CMD-Z1

SERVICE MANUAL

AEP Model
UK Model

SPECIFICATIONS

Signalling format	GSM
Frequency range	Transmit: 890 ~ 915 MHz
	Receive: 935 ~ 960 MHz
GSM power class	Class 4 (2 W)
SIM chip	Pluggable mini SIM card
Display	High resolution full graphics display
	Resolution: 97 x 32 pixels
	5 lines: 1 header line for icons
	2 lines x 11 large characters
	or 4 lines x 16 small characters
Antenna gain	0 dB
Channel spacing	200 kHz
Number of channels	124
Frequency stability	Transmit frequency drift (synchronized)
	$< \pm$ 0.1 p.p.m.
RF output power	2 W

PORTABLE DIGITAL CELLULAR TELEPHONE
WITH ACCESSORIES

SONY

Power requirements	5.4 V ~ 8.4 V dc
Battery life	Standby : up to ±80h
	Talk time : minimum 4h up to 10h
Operating temperature	–25°C to +55°C
Storage temperature	–40°C to +70°C
Battery pack charging temperature	+0°C to +40°C
Dimensions	133 mm (265 mm with antenna and microphone arm opened) (H) x 60 mm (W) x 26 mm (D)
Weight	220 g
Volume	120 cm^3
Accessories	QN-020BC (desk top charger), QN-011AC (AC adaptor), QN-012AC (AC adaptor - UK), QN-021BC (travel charger - Euro), QN-022BC (travel charger - UK), QN-022HFK (hands free kit), QN-022BP (battery pack), QN-022DC (cigar lighter charger), QN-022PCM (PCMCIA card)

Design and specifications are subject to change without prior notice.
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

SECTION 1
OPERATING INSTRUCTIONS

End Key.
Press to end calls.

Call Key.
Press after dialling a
number to make a call

Clear Key
Press short to erase last
digit or letter. Press long to
erase total number or
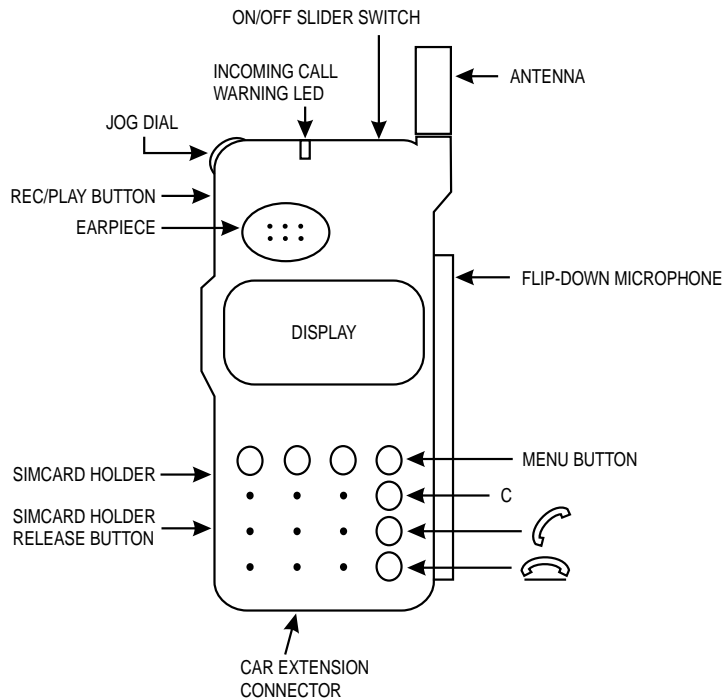name. If in menu, press to
go one level back.

MENU Press to enter menu
structure.

Antenna

Extend fully for best operation.

Display

Battery charge level.

