
RF Power Output	33 dBm nominal GSM 850 33 dBm nominal GSM 900 30 dBm nominal GSM 1800 30 dBm nominal PCS 1900
Output Impedance	50 ohms nominal
Spurious Emissions	-36 dBm from 0.1 to 1 GHz, -30 dBm from 1 to 4 GHz
Bluetooth	Class 2

Receiver Specification	
Receive Sensitivity	-106 dBm GSM 850 -106 dBm GSM 900, -104 dBm GSM 1800, -104 dBm PCS 1900
RX bit error rate (100k bits) Type II	< 2%

Receiver Specification	
Channel Hop Time	500 microseconds
Time to Camp	Approximately 5-10 seconds

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
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 A1200 and A1200i mobile telephones feature global system for mobile communications (GSM) air interface, general packet radio service (GPRS) transport technology, and wireless application protocol (WAP) Internet browser. The mobile telephone uses a simplified icon and graphical-based user interface (UI) for easier operation, allow short message service (SMS) text messaging, and include clock, alarm, datebook, calculator, and caller profiling personal management tools. The A1200 and A1200i are quad band phone that allows roaming within the GSM 850, GSM 900, DCS 1800 MHz and PCS 1900 MHz bands.

These telephones support GPRS, EDGE, SMS, EMS, and MMS in addition to traditional circuit switched transport technologies. GPRS or EDGE, where available, provides substantial increases in mobile data communications performance and the efficient use of radio spectrum. A key advantage is the provision of a permanent virtual connection to the network. This “always on” connection is possible because GPRS and EDGE use packet data transfer so that, for example, email can be downloaded in “background mode.” There is no need for the user to re-connect before requesting a service, eliminating connection set-up delays and adding convenience and immediacy to data services access. The “virtual” nature of this connection means that network resources are not consumed during periods when a user is not actually sending or receiving data.

The telephone is made of polycarbonate plastic. The display and the transceiver printed circuit board (PCB), microphone, charger, headphone connector, stylus, and buttons are contained within the base of the phone. The speaker and speaker leads are contained within the transparent flip. The 820 mAh Lithium Ion (Li Ion) battery provides 270 - 480 minutes of talk time and 190 - 210 hours of standby time[1]. The phone accepts 3V mini subscriber identity module (SIM) cards which fit into the SIM holder under the rear housing cover. The telephone features a 240 x 320, 256k QVGA TFT touch screen display and an internal antenna. The A1200 and A1200i are Bluetooth class 2 products.

Features

A1200 and A1200i 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 the A1200 and A1200i include:

ID and Styling:

- Iconic Design*
- Transparent Flip *

User Interface:

- Animated 3D Icons and GNB Icons*
- Enhanced Media Player UI*
- Full screen CLI through transparent Flip*

For General Phone Use:

- Speaker-Independent Voice Dial (including via BT headset*)

1. 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.

- Text to Speech feedback for voice dials interaction, SMS readout.
- Internal Quad band Antenna

Multimedia features:

- Large, rich color touch screen display
- 2MP camera, with enhanced functions *
- Streaming Video Player (Real)
- Real HTML browsing for general Internet Access
- Video Record and Playback
- MP3/AAC+ playback (inc. stereo via headphones)
- 40-Voice Beatnik MIDI, and AAC+ & MP3 ringtones
- Micro SD card for memory expansion
- Bluetooth Stereo Profile*

For Business:

- PIM sync
- Cursive Handwriting Recognition* - English language(s)
- Bluetooth class 2
- Document Viewer

Display Features

- 240 x 320, 256k QVGA TFT color display
- 4-way + center select only for menu navigation
- Integrated 2MP camera
- Connectivity via USB or Bluetooth
- Up to 1Gb User Memory with removable Trans Flash memory module (optional).
- Touch screen hand writing recognition input
- Display animation
- VibraCall® vibrating alert
- Downloadable wallpaper and ring tones[2]
- Voice activation for phone book entries
- Calling line identification[2]
- Supports call diverting for incoming voice calls[2]
- Personal management tools calculator, real time clock with date, reminders, and caller profiling
- Phase II Unstructured Supplementary Service Data (USSD)[2]
- Hearing Aid Telephone Interconnection System (HATIS) support
- Chat messaging via WAP over GPRS[2]
- Multiple destination SMS
- TrueSync™ Multi-Point Synchronization Capability
- Supports MP3, AAC, WMA, RA, WAV, MIDI, AMR-NB/-WB audio
- 8 megabytes of internal end user memory
- OMA DRM Phase 1 (Forward Lock, Combined Delivery, Separate Delivery)

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

Speaker Dependant Voice Activation

The voice dialing feature allows the user to recall pre-programmed voice numbers simply by pressing the Voice/Ok key and speaking the desired voice tag. Up to 10 voice tags can be stored.

The user 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.

Wireless Access Protocol (WAP) 2.0 Compliancy

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

The A1200 and A1200i 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.

If 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

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.

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, an incoming call message is displayed.

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

SIM 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.

Network Based Chat Messaging

The chat messaging feature provides a constant WAP connection through GPRS to carrier, service center, or factory flexed WAP site. The specific site can also be entered by the user. Chat messaging is a carrier option.

Personal Information Management

The A1200 and A1200i telephones contain a built in calendar with date book reminders and phonebook that can be synchronized easily to a personal computer with mobile Phone Tools software.

General Operation

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

The A1200 and A1200i controls are located on the front of the device, and on the keyboard as shown in Figure 1. Indicators, in the form of icons, are displayed on the LCD (see Figure 2).

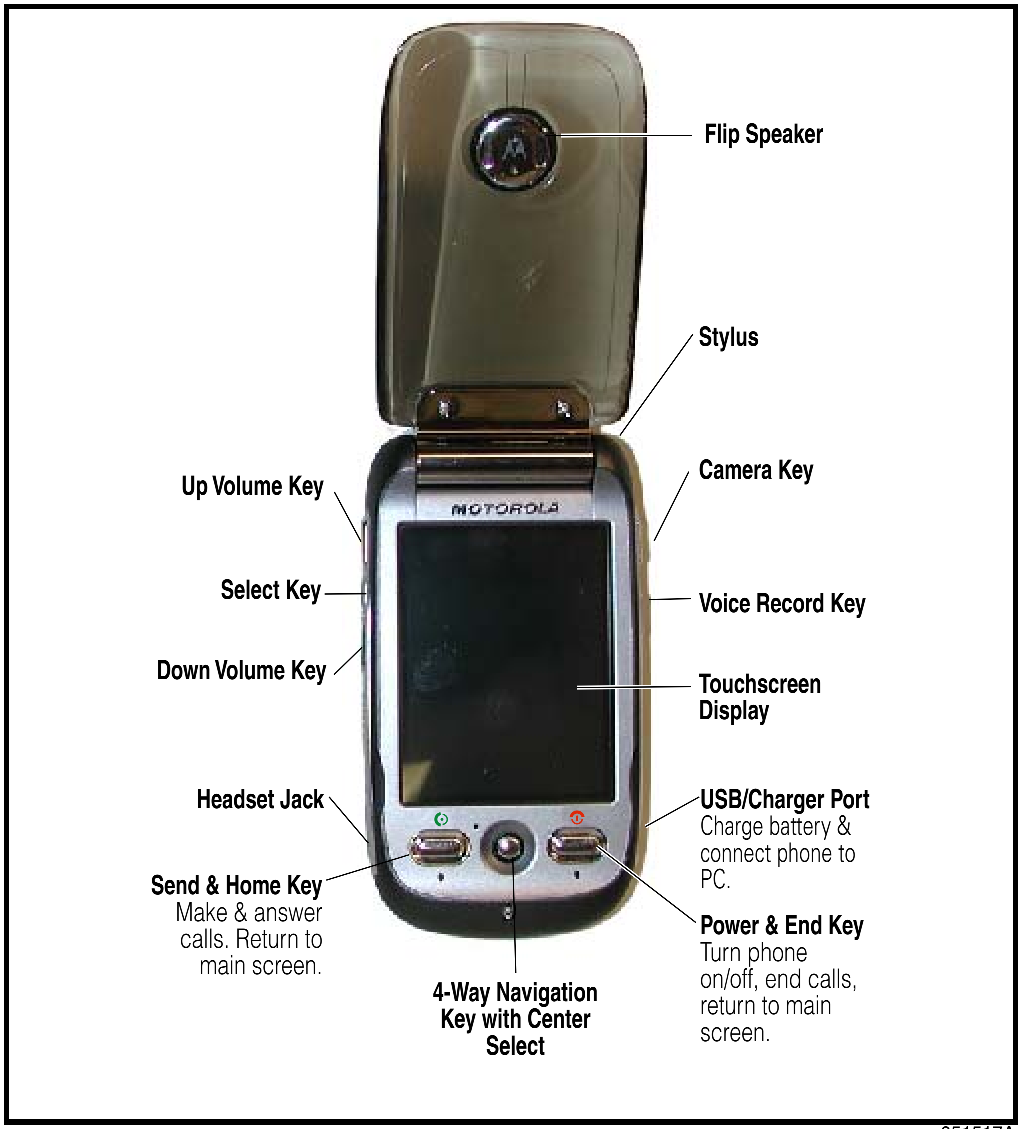


Figure 1. Telephone Controls and Indicators Locations (Front)

