



M15 PLUS

Installation and Operations Guide

Guida all'installazione e all'uso

Fonctionnement et Installation

Bedienungs- und Installationshandbuch

Guía de instalación y funcionamiento



olivetti
PERSONAL
COMPUTER



PUBLICATION ISSUED BY:

Ing. C. Olivetti & C., S.p.A.
Direzione Documentazione
77, Via Jervis - 10015 Ivrea (Italy)

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PUBLICACION EDITADA POR:

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NOTE, NOTA, REMARQUE, HINWEIS, NOTA:

ENGLISH:

Systems with hard disk.

To avoid any risk of damaging the hard disk, read carefully chapter 8, before transporting your system.

ITALIANO:

Sistemi con hard disk.

Per evitare eventuali danni all'hard disk, prima di spostare il vostro sistema, leggete attentamente il Capitolo 8.

FRANÇAIS:

Système à disque dur.

Pour éviter le risque d'endommager le disque dur, lire attentivement le Chapitre 8 avant de transporter le système.

DEUTSCH:

Systeme mit Festplatte.

Um jegliches Risiko einer Beschädigung der Festplatte auszuschließen, lesen die bitte aufmerksam Kapitel 8, bevor Sie Ihr System transportieren.

ESPAÑOL:

Sistemas con Disco Duro

Para evitar eventuales daños al disco duro, lea atentamente el capítulo 8, antes de desplazar su sistema.

This equipment conforms to the specifications of the EEC directive 82/499 on the prevention and elimination of radio-frequency disturbances.

Warning: This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only peripherals (computer input/ output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

NOTICE

Ing. C. Olivetti & C., S.p.A. reserves the right to make any changes in the product described in this manual at any time and without notice.

PREFACE

This manual is provided for all users of this personal computer. It contains all the information necessary to set it up and begin operation. A summary of the guide is given below.

CHAPTER 1 gives a general description of the possible system configurations, the starter kit, and informs about software requirements.

Chapter 2 helps you to familiarize yourself with the system. You will find a detailed description of the system components, controls, indicators and interfaces.

Chapter 3 describes the first switching on of the system and the autodiagnosics.

Chapter 4 gives some important advice on the care and handling of diskettes, disk drives and configurations with a hard disk.

Chapter 5 explains everything necessary to load an operating system, keyboard drivers and the travel utility for configurations with hard disks.

Chapter 6 is intended to familiarize you with the keyboard.

Chapter 7 gives some important advice on working with AC power, batteries and cable connections.

Chapter 8 provides all the information needed before you switch OFF your PC and how to transport it.

APPENDICES A - D provide the following information:

- A) Adjusting the display hinges, upgrading the system with an optional 5.25" disk drive and replacing the batteries and the backlight.
- B) Trouble shooting, Customer Test
- C) Technical characteristics
- D) List of figures

PRE-REQUISITE PUBLICATIONS: None

RELATED PUBLICATIONS: MS-DOS User Guide

DISTRIBUTION: General (G)

FIRST EDITION: March 1988

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INTRODUCTION

YOUR PORTABLE PERSONAL COMPUTER

Thank you for choosing this portable Personal Computer. By buying this particular PC, you have acquired a versatile system, which, because of its compatibility with Industry Standards, gives you access to a wide range of application software.

The system has an incorporated rechargeable battery, which means that you can work with or without AC supply, as you wish. Because of its compact measurements, it can be used almost anywhere.

THE TWO POSSIBLE CONFIGURATIONS

Two system configurations are available:

1. SYSTEM WITH TWO DISK DRIVES (each with a capacity of 720 KByte)
2. SYSTEM WITH HARD DISK (20 MByte) AND ONE DISK DRIVE (720 KByte)

SUMMARY OF SYSTEM FEATURES

Below is a brief overview of the technical specifications of the system:

- Internal storage capacity: 512K bytes
- Intel 80C88 Processor (16 bit internal bus)
- Mass storage, external storage capacity:
 - **configuration 1:**
2 integrated disk drives, each one with 720K bytes capacity, using 3.5" microdiskettes