Mail box message(s)

R Roaming

No service

ABC Character input

**Icons which appear in standby
mode**

Barring incoming calls

Barring outgoing calls

Barring incoming and
outgoing calls

Call divert

You have missed incoming
calls

Carry mode

Silent mode

In car mode

ringer off (volume set to 0)

ON/OFF SLIDER SWITCH

INCOMING CALL
WARNING LED

ANTENNA

JOG DIAL

REC/PLAY BUTTON

EARPIECE

FLIP-DOWN MICROPHONE

DISPLAY

SIMCARD HOLDER

MENU BUTTON

C

SIMCARD HOLDER
RELEASE BUTTON

CAR EXTENSION
CONNECTOR

- Flip down microphone
  - activates incoming call (flip-down)
  - stops active call (flip-up)
  - activates outgoing call (flip-down)
- jog dial : jog and enter (push)
  - dial for menu control
- rec/play : to record/playback up to 20 seconds
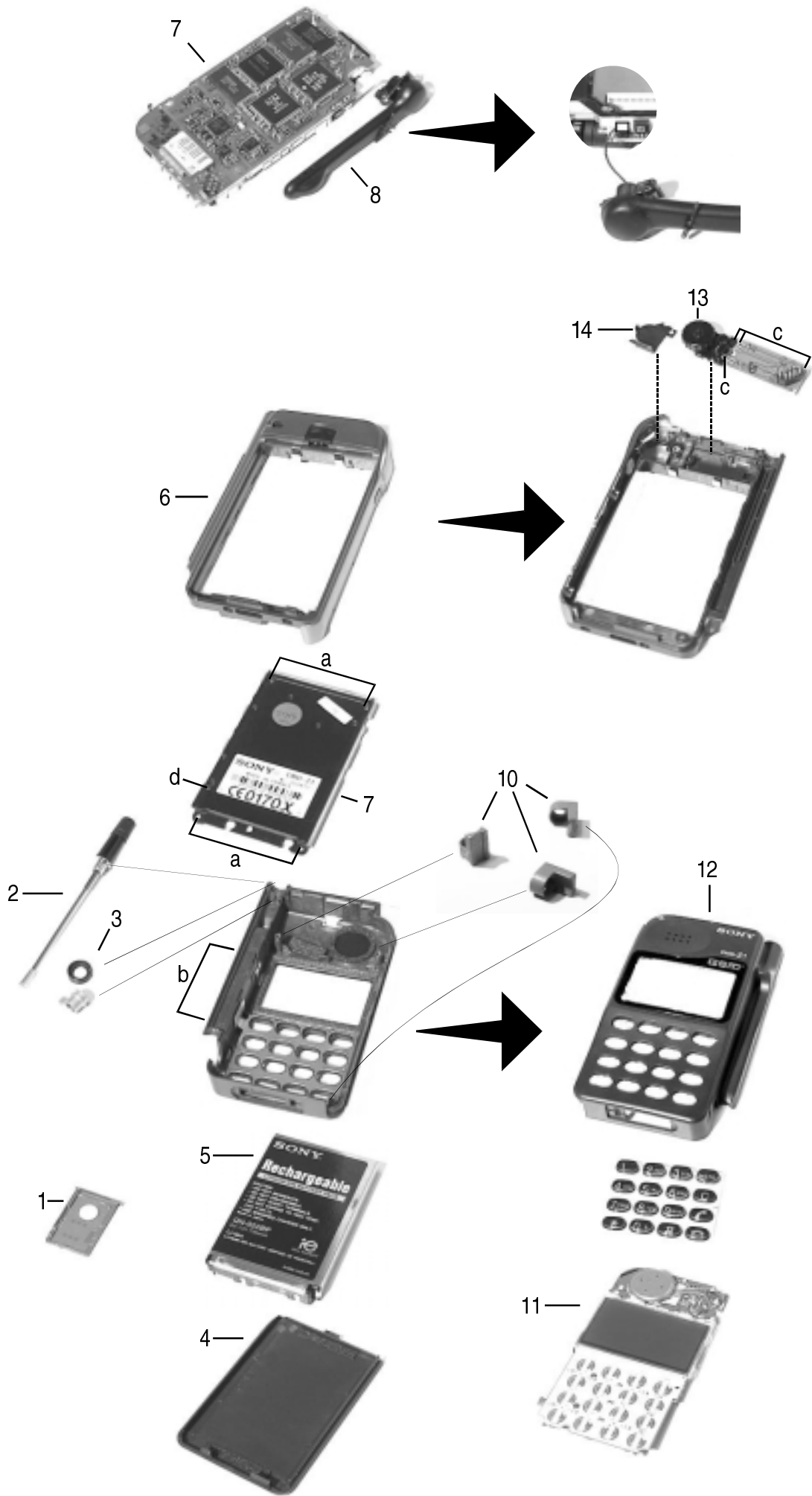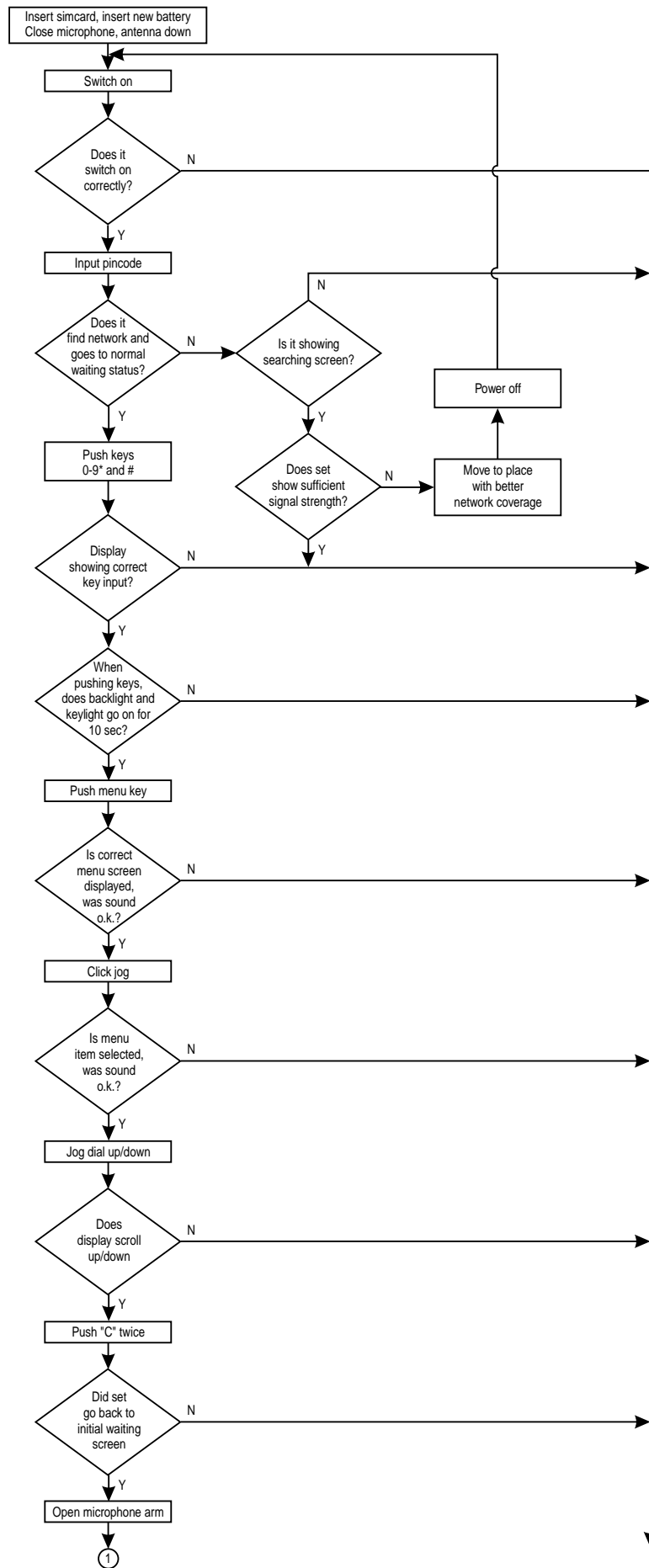
3