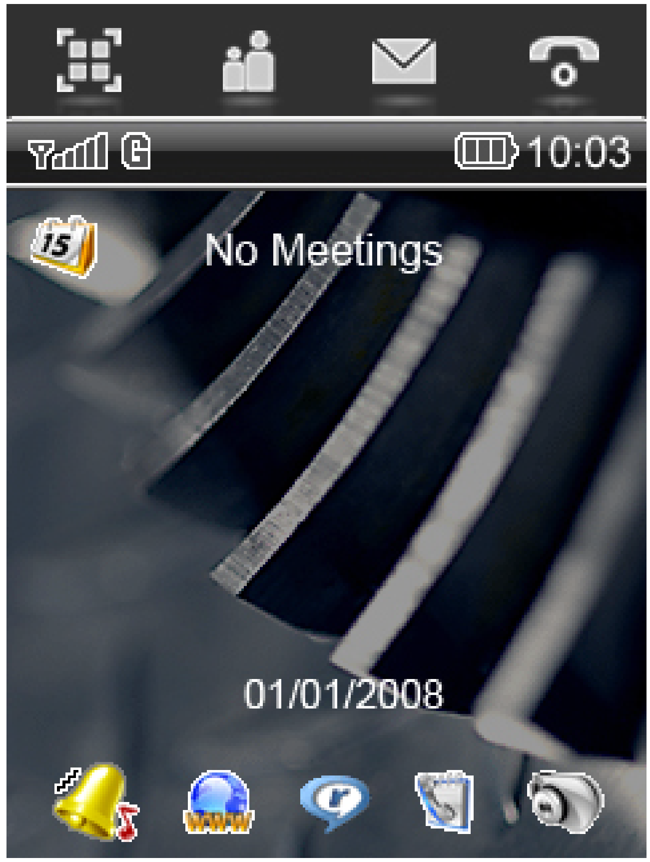
Figure 2. Telephone Controls and Indicators Locations (Rear)

Menu Navigation

A1200 and A1200i telephones are equipped with a touch screen icon and graphical-based user interface. All of the phone’s features can be accessed by tapping on feature icons, buttons, and text with the provided stylus. A 4-way navigation key with center select also allows you to move easily through menus and select menu items.

Display

Figure 3 provides a view of the A1200 and A1200i display.



051874o

Figure 3. A1200 and A1200i Display

Icon Indicators

Figure 3 provides a display of some of the icon indicators used by the A1200 and A1200i telephones.

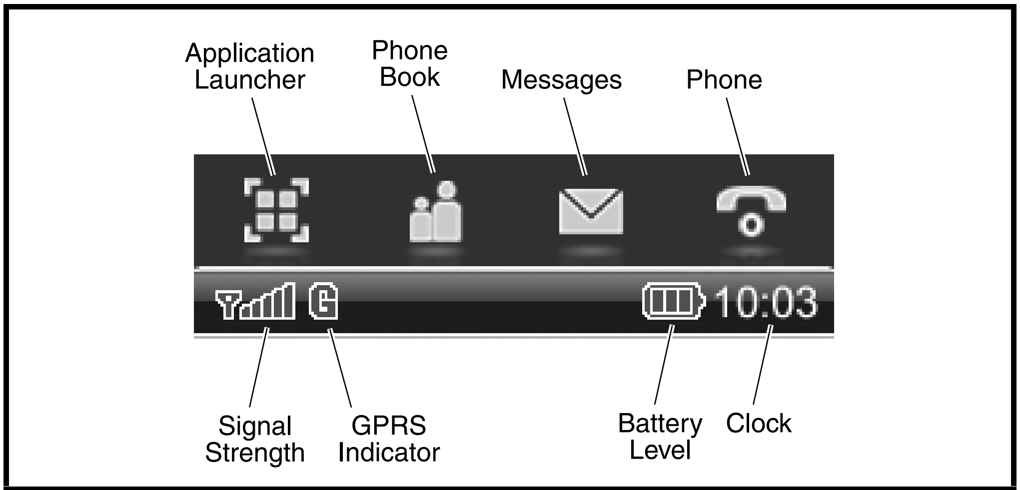


Figure 4. Icon Indicators

Signal Strength Indicator – Vertical bars show the strength of the network connection. You cannot make or receive calls when the (no signal) indicator or (no transmit) indicator is displayed.

GPRS/EDGE – Indicates when your phone is using a high-speed General Packet Radio Service (GPRS) or Enhanced Data for GSM Evolution (EDGE) network connection. A darkened indicator shows that a GPRS or EDGE connection is not available.

Battery Level – Vertical bars show the battery charge level. Recharge the battery when Low Battery displays and the battery alert sounds.

Clock – Shows the current time.

Liquid Crystal Display (LCD)

The LCD provides an large touch screen color display with user-adjustable brightness settings for optimum readability in all light conditions. The large 240 x 320 pixel display provides room for entering text, viewing graphics, tapping icons, and system prompts.

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

Alert Settings

In addition to preset ring tones, A1200 and A1200i telephones allow the user to download additional ring tones via SMS. (Availability is carrier and Network dependant).

Motorola A1200 and A1200i phones incorporate the VibraCall® discreet vibrating alert that helps to avoid disturbing others when a ringing phone is unacceptable.

Alerts can be set to ring only, vibrate only, vibrate then ring, or no ring or vibrate

Additionally, the profiling feature allows users to identify incoming calls by a specific ringer tone.

Battery Information

Battery Charge Indicator

The telephone displays a battery charge 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 (partially entered phone book entries or outgoing messages, for example) is lost.

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.

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

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

Battery Date Code

The battery date code is a 15 position alphanumeric code that provides, back end manufacture site information, year and week of manufacture date, cell type and vendor information.

The battery date code is used for cell phone batteries that were manufactured beginning in March 2000. The following paragraphs provide more detail about the battery date code.

1. Backend Pack Manufacturing Site (first position of battery code)

A = Motorola Penang	J= ESG, Chihuahua	S = T.D.I Scotland
B = T.D.I. Mexico	K= T.D.I. Romeoville	T = T.D.I Downers Grove
C = Motorola China	L = Motorola Lawrenceville	U = T.D.I. Hungary
D = T.D.I. Shanghai, China	M = TDI, Malaysia	V =
E = ESG, Evadin, Brazil	N = TDI, Manau, Brazil	W = ESG, Sung Woo
F = ESG, Propower, Korea	O =	X = ESG, Foxlink, China
G =	P = Intesys Arizona	Y = P&K (G.E.T.) Systems, Korea
H = Motorola Harvard	Q =	Z =
I = Motorola Ireland	R =	

2. Cell code and vendor (second and third position of battery code): 2 alpha characters.

Cell Reference Designator	Vendor	Size	Part Number
IA	A&TB	6.6x30x48	LGQ633048C
1B	A&TB	6.6x30x48	LGQ633048D
1C	A&TB	6.6x30x47.2	LGQ633048P
1D	A&TB	8.8x34x48	LGQ863448C
1E	A&TB	8.8x34x47.3	LGQ8634481-1
1F	A&TB	18x65	LGR18650E
IG	A&TB	7.5x14.5x48	TH750F5
1H	A&TB	10.5x43.6	TH550AAA
3F	Toshiba	7.5x14.5x48	TH900F5
3G	Gold Peak	1/3A	GPZSAFK
3H	Toshiba	4.4x34x56	LA8423456A

Cell Reference Designator	Vendor	Size	Part Number
3J	Saft	AA	VHAA1200
3K	Maxell	5.5x30x48	ICP053048G
3L	NEC-Moli	6.7x30x47.3	MK11-2293
3M	Mitsubishi	4.4x34x56	Lipmo001
3N	Toshiba	6.6x34x50	LGQ633450R
3P	Panasonic	6x34x50	CGP34506
3R	Toshiba	3.9x34x56	LAB363456A
3S	NEC-Moli	6.5x22x65	MK11-2300
3T	BYD	6.6*9.8x47.9	LP063048A
3U*	Panasonic	LL-AAAA	HHR70QAB4
3V	Sanyo (Toshiba)	6mm NiMH	THF6M
3W	LG Chemical	6x30x48	ICP633048
3X	BYD	5.4x30.1x48.2	LP053048A
3Y	BYD	6x34x50	LPO53048A
3Z*	Panasonic	6.2x35.2x16.	HF6OSS
4A	Peacebay-Manual	6mm NiMH	F6MG
4B	BYD	4x30x48	F6MG
4C	Peacebay-Auto	6.4x16.34	F6MP
4D	Sanyo	6mm NiMH	HFC1U
4E	BYD	8x3 x47.5	LP083448SH
4F	Sony	34x67	UP423467A4H
4G	LG Chemical	8.6x34x48	ICP863448
4H	LG Chemical	6.3x 34x50	ICP633450
4J*	BYD	4x30x41	LP043O41A
4K	GS Melcotec	4.6x29.5x41	LP423041A
4L	LG Chemical	4.2x30x48	ICP423048
4M	Toshiba	5.5x30x48	LGQ553048U
4N	Sanyo	3.8x34x50	UF383450P
4P	Toshiba	4.4x34x50	LGQ443450U
4R	Toshiba	4.4x30x48	LGQ443048U

Cell Reference Designator	Vendor	Size	Part Number
4S	Lishen	06x30x48	LP0601AE
4T	Panasonic	AAAALL	HHR70QAB4

3. Cell date code (fourth fifth and sixth position of battery code) consisting of characters as stated on cell pack by cell manufacturer. If a 3 digit code is not used, place a period in the sixth position.
4. Line and shift manufactured (optional) (seventh and eighth positions of battery code)
5. Year of battery manufacture (ninth position of battery code)

1990 = A	1997 = H	2004 = O	2011 = V
1991 = B	1998 = I	2005 = P	2012 = W
1992 = C	1999 = J	2006 = Q	2013 = X
1993 = D	2000 = K	2007 = R	2014 = Y
1994 = E	2001 = L	2008 = S	2015 = Z
1995 = F	2002 = M	2009 = T	
1996 = G	2003 = N	2010 = U	

6. Week of manufacture (tenth and eleventh positions of battery code).

A=0	C=2	E=4	G=6	I=8
B=1	D=3	F=5	H=7	J=9

7. Front end corepack manufacturing site (twelfth position of battery code (see step 1)).

Example of a battery date code: **`A1V90311JCCC...`**

position 1 = A = Motorola Penang.t (Backend Pack)
position 2 & 3 = 1V = Panasonic, AAA, HHR55B2
position 4, 5 & 6 = 903 = cell date code (from manufacturer)
position 7 & 8 = 11 = (TBD by supplier.Example: Line one of the first shift.)
position 9 = J = 1999 = Year of battery pack manufacture
position 10 & 11 = CC = week twenty two. (backend pack)
position 12 = C = Motorola, China. (Frontend Core Pack)
position 13, 14 & 15 = placeholders (...) to indicate pack has <u>not</u> been relabeled.