- **configuration 2:**

1. 1 integrated hard disk, storage capacity 20 MBytes
 2. 1 integrated disk drive, 720 Kbytes capacity
- Interface for connecting an optional 5.25" disk drive. This can be used to read/write software directly from/to 5.25" diskettes (capacity 360K bytes).
- Liquid crystal display with:
1. backlight
 2. contrast control
 3. 25 lines of 80 characters per line in text mode (or 25 lines of 40 characters per line)
 4. Graphics capability, with a resolution of 640 x 200 pixels.
- The keyboard has 78 keys, and can be left in the system or taken out and moved to any position. Any of a range of national keyboard versions can be supplied.

A wide variety of printers can be connected to the system, to meet diverse needs.

The system can be equipped with an adjustable shoulder strap. A carrier bag is supplied for transporting the system, along with its accessories.

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IMPORTANT SYSTEM FEATURES: BACKLIGHT, BATTERY

The display of your system is equipped with a backlight which allows you to use your PC in different lighting conditions.

Thanks to the built-in rechargeable batteries, you can use this system even where there is no AC outlet.

HOW TO USE THIS MANUAL

At the end of this manual you will find a fold-out appendix, which contains:

- all the illustrations referred to in the text, in the order they are referred to, showing all the important operations which may be carried out on the computer.
- illustrations of all the available national keyboard versions.

Please unfold this appendix and turn to the illustration (1) .

When reference is made in the manual to certain components, for example (4) or (3,B) etc., the components will be found by these numbers in the illustrations of the appendix. For example the number (4) refers to Figure 4; the number (3,B) refers to the component marked B in Figure 3.

In this way, you can follow the text and have the corresponding illustrations available at a glance.

THE STARTER KIT

The Starter Kit has been designed to supply everything necessary to start up and begin working with the system.

The Kit, which has been supplied with your system, consists of the following:

- This manual
- 1 Diskette (3.5") labeled: UTILITIES
- 2 templates to be inserted in the area above the keyboard. These templates can be used to describe your function keys. In addition they help you to identify your disk drives (and/or your hard disk).

On the diskette marked UTILITIES you will find the national keyboard drivers, which must be loaded when you have a keyboard version other than the US ASCII keyboard. In addition, you will find the Customer Test software and the Travel utility on this diskette.

The Customer Test software can be used to test the hardware of your system.

The Travel utility is needed when you have a system with hard disk. The Travel utility offers a way (among others) to park the heads of the hard disk in a safe position. This utility can be used before a system with hard disk is transported.

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CHECKING YOUR ORDER

Please make a brief check of the items in the package:

- the portable PC (1,A), comprising display, keyboard, and two integrated disk drives or (hard disk configurations) one integrated hard disk and an integrated disk drive.
- 1 carrier case (1,B)
- 1 shoulder strap (1,H)
- Starter Kit (1,D) with manual and UTILITIES diskette
- 2 templates (1,C) (to be inserted in the area above the keyboard)
- AC adapter with DC cable (1,G) (1,F)
- 1 AC power cable, for AC adapter-AC outlet connection (1,E)

We recommend that you keep all the packing material, as it will be useful for reshipment.

SOFTWARE REQUIREMENTS: OPERATING SYSTEM

You will not be able to fully utilize your Personal Computer until an operating system (or appropriate application program) is loaded into its memory. This is **NOT INCLUDED** in the Starter Kit which comes in the box with this computer. You can purchase the operating system from your dealer.

The operating system to be used on this system is: **MS-DOS 3.2**

FAMILIARIZING YOURSELF WITH THE SYSTEM

CONNECTING THE STRAP

The shoulder strap (1,H), provided in the box, will help you when transporting your system. To connect the carrying strap proceed as follows (2):

1. Put one end of the carrying strap around the metal holder (2,C) on the left side of the system, and put the metal pin (2,D) into the hole on the end of the strap.
2. Put the other end of the carrying strap around the metal holder (2,A) on the right side of the system and put the metal pin (2,B) into the hole on this end of the strap.
3. By moving the clasp (2,F) to the left or right you can adjust the length of the belt as you wish.