SECTION 2
DISASSEMBLY

IMPORTANT NOTES :
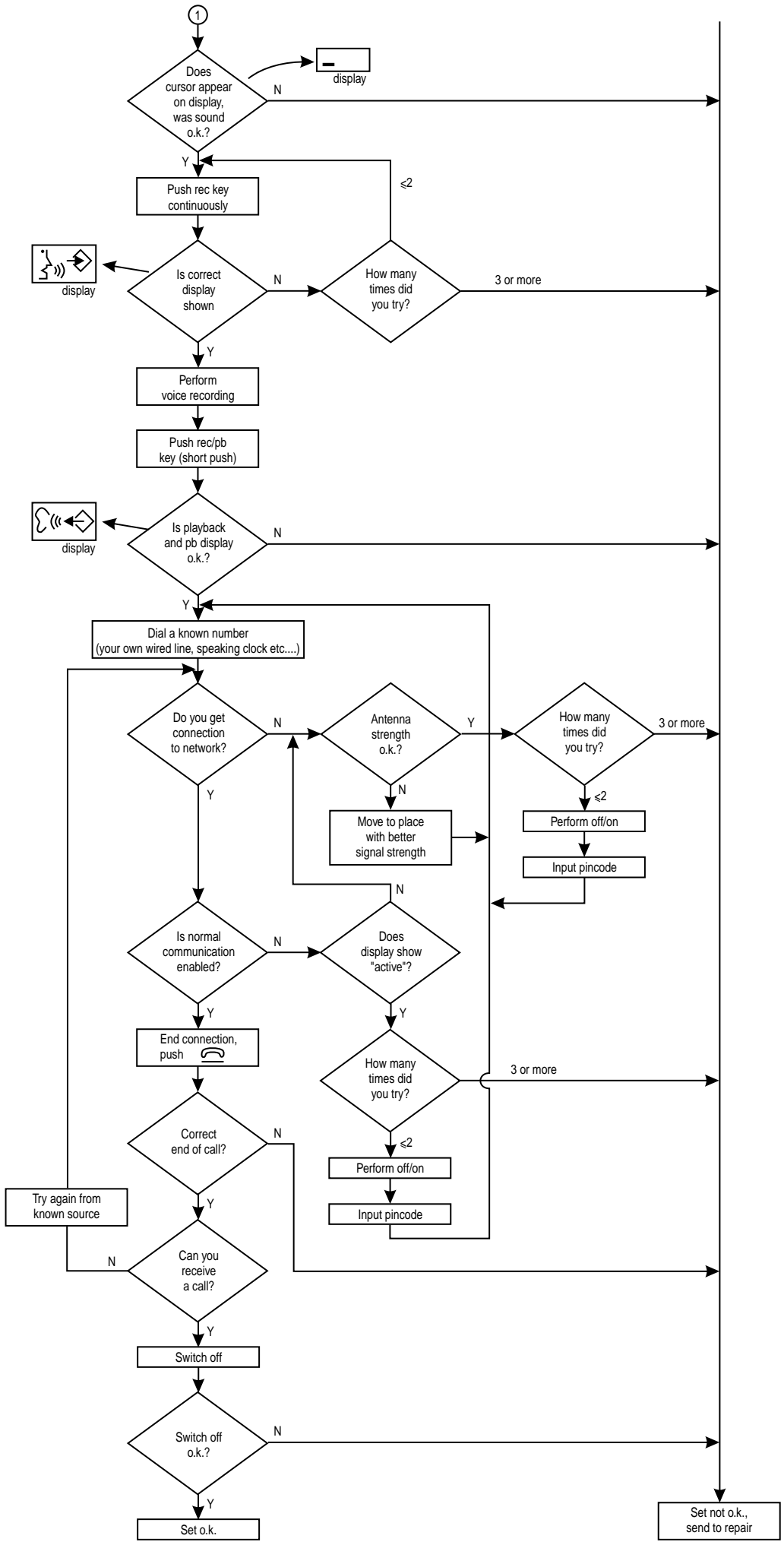
1) *Disassembly of the RF/Logic Assembly, including the Lower Shield (on which the IMEI sticker is mounted) and all other shielded elements is totally forbidden. Any attempt to do so may lead to non-compliance with GSM as well as CE specifications, and in extreme cases it can cause interference problems.*
2) *When replacing cosmetic parts, verify if all spacers are mounted on the new cosmetic; if necessary transplant them from the old to the new cosmetic part.*
3) *When reassembling, make sure all screws are tightened fully.*