8. Batteries sold in China have a 16 character date code:

Example: **YYYYMMDDABCXXXX**

Where YYYYMMDD is the actual battery manufacturing date
A is the line number
B is the shift number (A,C is day shift; B, D is night shift)
C is a serial number from A to Z
XXXX is a sequence number

9. Embedded battery packs use a 6 character date code:
   Position 1 is the manufacturing site:

Manufacturing Site	Code
BYD	a
ESG	b
GSMT China	c
GSMT Japan	d
LG China	e
LG Japan	f
Maxell China	g
Maxell Japan	h
TDI	i
Toshiba China	j
Toshiba Japan	k

Position 2 and 3 is cell code and vendor. See step 2.

Position 4, 5, and 6 is cell date code (year and week). See steps 5 and 6.

Operation

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

Tools and Test Equipment

Table 1 list the tools and test equipment used on A1200 and A1200i telephones. Use either the listed items or equivalents.

Table 1. General Test Equipment and Tools

Motorola Part Number[1]	Description	Application
See Table 5	Charger	Used to charge battery and to power phone
0180386A82	Antistatic Mat Kit (includes 66-80387A95 antistatic mat, 66-80334B36 ground cord, and 42-80385A59 wrist band)	Provides protection from damage to phone caused by electrostatic discharge (ESD)
8102430Z04	GSM / DCS / PCS Test SIM	Used to enable manual test mode
6680388B67	Disassembly tool, plastic with flat and pointed ends (manual opening tool)	Used during assembly/disassembly of phone
6680388B01	Tweezers, plastic	Used during assembly/disassembly
RSX4043-A	Torque Driver	Used to remove and replace screws
—	Torque Driver Bit T-5 Plus, Apex 440-6IP Torx Plus or equivalent	Used with torque driver
HP34401A[2]	Digital Multimeter	Used to measure battery voltage

1. To order in North America, contact Motorola Aftermarket and Accessories Division (AAD) by phone 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

This section describes how to disassemble a A1200 telephone. Tools and equipment used 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

1. Ensure the phone is turned off.
2. Slide the battery cover away from the camera lens.
3. Lift the battery cover up and away from the phone (see Figure 5).

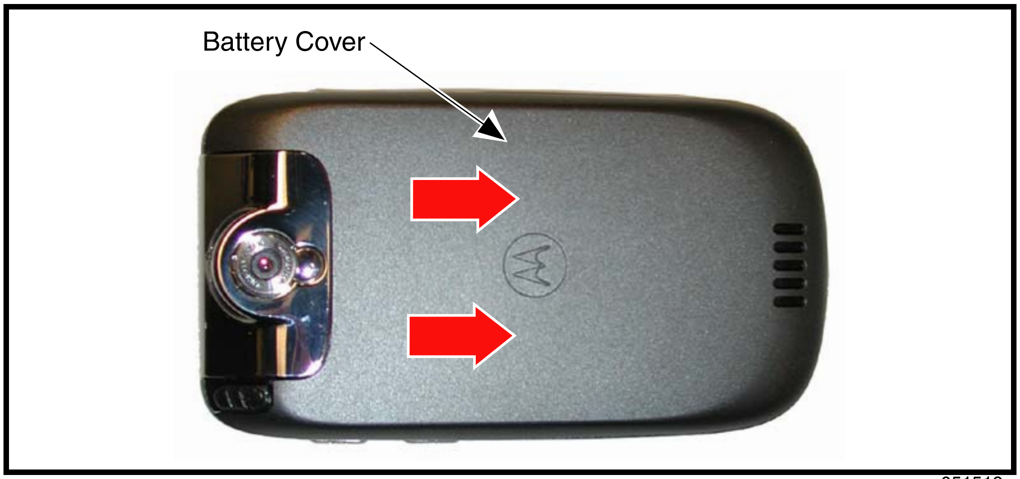


Figure 5. Removing the Battery Cover

4. To replace, align the battery cover to the back of the phone.
5. Lower the battery cover onto the phone.
6. Slide the battery cover into position until the battery cover snaps into place.

Removing and Replacing the Battery

Battery date codes are explained in the Battery Date Code section on page 19

Before handling the battery, please observe the battery cautions listed below.

Do not handle batteries with wet or sweaty hands.
Do not short the positive or negative terminals
Non conductive tweezers or grasping tools are to be used for battery connector manipulation, assembly, and disassembly.

1. Remove the battery cover as described in the procedures.
2. Lift the bottom end of the battery out of the battery compartment as shown in in Figure 6.
3. Slide the battery in the direction of the arrow to remove the battery out of the battery compartment as shown in Figure 6.

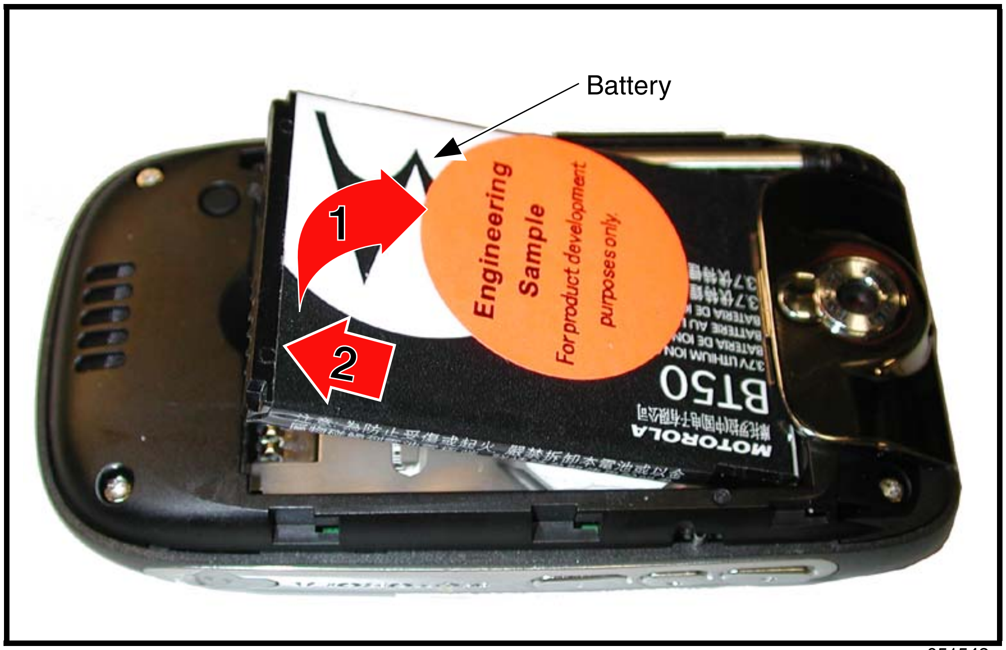


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Figure 6. Removing and Replacing the Battery

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.

4. To replace, insert the top end of the battery into the battery compartment with contacts facing downward.
5. Press the bottom end of the battery into the battery compartment.
6. Replace the battery cover as described in the procedures.

Removing and Replacing the Stylus

1. Remove the battery cover, and battery as described in the procedures.
2. Grasp the end of the stylus and pull it straight out of its compartment.

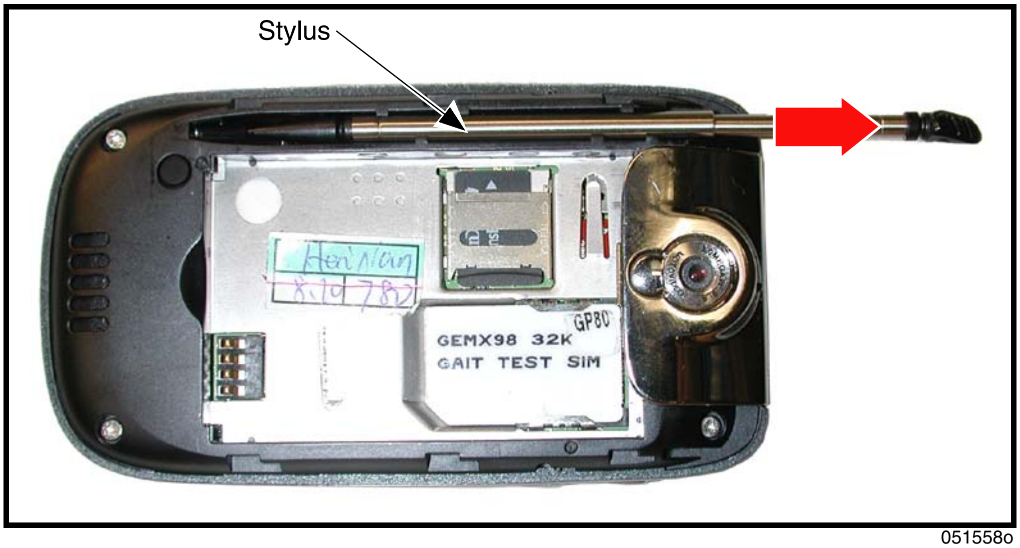

Figure 7. Removing and Replacing the Stylus

3. To replace, insert the tip end of the stylus into the stylus compartment and slide the rest of the stylus into the compartment until the top of the stylus is completely inserted into the phone.
4. Replace the battery, battery cover as described in the procedures.