CHOOSING A WORKING LOCATION

This computer system is designed to be portable; that is, you can use it safely in different types of location and in varying working environments. If you intend to use the computer in a non-office environment, and in unusual or rough conditions, please pay attention to the following points:

Avoid:

1. using the system in a chemical or dust-laden environment
2. exposing the equipment to extremes of temperature or humidity
3. knocks and vibrations
4. placing the equipment near sources of electrical or magnetic interference, such as large transformers,

high-frequency devices, large electric motors, or telephones.

You should also take care:

- not to expose the system to direct sunlight.
- when operating from the AC outlet, to check that there is a ground (earth) connection.

For the technical characteristics of the equipment under unusual conditions, with respect to temperature and humidity, see the chapter on Technical Characteristics at the end of the manual.

WORK LOCATION, SYSTEMS WITH HARD DISK

Note the following if you have a system with hard disk:

When you are using a system with hard disk and the hard disk is switched ON the system should not be moved more than necessary. The system should not be exposed to any knocks, vibrations etc.

You can also use a system with hard disk with the hard disk switched OFF. (Hard disk switch (15,E) in position OFF (=0), battery operation; **hard disk heads parked in a safe position as described in this manual**). In this case you don't have to take the above precautions.

FAMILIARIZING YOURSELF WITH THE SYSTEM

OPENING THE COMPUTER

1. The flip-up display, when closed, is held in place by two plastic clips, (3,A), one on each side of the lid. To open, press both these clips simultaneously at the bottom and lift the display (3,B) upward.
2. Set the display, to the desired angle for optimum viewing.

Important: The display lid can be set in many positions, up to the maximum angle of inclination. Pay attention to the following points when opening:

1. Always open the lid carefully: never try to force it. (The resistance can be readjusted according to the description in Appendix A).
2. You will find the point of most resistance when you have reached the maximum angle of opening.
3. When closing the display, let it down softly with your hands; do not let it fall back into place. Above all, **do not slam it.**

Fig. (4) shows a system with two disk drives (4,A,B).

Fig. (5) shows a system with hard disk, (5,A) disk drive A:, (5,C) hard disk (drive C:).

INSERTING THE TEMPLATE FOR THE TWO CONFIGURATIONS

In your starter kit there are 2 templates to be inserted in the area above the keyboard. These templates can be used to describe your function keys. In addition they help you to identify your disk drives (and/or your hard disk).

The templates are printed on both sides (one side to be used for systems with two disk drives, one side to be used

for systems with hard disk).

If you have a system with two disk drives: Take the transparent plastic sheet from above the keyboard (4,D), insert the template (1,C) and reinsert the transparent plastic sheet.

Note the symbols for the disk drives: (6,A,B).

If you have a system with hard disk (7), note the symbols for hard disk and the disk drive: (7,C,A).

REMOVING/REPLACING THE KEYBOARD

There are two different ways of positioning the keyboard:

- a) It is designed in such a way that you can quite easily leave it and use it in the transport position (4),(5) .
- b) You can take the keyboard out and place it anywhere you wish. When you wish to do this, please proceed as follows:
 1. Lift up the keyboard using the thumbgrooves (8,A) provided on the front: first press it lightly as indicated by arrow (8,B) and then lift it out as indicated by arrow (8,C). Take it out of the housing (9).
 2. Pull out the keyboard cable which you will find wound around the two plastic pins (10,B,C)
 3. Place the keyboard wherever you wish.
 4. Check that the keyboard connector (10,A) is set straight in its socket. Apply slight pressure to ensure that the connector is fully inserted.

When you wish to disconnect the keyboard, pull the plastic connector (10,A) out of the socket. To

FAMILIARIZING YOURSELF WITH THE SYSTEM

re-insert the connector, push it fully into the socket.