- Remove the SIM Card Holder (1).
- Remove the Antenna (2) using the Antenna Jig; also remove the Antenna Ring (3) which is pressed over the top/bottom cosmetic part. Note the position (top/down side) of this ring for correct reassembly.
- Remove the Battery Lid (4) and the Battery (5).
- Unscrew four screws (a) on the Battery Compartment.
- The Lower Case Assy (6) can now be lifted; however, it is still tightened as the top side is held together with claws.
- Lifting the Lower Case Assy is preferrably performed gently on the antenna side. When reassembling this part, first insert the REC/PLAY button side.
- The RF/Logic Board (7) along with the Microphone Arm Assy (8) can now be taken out. Note, however, that the RF/Logic Board is still held onto the Display Board through a connector located at the bottom/left side between the two boards, so at this point still invisible.
- To remove the RF/Logic Assy (7), including the Microphone Arm Assy (8), first of all put the Microphone Assy to an angle of 90° versus the set. Next, push the Microphone Assy gently upward while at the same time pushing the Microphone Holding Part of the Upper Housing Assy downward (b). This should release the RF/Logic Assy from the rest of the set.
- The Microphone Arm Assy can be released by unscrewing one screw (d).
- When reassembling this board, gently push in the bottom/left corner to insert the RF/Logic side connector into the display connector side.
- When disassembling the RF/Logic Board, three Plastic Sleeves (10) will come loose; note their position for correct reassembly.
- The Display Board (11) can now be taken out of the Upper Housing Assy (12).
- The Jog Mounted PCB (13) can be taken out of the Lower Case Assy after unscrewing four screws (c). Note that one of these screws has a large head.
- Underneath the Jog there is a Jog Shielding (14).

SECTION 3
LEVEL 1 TROUBLESHOOTING CHART

Insert simcard, insert new battery
Close microphone, antenna down

Switch on

Does it switch on correctly? — N

Y

Input pincode

Does it find network and goes to normal waiting status? — N → Is it showing searching screen? — N

Y

Push keys 0-9* and #

Does set show sufficient signal strength? — N → Move to place with better network coverage

Power off

Display showing correct key input? — N

Y

When pushing keys, does backlight and keylight go on for 10 sec? — N

Y

Push menu key

Is correct menu screen displayed, was sound o.k.? — N

Y

Click jog

Is menu item selected, was sound o.k.? — N

Y

Jog dial up/down

Does display scroll up/down — N

Y

Push "C" twice

Did set go back to initial waiting screen — N

Y

Open microphone arm

①

```
                              ( 1 )
                               │
                               ▼
                    ╱ Does ╲                      ┌──────┐
                  ╱ cursor appear ╲          ──→  │  ▃   │
                 ╱  on display,    ╲    N          └──────┘
                 ╲  was sound      ╱───────────     display
                  ╲   o.k.?       ╱
                    ╲         ╱
                      │ Y
                      ▼                      ≤2
              ┌──────────────┐       ◄─────────────┐
              │ Push rec key │                     │
              │ continuously │                     │
              └──────────────┘                     │
                      │                            │
                      ▼                    ╱ How many ╲
  ┌────────┐   ╱ Is correct ╲    N       ╱  times did  ╲    3 or more
  │ 🔊📟  │◄──╱  display     ╲─────────→╲  you try?    ╱──────────────→
  └────────┘   ╲  shown     ╱            ╲           ╱
   display       ╲       ╱                 ╲       ╱
                   │ Y
                   ▼
           ┌──────────────┐
           │  Perform     │
           │ voice recording │
           └──────────────┘
                   │
                   ▼
           ┌──────────────┐
           │ Push rec/pb  │
           │ key (short push) │
           └──────────────┘
                   │
                   ▼
  ┌────────┐   ╱ Is playback ╲   N
  │ 🔉📟  │◄──╱ and pb display ╲────────────────────────────────────→
  └────────┘   ╲   o.k.?      ╱
   display       ╲         ╱
                   │ Y
                   ▼
        ┌────────────────────────────┐
        │ Dial a known number        │
        │ (your own wired line, speaking clock etc....) │
        └────────────────────────────┘
                   │
                   ▼
           ╱ Do you get ╲    N      ╱ Antenna ╲    Y    ╱ How many ╲   3 or more
          ╱ connection   ╲───────→ ╱ strength  ╲──────→╱ times did  ╲──────────→
          ╲ to network?  ╱    ▲     ╲  o.k.?   ╱        ╲ you try?   ╱
            ╲         ╱       │       ╲      ╱            ╲        ╱
              │ Y            │          │ N                  │ ≤2
              │              │          ▼                    ▼
              │              │    ┌──────────────┐    ┌──────────────┐
              │              │    │ Move to place│    │ Perform off/on│
              │              │    │  with better │───→└──────────────┘
              │              │    │ signal strength│          │
              │              │    └──────────────┘          ▼
              │              │          N           ┌──────────────┐
              ▼              │                       │ Input pincode│
         ╱ Is normal ╲   N   │   ╱ Does ╲            └──────────────┘
        ╱ communication ╲───────→╱ display show ╲          │
        ╲  enabled?    ╱        ╲  "active"?   ╱    ◄───────┘
          ╲        ╱              ╲         ╱
            │ Y                      │ Y
            ▼                        ▼
     ┌──────────────┐         ╱ How many ╲    3 or more
     │ End connection, │      ╱ times did  ╲──────────────→
     │ push  ☎       │       ╲ you try?   ╱
     └──────────────┘         ╲        ╱
            │                    │ ≤2
            ▼                    ▼
      ╱ Correct ╲   N     ┌──────────────┐
     ╱ end of call? ╲─────│ Perform off/on│
     ╲            ╱       └──────────────┘
       ╲       ╱                 │
          │ Y                    ▼
┌──────────────┐          ┌──────────────┐
│ Try again from │        │ Input pincode│
│ known source │          └──────────────┘
└──────────────┘
       │        ╱ Can you ╲   N
       └───────╱  receive   ╲──────────────────────────────────→
               ╲  a call?   ╱
                 ╲        ╱
                   │ Y
                   ▼
           ┌──────────────┐
           │  Switch off  │
           └──────────────┘
                   │
                   ▼
           ╱ Switch off ╲   N
          ╱   o.k.?      ╲──────────────────────────────────→
          ╲            ╱
            ╲        ╱
              │ Y
              ▼
        ┌──────────────┐          ┌──────────────┐
        │   Set o.k.   │          │ Set not o.k.,│
        └──────────────┘          │ send to repair│
                                  └──────────────┘
```