Removing and Replacing the Subscriber Identity Module (SIM)

1. Remove the battery cover, and battery as described in the procedures.
2. Slide the SIM out of the SIM holder as shown in Figure 8.
3. Remove the SIM from the phone.

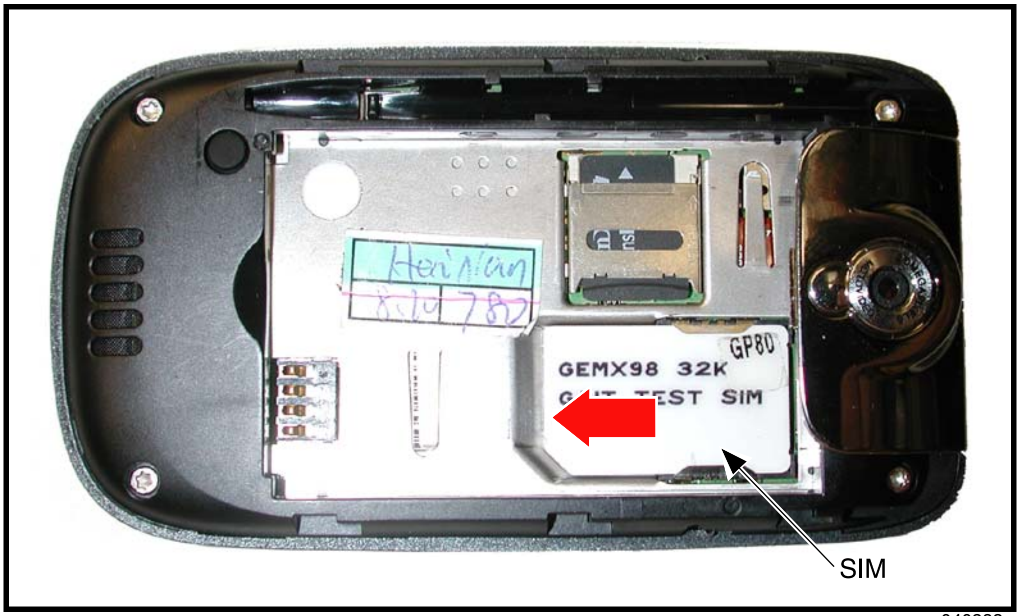

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Figure 8. Removing the SIM

4. To replace, carefully slide the SIM into position under the SIM holder.
5. Observe the notched corner when inserting the SIM.
6. Replace the battery and the rear housing as described in the procedures.

Removing and Replacing the TransFlash Memory Card

1. Remove the battery cover, and battery as described in the procedures.
2. To unlock the memory card holder, slide it toward the stylus as indicated by the first arrow shown in Figure 9.
3. Open the memory card holder as indicated by the second arrow shown in Figure 9.
4. Carefully remove the TransFlash memory card from the phone.

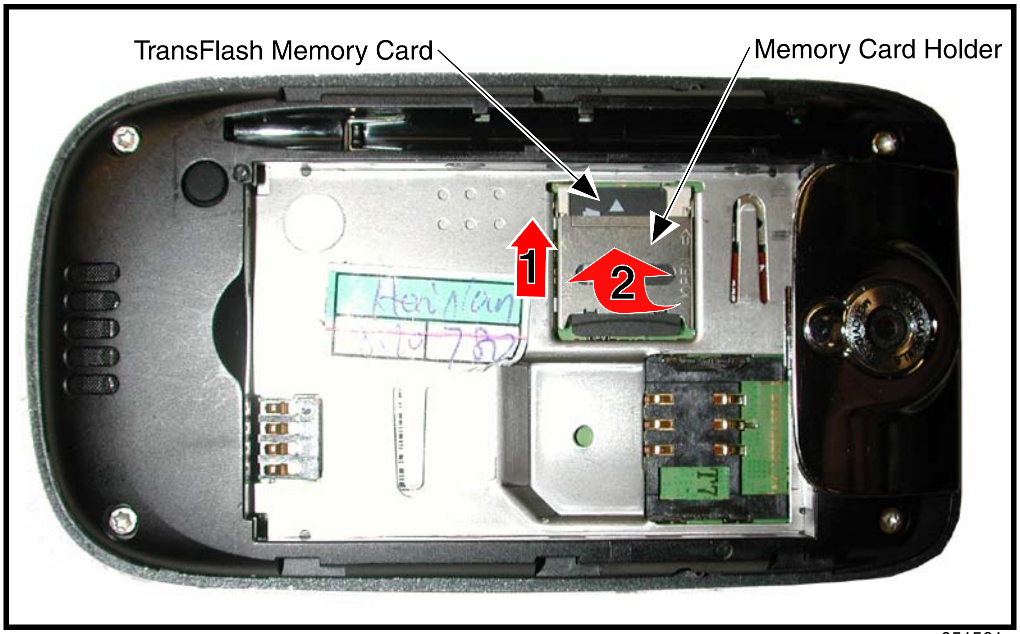

Figure 9. Removing the TransFlash Memory Card

5. To replace, open the TransFlash memory card holder.

6. Place the TransFlash memory card into the memory card slot as shown in Figure 10.

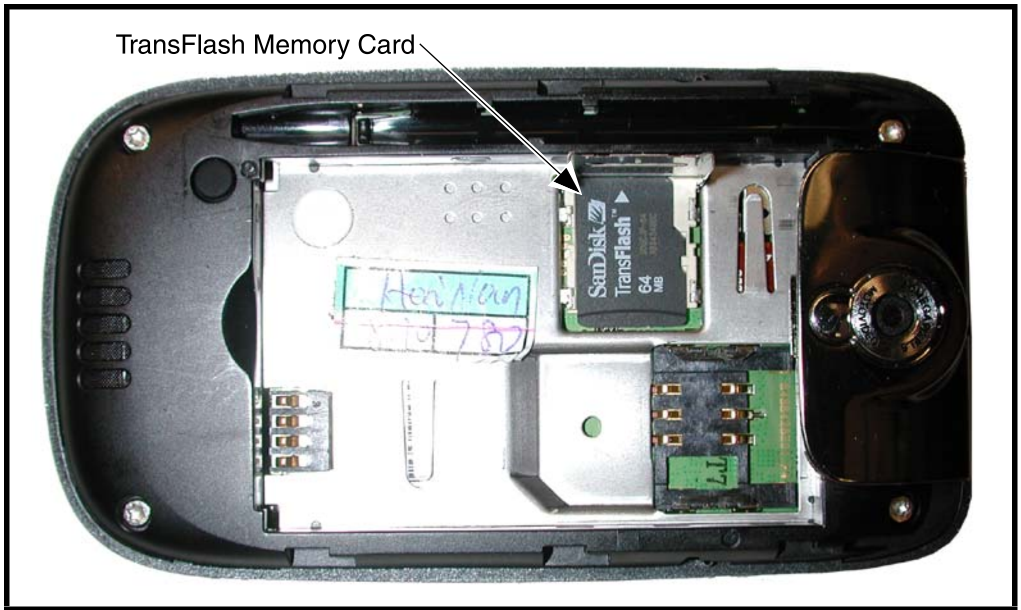

Figure 10. Inserting the TransFlash Memory Card

7. Close the memory card holder and slide it toward the SIM card to lock.
8. Replace the battery, and battery cover as described in the procedures.

Removing and Replacing the Rear Housing

1. Remove the battery cover, battery, stylus, and SIM as described in the procedures.
2. Use a T6 driver to remove 4 screws at near each corner of the phone (see Figure 11). Set the screws aside for reuse.

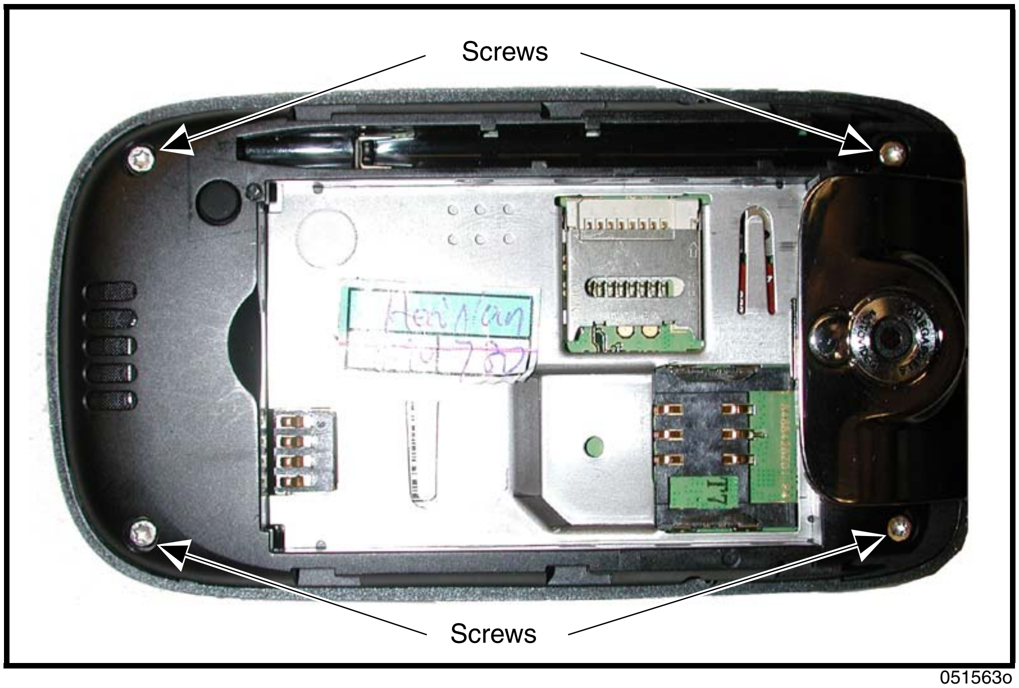

Figure 11. Housing Screw Locations

3. Release the housing latch on the left side of the phone (see Figure 12).

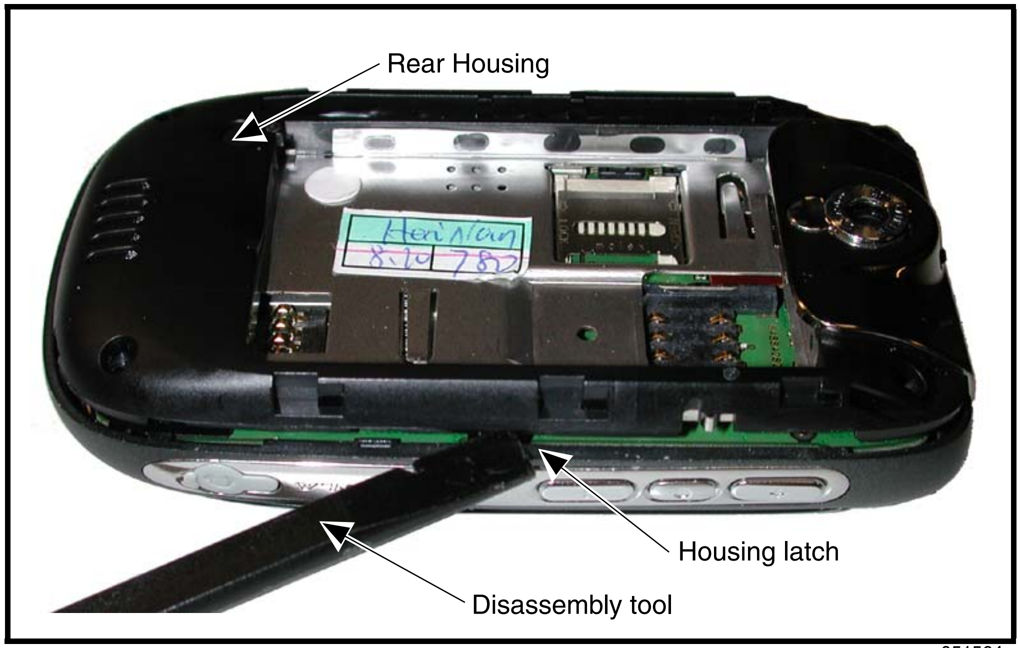

Figure 12. Removing the Rear Housing Latches

4. Carefully release the housing latch on the right side of the phone.
5. Carefully lift the rear housing from the phone.
6. To replace, align the front and rear housings. Firmly and carefully press the front and rear housings together until the housings snap into position.
7. Insert and tighten the 4 housing screws using the T6 driver. Tighten to 16 Ncm. Do not overtighten.
8. Replace the SIM, stylus, battery, and battery cover as described in the procedures.

Removing and Replacing the Antenna Assembly

1. Remove the battery cover, battery, stylus, SIM, and rear housing as described in the procedures.
2. Insert the disassembly tool under the antenna assembly and pry upward to release the antenna assembly (see Figure 13).

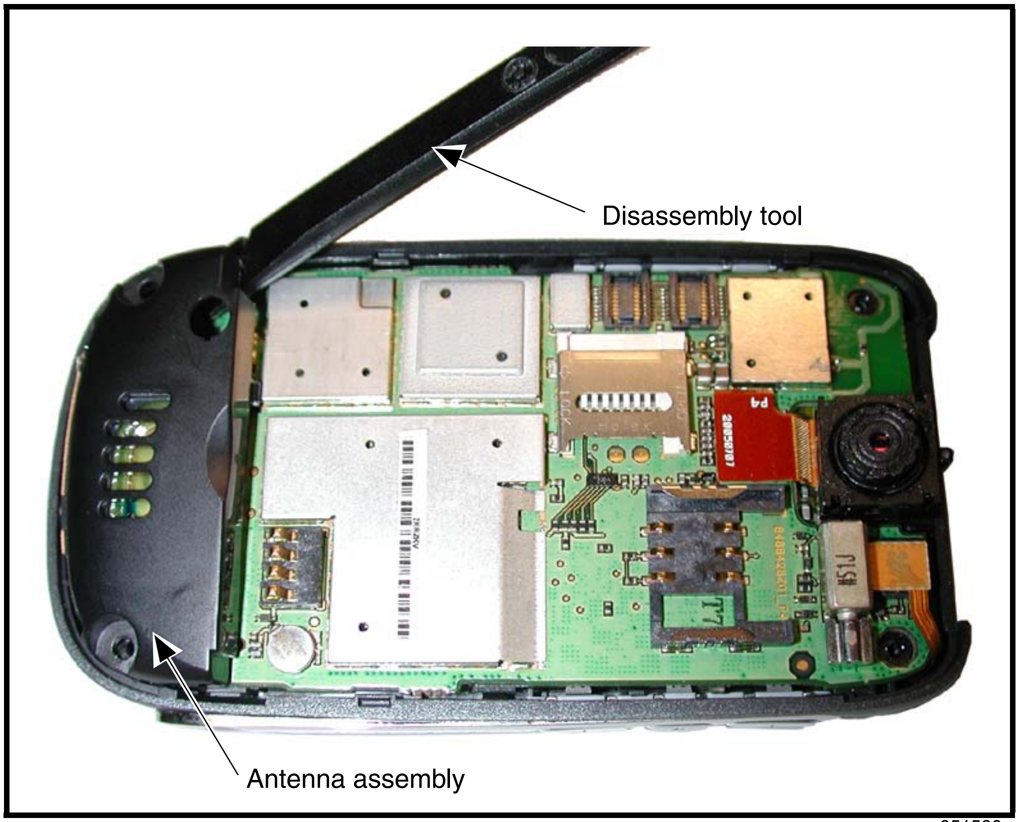

Figure 13. Removing the Antenna Assembly

3. Lift the antenna assembly from the phone.
4. To replace, align the antenna assembly to the phone. Use the guide pins to help align the antenna assembly to the phone's printed circuit board.
5. Gently press the antenna assembly onto the phone's printed circuit board until it snaps into place.
6. Replace the rear housing, stylus, SIM, battery, and battery cover as described in the procedures.

Removing and Replacing the Camera Module

1. Remove the battery cover, battery, stylus, SIM, rear housing, and antenna assembly as described in the procedures.
2. Use the disassembly tool to unseat the camera module connector from the transceiver PC board.

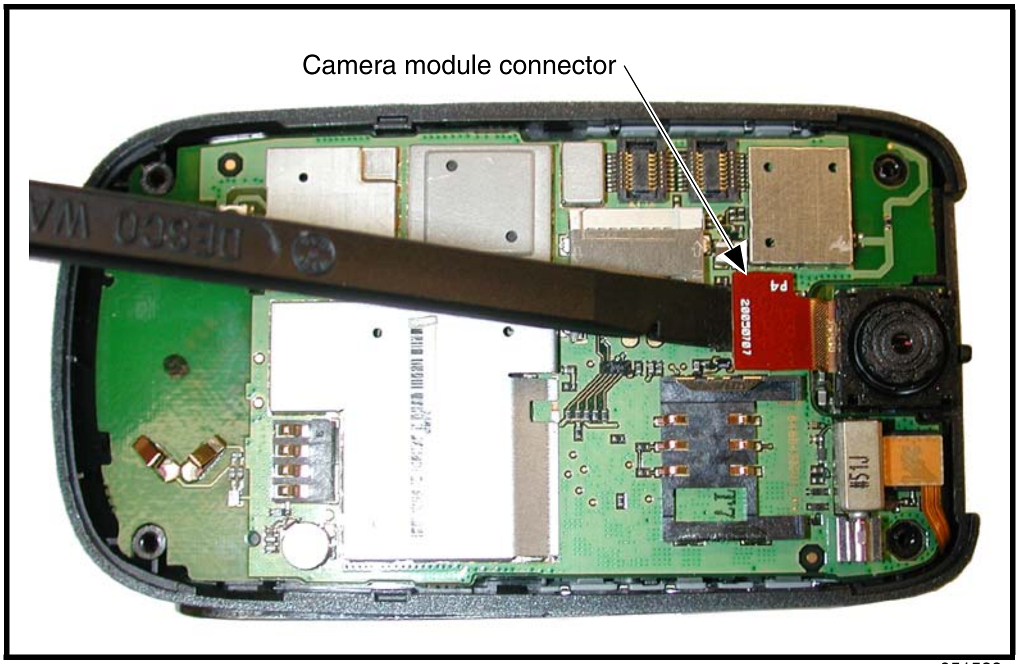

Figure 14. Removing the Camera Module Connector

3. Lift the camera module away from the transceiver PC board.
4. To replace, align the camera module connector to it's socket on the transceiver PC board.
5. Gently but firmly press the camera module connector into the camera connector socket on the transceiver PC board.
6. Replace the antenna assembly, rear housing, stylus, SIM, battery, and battery connector as described in the procedures.

Removing and Replacing the Transceiver PC Board Assembly

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

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

2. Use the disassembly tool to unseat the flip speaker Flex connector from the transceiver PC board assembly (see Figure 15).