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SECTION 4
PROGRAMMING INSTRUCTIONS

1. Setup

The programming jig is based upon a PC-linked application.

Minimum requirement for PC is IBM compatible, 386 type.

The software is a basic MS‑DOS application. *Please do <u>NOT</u> run it as a DOS mode application starting from a Windows program. It is necessary to exit Windows when starting the PC-link application, or preferrably to start the PC without entering Windows.*

The jig consists of: Level Convertor, Connection Cables (PC to Level Convertor and Level Convertor to CMD‑Z1) and application software on floppy disc.

No specific software installation is needed; only copy all the files from the floppy disc to the PC, ideally into a dedicated directory.

Starting of the software updating program will take place when going to the directory where you have loaded the application program and typing **CMD‑Z1 + enter.**

2. Important notes

● Before connecting the CMD‑Z1 to the level convertor, **take out the battery of the CMD‑Z1; the CMD‑Z1 must be powered from the level convertor.**

● Whenever the program is in progress, or when the level convertor is powered on, never disconnect or connect any cables.

● Never interrupt the power supply to the level convertor whenever a software update is in progress.

● The level convertor has some switches; please make sure they are in the correct position. These switches are included also to allow future changes, or other applications.

3. Menu screens

The program will show the following masks according to the respective menu points.

At the first menu point, the following mask is displayed:

```
Program-CMD-Z1 Service Station Utility

Version: X.XX for PC (DOS)

Mode: Update AP/OS code and change the Language set



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Current Status

Serial Port: COM 1, 19200, N81

1. Update.



2. Serial Port Setting



Please make choice (1/2) = 1
```

The user can either choose the serial port or go for the updating option immediately.

The default setting for the serial port is COM1.

NOTE If a port were chosen which is not connected to the Level Shifter, the error message "No Response" would be displayed after starting the update process.

If option 1 has been chosen, the following display will appear:

Flash ROM Type – Sharp 30 23

Set the switch of the voltage convertor as follows.

Vpp = on; FROMRP = off

After you set the switch, type any key to proceed.

The user is requested to set the switches on the Level Shifter to the settings displayed.
To enable the ROM Loader Software to determine the ROM manufacturer and hence the switch settings, the ROM-ID is read first from the Z1. The settings shown in the sample above are only valid for a Sharp ROM and are therefore only an example. Future ROM types may come from a different manufacturer. After setting the switches on the Level Shifter, press any key to proceed.

NOTE If the connection has been set up successfully, the green lamp on the Z1 display starts flashing.

As soon as the connection is established successfully, the current AP and OS software versions are displayed as well as the latest versions to ensure that the service operator is fully aware oft he differences of both software versions.
Proceeding the program leads to the following simple options from which the operator is requested to choose:
  – Update AP? (y/n/c) or
  – Update OS? (y/n/c) or
  – Change Language Set? (y/n/c)*
The operator does not have to change the Language Set or any other item he does not want to change at this time. Thus it is possible to change the operating system (OS) only while the application code (AP) and the Language Set remain unchanged.