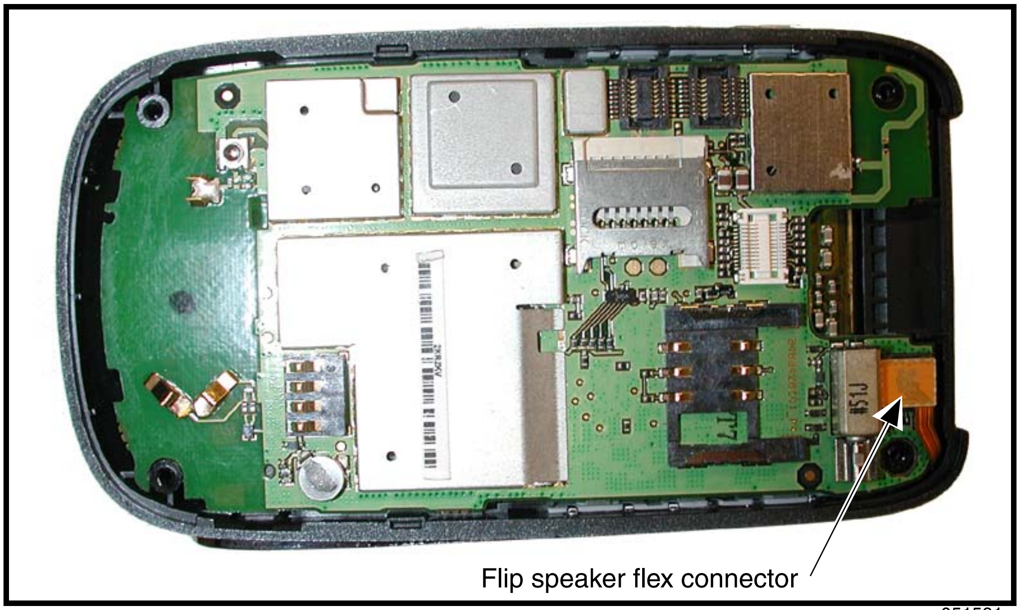

Figure 15. Removing the Flip Speaker Flex Connector

3. Use the disassembly tool to pry the housing away from the headphone socket on transceiver PC board just enough to lift the transceiver PC board out of the front housing (see Figure 16).

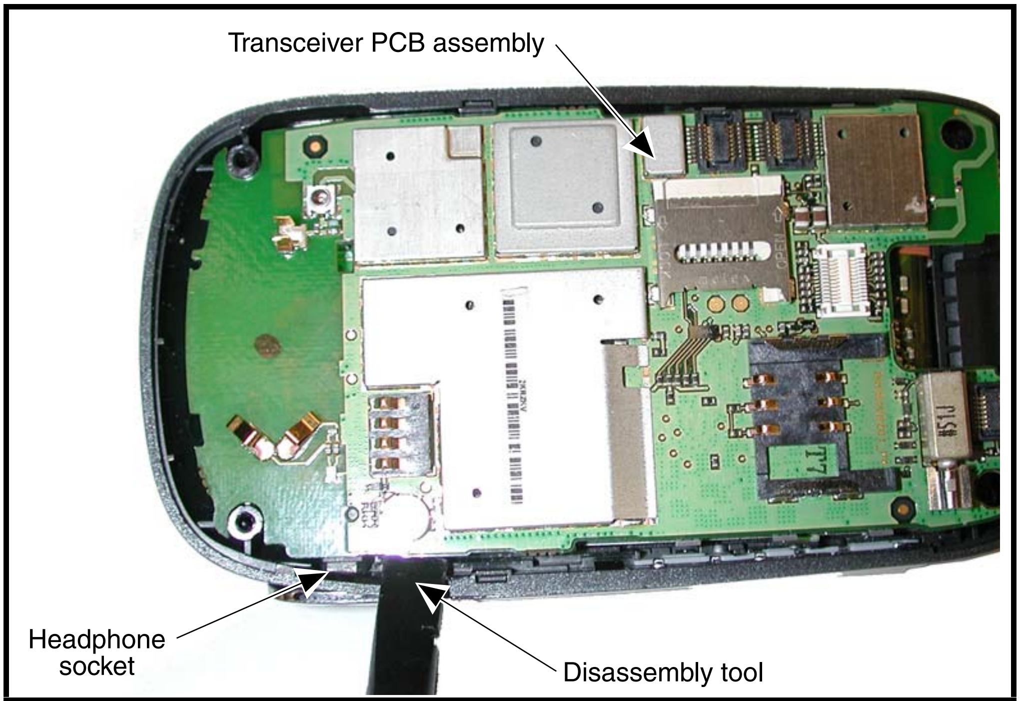

Figure 16. Removing the Transceiver PC Board Assembly

4. Carefully lift up the headphone socket end of transceiver PC board up while leaving the motor vibrator end of the transceiver PC board close to the front housing.

5. Underneath the transceiver PC board assembly is the display assembly flex connector. Use the disassembly tool to unseat this connector from the transceiver PC board assembly.

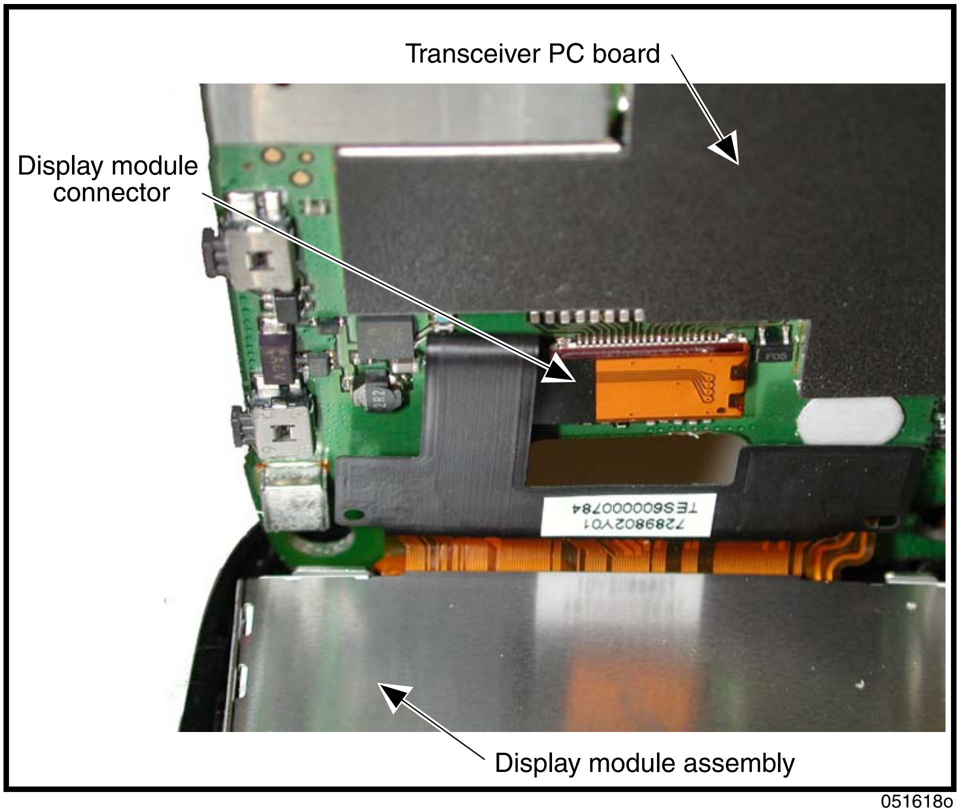

Figure 17. Removing the Display Assembly Connector

6. Carefully lift the transceiver PC board assembly out of the housing.
7. To replace, align the transceiver PC board assembly to the rear housing.
8. Connect the display module flex connector to the socket on the transceiver PC board.
9. Lower the transceiver PC board assembly into the front housing.
10. Use the disassembly tool if necessary to help align the headset socket to the opening in the front housing. Ensure the transceiver PC board is properly seated in the front housing.
11. Connect the flip speaker flex connector to its socket in the corner near the motor/vibrator assembly.
12. Replace the camera module, antenna assembly, rear housing, SIM, stylus, battery, and battery cover as described in the procedures.

Removing and Replacing the Display Module Assembly

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

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

2. Use the disassembly tool to lift the display module assembly from the front housing (see Figure 18.

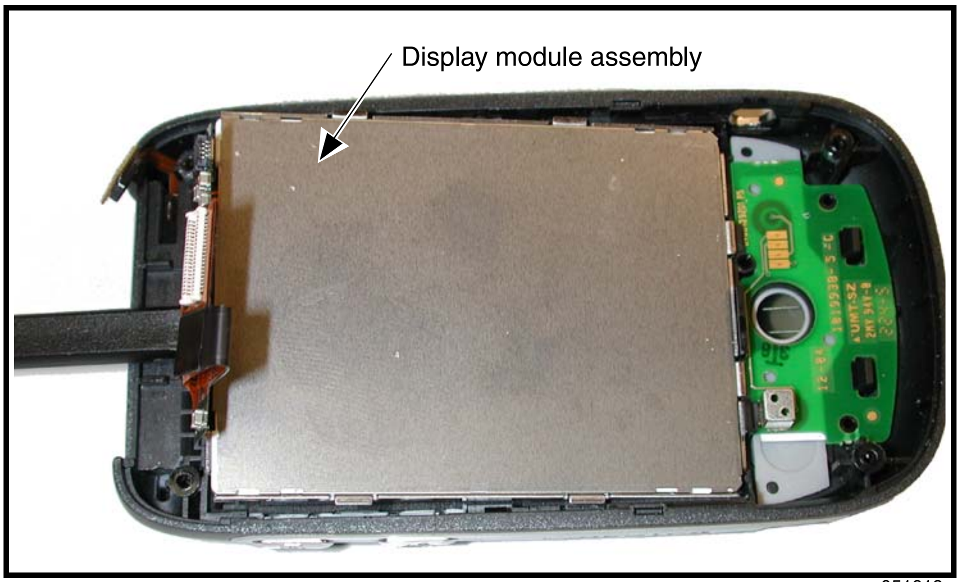

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Figure 18. Removing the Display Assembly

3. Carefully lift the display assembly away from the transceiver PC board.
4. To replace, align the display module to the front housing.
5. Lower the display module into place in the front housing until properly seated.
6. Replace the transceiver PC board assembly, camera module, antenna assembly, rear housing, SIM, stylus, battery, and battery cover as described in the procedures.

Removing and Replacing the Camera/Voice Keys

7. Remove the battery cover, battery, SIM, stylus, rear housing, antenna assembly, camera module, and transceiver PC board assembly as described in the procedures.
8. Use the plastic tweezers to remove the camera/voice keys from the front housing (see Figure 19).

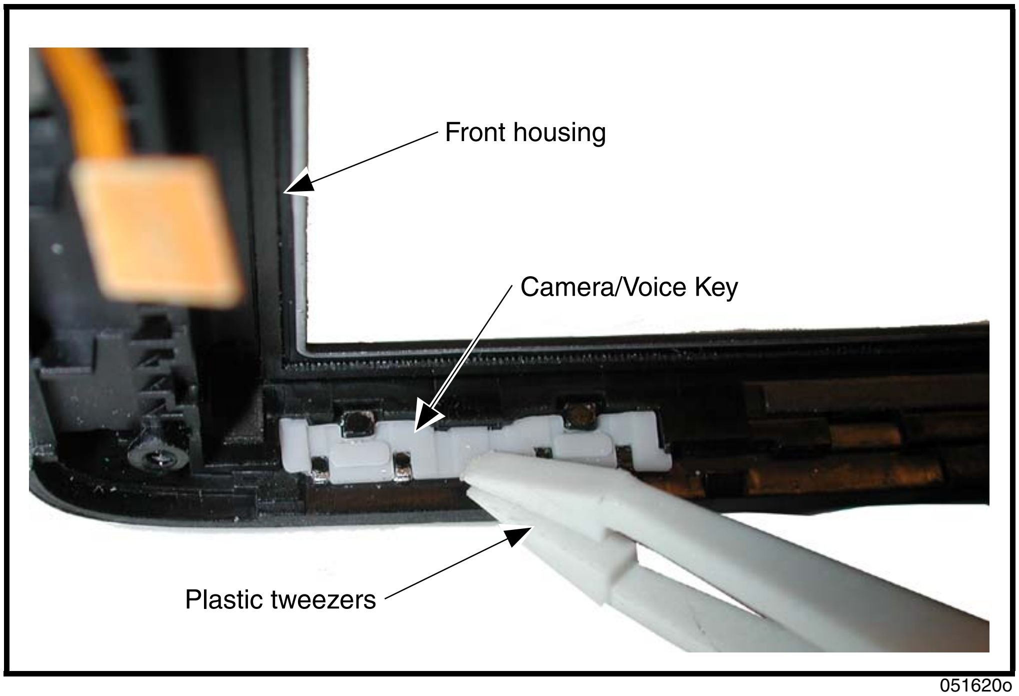

Figure 19. Camera/Voice Keys Removal

9. To replace, use the plastic tweezers and the pointed end of the disassembly tool to insert the camera/voice keys into their slot in the front housing. Use the guides molded into the front housing to place the keys correctly.
10. Test the keys for proper operation when replacing the transceiver PC board assembly.
11. Replace the display assembly, transceiver PC board assembly, camera module, antenna assembly, rear housing, SIM, stylus, battery, and battery cover as described in the procedures.

Removing and Replacing the Volume Up/Down/Select Keys

12. Remove the battery cover, battery, SIM, stylus, rear housing, antenna assembly, camera module, and transceiver PC board assembly as described in the procedures.
13. Use the plastic tweezers to remove the Volume Up/Down/Select from the front housing (see Figure 20).

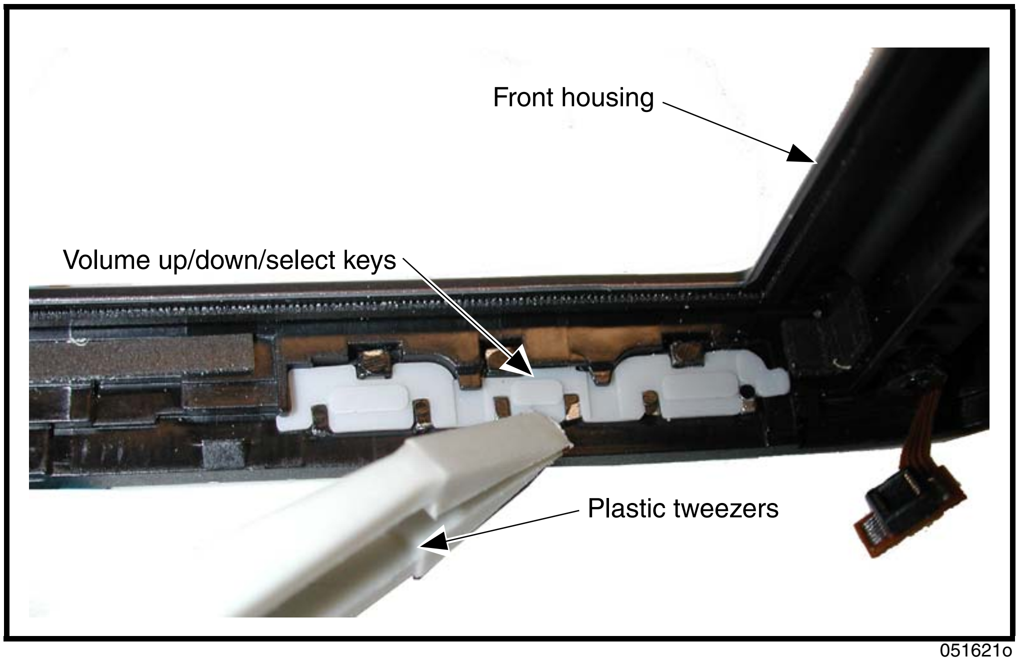

Figure 20. Volume Up/Down/Select Removal

14. To replace, use the plastic tweezers and the pointed end of the disassembly tool to insert the volume up/down/select keys into their slot in the front housing. Use the guides molded into the front housing to place the keys correctly.
15. Test the keys for proper operation when replacing the transceiver PC board assembly.
16. Replace the display assembly, transceiver PC board assembly, camera module, antenna assembly, rear housing, SIM, stylus, battery, and battery cover as described in the procedures.

Subscriber Identity Module (SIM) and Identification Label

SIM

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 card 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

Identification

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

Mechanical Serial Number (MSN)

The MSN is an individual unit identity number and remains with the unit throughout its life.

The MSN can be used to log and track a phone on Motorola's Service Center Database.

The MSN is divided into 4 sections as shown in Figure 21.

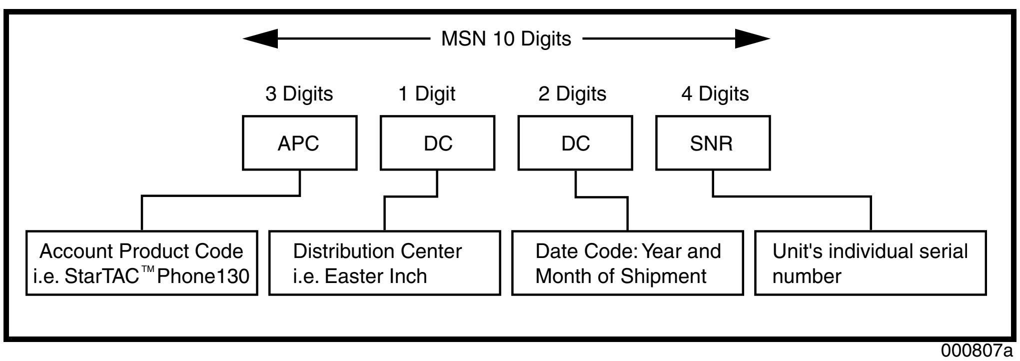

Figure 21. MSN label breakdown

International Mobile Station Equipment Identity (IMEI)

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

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

Table 2. IMEI Number Breakdown

TAC	Serial Number	Check Digit
NNXXXXXX	ZZZZZZ	A

Where

TAC Type Allocation Code, formerly known as Type Approval Code

NN Reporting body identifier

XXXXXX Type Identifier

ZZZZZZ Individual unit serial number

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

Other label number configurations present are:

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

Troubleshooting

Manual Test Mode

Motorola A1200 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. 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. Turn the phone ON.
7. On the main screen, tap the phone icon to switch the phone to dial mode.

8. On the dial mode screen, tap and hold the # key for 3 seconds to enter the Test Menu.

9. The test mode screen displays.

Troubleshooting Chart

Table 3. Level 1 and 2 Troubleshooting Chart

Symptom	Probable Cause	Verification And Remedy
1. Telephone will not turn on or stay on.	a) Battery either discharged or defective.	Measure the voltage at TP_BATT+ with battery attached. If voltage is below 3.0V, attach a charger to the phone and ensure that the phone is charging. If the phone does not charge, change the battery and repeat the measurement charging procedure. If the phone still does not turn on, proceed to b).
	b) Transceiver board defective.	Replace the faulty board with a known good transceiver board. If the phone powers up after replacement, reassemble the phone with a new transceiver board. Verify that the fault is fixed.
2. Telephone exhibits poor reception or erratic operation such as calls frequently dropping or weak or distorted audio.	a) Speaker/antenna assembly defective	Check connection between the speaker/antenna assembly and the transceiver board. If the contact is intermittent visually, replace with a known good speaker/antenna assembly. If the fault is still present, proceed to b.
	b) Transceiver board defective.	Replace with a known good transceiver board (refer to 1c). Verify that the fault has been cleared with the new transceiver board and reassemble the unit.
3. No display.	a) Connections between transceiver and display faulty.	Check connections between transceiver board and display. If display still does not come up, proceed to b.
	b) Display module defective.	Replace with a known good display module. Verify that the fault has been cleared with the new display module and reassemble the unit.
4. Incoming call alert transducer audio distorted or volume is too low.	a) Faulty antenna/speaker assembly.	Replace the antenna/speaker assembly with a known good antenna/speaker assembly. If the problem goes away, replace with a new antenna/speaker assembly. Else proceed to b.
	b) Transceiver board defective	Replace with a known good transceiver board (refer to 1c). Verify that the fault has been cleared with a new transceiver board.
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.	Verify transmit audio quality. If transmit audio quality is still weak and microphone is not obstructed, proceed to b.
	b) Microphone defective.	Replace the microphone as described in the procedures. If fault is not cleared, proceed to c.
	c) Transceiver board defective.	Replace the transceiver board (refer to 1c). Verify that the fault has been cleared and reassemble the phone with the new transceiver board.
6. Receive audio from earpiece speaker is weak or distorted.	a) Connector between transceiver board and flip assembly faulty.	Check connections between transceiver board and flip assembly. If the fault still exists, replace the flip assembly with a known good one. if the fault goes away, reassemble with a new flip assembly. If the fault is still present, proceed to b.
	b) Transceiver board defective.	Replace the transceiver board (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board.