NOTE Typing in "c" (cancel) will interrupt the updating process at any time and will abandon the program.

  * The request to update AP(y) makes a language set change necessary.
     Therefore the message : "Default new language setting because of AP code change", appears instead of "change language set" (y/n/c)
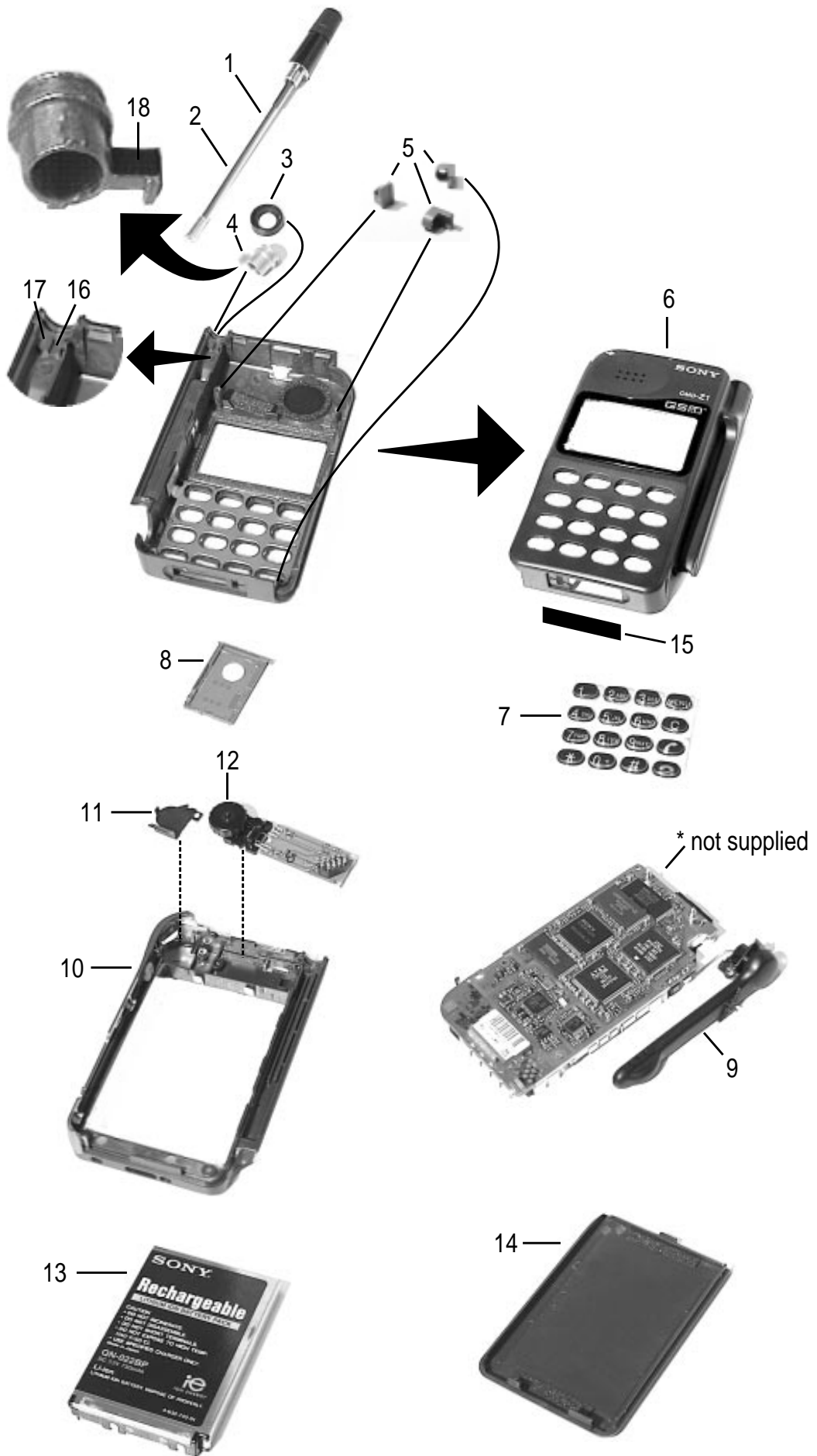
General information