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

Symptom	Probable Cause	Verification And Remedy
7. Telephone will not recognize or accept SIM card.	a) SIM card defective.	Check the SIM card contacts for dirt. Clean if necessary, and check if fault has been cleared. If the contacts are clean, insert a known good SIM card into the telephone. Power up the unit and confirm that the card has been accepted. If the fault goes away, replace the defective SIM card. If the SIM card is not at fault, proceed to b.
	b) Transceiver board defective.	Replace the transceiver board (refer to 1c). Verify that the fault has been cleared and reassemble the phone with the new transceiver board.
8. Vibrator feature not functioning.	Transceiver board defective.	Replace the transceiver board (refer to 1c). Verify that the fault has been cleared and reassemble the phone with the new transceiver board.
9. No or weak audio when using headset.	a) Headset plug not pushed in fully.	Ensure the headset plug is fully seated in the jack.
	b) Faulty jack on transceiver board.	Replace the transceiver board with a known good transceiver board (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board.

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 section provides a reference for the parts associated with A1200 telephones.

Exploded View Diagram

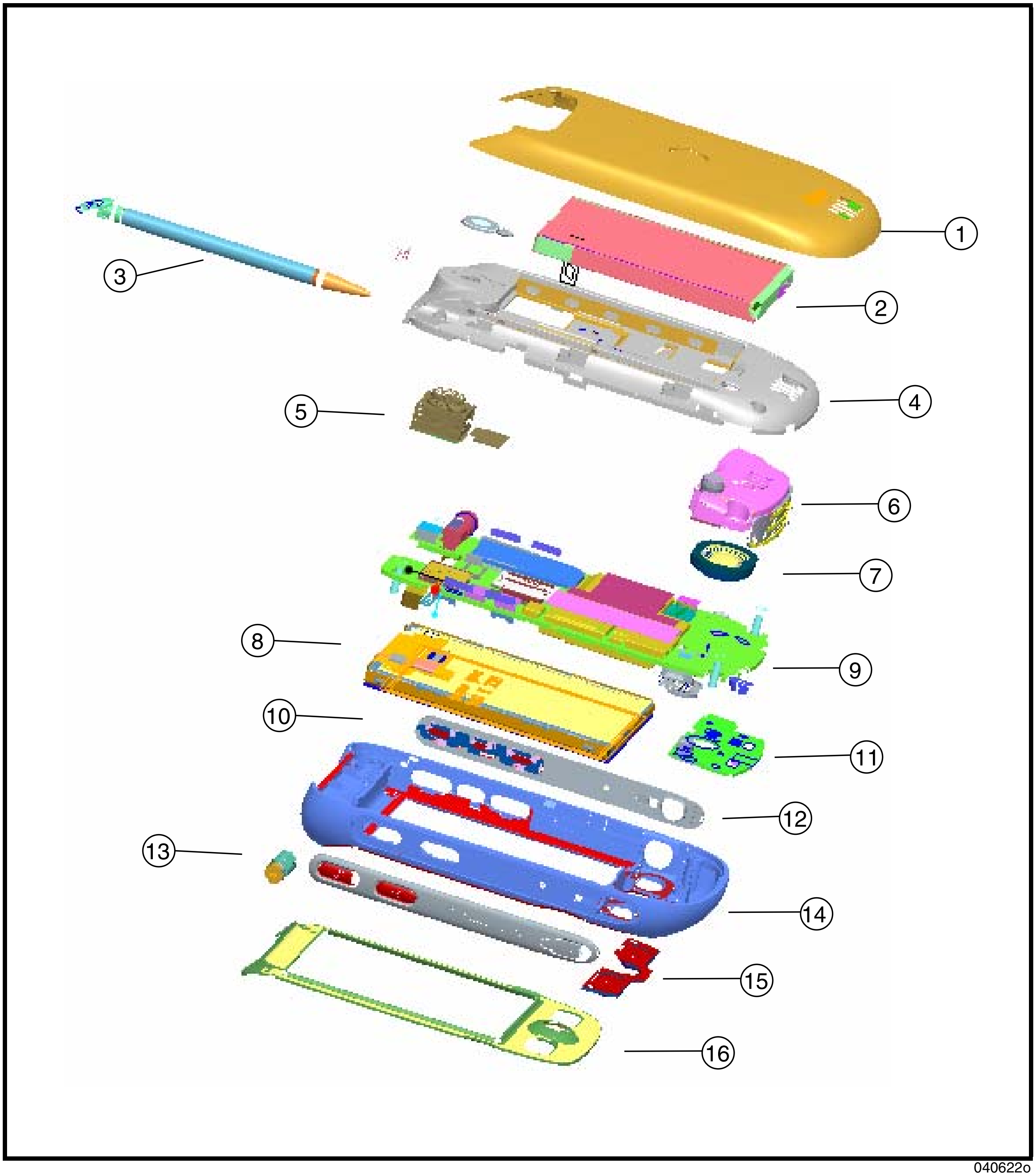

Figure 22. Exploded View Diagram

Exploded View Parts List

Table 4. Exploded View Parts List

Item Number	Motorola Part Number	Description
1	CHHN4711	Battery door
2	SNN5771	PF4 battery
3	0188434Z01	Stylus
4	1588483Z01	Rear housing
5	1588488Z01	Camera module
6	0188485Z01	Antenna assembly
7	5088317Y01	Speaker
8	7289802Y01	Display module
9	CHLF4626AA	Transceiver PCB assembly
10	3888491Z01 3888492Z01	Side key left Side key right
11	0188486Z01	Keypad PCB
12	1588463Z01 1588464Z01	Side grip left Side grip right
13	5588524Z01	Hinge
14	0188481Z01	Front housing
15	3888493Z01	Home keypad
16	1388502Z01	Front bezel

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 1404.

Accessories

Table 5. Accessories	
Audio and Connectivity	
Data Cable Mini USB/USB/Serial	SKN6371
Headset Mono Earbud - Universal (Black)	SYN8390
Headset Mono Earbud - Universal (Silver)	AAYN4264
Headset One Touch Customizable - Universal	SYN9351
Headset One Touch w/ Send-End	SYN8419
Headset Stereo One Touch Earbud	CHYN4516
Mobile Phone Tools	Region-specific
Bluetooth Accessories	

Table 5. Accessories	
Bluetooth Stereo Headset HT820 (Neptune)	SYN0948
Bluetooth Headset (Aphrodite) - H700	SYN1311
Bluetooth Headset (Medusa - Pearl Dark Gray) - H300	SYN1297
Bluetooth Headset (Persephone) - H605	SYN1303
Bluetooth Stereo Transceiver DC800 (Triton)	SYN1001
Bluetooth Headset - Oakley RAZRWIRE (Mercury: NA) - H7	98679H
Bluetooth Headset - Oakley RAZRWIRE (Pewter/Black: NA) - H7	98677H
Bluetooth Headset - Oakley RAZRWIRE (Platinum/Rootbeer: NA) - H7	98678H
In-vehicle Solutions	
Vehicle Power Adapter EMU - VC700	SYN0847
Self Install Car Kit Universal - Mandarin - Smart Drive+	SYN0888
Self Install Car Kit Universal - Smart Car Kit - Smart Drive	SYN0890
Smart Cable EMU - Motorola	SYN1003
Power Solutions	
Travel Charger EMU Mid-Rate Switcher - Argentina	SPN5192
Travel Charger EMU Mid-Rate Switcher - Australia	SPN5193
Travel Charger EMU Mid-Rate Switcher - BRAZIL	SPN5187
Travel Charger EMU Mid-Rate Switcher - EURO	SPN5189
Travel Charger EMU Mid-Rate Switcher - INDIA	SPN5194
Travel Charger EMU Mid-Rate Switcher - MEXICO	SPN5186
Travel Charger EMU Mid-Rate Switcher - PRC	SPN5188
Travel Charger EMU Mid-Rate Switcher - TWN	SPN5216
Travel Charger EMU Mid-Rate Switcher - UK/HK	SPN5190
Travel Charger EMU Mid-Rate Switcher - US ENG	SPN5185
Travel Charger EMU Rapid Switcher - Argentina	SPN5197
Travel Charger EMU Rapid Switcher - BRAZIL	SPN5196
Travel Charger EMU Rapid Switcher - HK	SPN5199
Travel Charger EMU Rapid Switcher - MEXICO	SPN5200
Travel Charger EMU Rapid Switcher - PRC	SPN5198
Travel Charger EMU Rapid Switcher - US	SPN5202
Battery-Only-Charger for PF batteries, US/Euro plug	SYN1488A
Battery-Only-Charger for PF batteries, PRC plug	SYN1489A
Battery-Only-Charger for PF batteries, Taiwan plug	SYN1490A
Battery-Only-Charger for PF batteries, Hong Kong plug	SYN1491A

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