- No GSM test mode is implemented in the Z1 for use with the ROM Loader Software. For the software or the Language Set update simply connect the Z1 with the Level Shifter and run the ROM Loader Software (CMD‒Z1.EXE). The Z1 does not have to be switched on!
- The switch settings of the Level Shifter are as follows:

Switch	Intel ROM	Sharp ROM
Main power	always on	always on
Vpp	off	on
IGN/Vpp	always on	always on
FROMRP	disabled (factory set to off position)	disabled (factory set to off position)
GSM power	always on	always on

Troubleshooting

- Cause 1
  - The error message "ERROR : SIO Receive timeout" appears after starting the program and trying to set up the connection between PC and Z1.
- Remedy 1
  - Check the connection between MT (mobile terminal), Level Shifter, and PC. Also make sure that the Level Shifter's power is switched on (both switches). Both the Main Power LED and the GSM Power LED must light up.
  - Check whether COM1 or COM2 is active.

SECTION 5
EXPLODED VIEW

* not supplied

SECTION 6
SPARE PARTS AND ACCESSORIES LIST

Ref. No.	Part number	Description
1	1-501-782-11	Antenna
2	3-929-538-01	Tube, Antenna Guide
3	3-929-542-01	Ring, Antenna
4	3-929-551-01	Screw, Antenna
5	3-929-540-01	Sleeve
6	X-3372-058-1	Housing (Upper) Assy
7	3-929-539-01	Pad, Key
8	3-932-747-01	Holder SIM
9	X-3372-069-1	Arm Assy, Microphone
10	A-3642-683-A	Case (Lower) Assy
11	3-935-533-03	Jog Shield
12	A-3622-007-A	Jog Mounted PCB
13	1-528-618-11	Rechargeable Lithium Ion Battery Pack
14	X-3372-124-1	Battery Cover Assy
15	3-929-534-01	Bottom Connector Cover
16	3-013-808-01	Spacer, Antenna
17	3-013-809-01	Adhesive Sheet, Antenna
18	3-012-064-01	Insulator Antenna

ACCESSORIES

	1-473-004-12	AC Adaptor QN-011AC
	1-528-665-11	Desk Top Charger QN-020BC

JIGS & TOOLS

	3-935-127-01	Antenna Driver Jig
	9-948-320-40	Software Update Jig

SCREWS

	3-929-548-01	1.7 x 6 PTT (for Jog Assy)
	3-007-531-01	1.7 x 6 Large Head (for Jog Assy)
	3-939-146-01	1.7 x 6 + P (for Arm Assy)
	3-929-541-01	1.7 x 9 Torques (for Lower Shield & Lower Case Assy)

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CMD-Z1Plus

SONY

SERVICE MANUAL

SUPPLEMENT-1

Please file this supplement with the

CMD-Z1 Service Manual (9-948-412-10).

Subject : New model has been added.

Since the specifications of CMD-Z1 an CMD-Z1Plus are nearly identical, this supplement will only indicate the differences.

1. Parts for service are identical to CMD-Z1 except :
   - Battery QN-023BP   1-528-882-11
   - Upper Case   A-3647-111-A

2. Technical specifications are identical except :
   - Weight :   195g
   - Battery life :
     - Standby :   up to 50 h
     - Talk time :   up to 8 h

   - **Note 1 :**   When the QN-022BP (original battery of CMD-Z1) is used in CMD-Z1Plus, the weight and battery life specifications are identical to the CMD-Z1.

   - **Note 2 :**   It is advisable to use the QN-023BP battery *only in CMD-Z1Plus*. When this battery would be used in CMD-Z1, the battery level indication cannot be guaranteed to be correct at all moments.

3. A number of user options in the software menu structure have been changed or added. Please refer to the new user instruction manuals :

   - 3-862-469-11   German/Italian
   - 3-862-469-21   English
   - 3-862-469-31   French/Dutch
   - 3-862-469-41   Swedish/Finnish
   - 3-862-469-51   Danish/Norwegian
   - 3-862-469-61   Spanish/Portuguese
   - 3-862-469-71   Greek/Turkish
   - 3-862-469-81   Chinese

4. Car Kit High has been changed to QN-022HFKPlus.