5. When replacing the keyboard in its housing, be careful to wind the cable around the plastic pins (10,B,C). Make sure that the left and right corner of the keyboard are positioned under the plastic edges as indicated by (11,D). Then press the keyboard slightly as indicated by the arrows (11,B) and (11,C). When the keyboard is back in its original position, it should be evenly aligned with the sides of the housing.
6. Before closing the display lid, ensure that the keyboard is correctly in position.

CONTROLS, INDICATORS, INTERFACES

Before you begin working, make a brief visual check of the system, the rear panel, and the power supply unit.

You will see the following controls and indicators:

System and display

- ON/OFF switch (12,A)
0 position = System OFF
1 position = System ON

- Speaker (13,A)

- Power indicator light (green) (13,C)

This indicator lights up when the system has been switched on.

- Battery indicator light (green) (13,B)

This indicator lights up when the battery needs to be recharged.

- Display contrast control knob (13,D)

This is used to adjust the contrast setting on the display. Turn clockwise to increase the contrast. The screen will become generally darker.

- Volume control knob (13,E)

This controls the volume of the sound on the speaker. Turn clockwise to increase the volume.

- BACKLIGHT ON/OFF switch (13,F)

This switches the built-in backlight ON or OFF.
(ON = backlight at maximum brightness)
(OFF = backlight at minimum brightness)

The disk drive(s)/hard disk

SYSTEMS WITH TWO DISK DRIVES:

- Disk drive A (right hand side) (12,D)
- Disk drive B (left hand side) (12,F)
- Disk drive indicator light (drive A) (12,C)
- Disk drive indicator light (drive B) (12,B)

These indicators come on when the system is accessing the disk drive(s).

On each disk drive note:

- A disk drive cover (12,F)

FAMILIARIZING YOURSELF WITH THE SYSTEM

- A disk drive release button (12,E)

When pressed, this button partially ejects any microdiskette present in the disk drive.

SYSTEMS WITH HARD DISK:

Disk drive A (right hand side) (12,D)

- HARD DISK C (12,H) (left hand side)
- Hard disk drive cover (12,H). This protects the hard disk. It should not be removed.
- Disk drive indicator light (drive A) (12,C)
- Hard disk indicator light (drive C) (12,B)

These indicators come on when the system is accessing the disk drive/hard disk.

Keyboard

- 78 keys, including:
 - a) 10 Function Keys, F1 to F10 (14,A)
 - b) integrated numeric keypad (14,B)
 - c) cursor control keys (14,D)
- Indicator light on the NUM LOCK key (14,C)

When this key is pressed, the indicator light shows that the number keys are activated.

- Indicator light on the CAPS LOCK key (14,E)

When the CAPS LOCK key is pressed, this indicator light shows the alphabetic section of the keyboard is in

upper case mode.

- EDIT/SHIFT key, (14,F)

This is a toggle key used to activate the numeric keypad, and the PG UP, PG DN, HOME, and END functions.

- Keyboard connector (10,A)

This connects the keyboard to the system.

Back panel/interfaces

- Socket for DC power connection (15,F)

- **Systems with hard disk:** ON/OFF switch for hard disk (15,E)

- Parallel interface (15,A)

This is used to connect a printer (parallel).

- Serial interface (15,C)

This is used to connect equipment requiring a serial interface.

- Interface for 5.25" disk drive (15,B)

This is used to connect the optional 5.25" disk drive.

- Air outlets (15,D): You should keep these outlets free from paper etc. on systems with hard disk.

FAMILIARIZING YOURSELF WITH THE SYSTEM

AC adapter

- The universal AC adapter (16,D) can be connected to AC voltages from 100 volt to 240 Volt (AC frequency: 50 Hz, and 60 Hz). (AC input socket (16,E))
- DC power supply cable (16,C) for connecting the AC adapter to the computer, when operating from an AC outlet and when charging the batteries.
- Power supply indicator light (green) (16,A)
lights up when the AC adapter is connected to a wall outlet.

IMPORTANT NOTE: SWITCHING ON-OFF; TRANSPORTING A SYSTEM WITH HARD DISK

If you switch ON/OFF a system with hard disk, please refer to Chapter 8, which explains all steps to be performed to protect the hard disk before you transport the system.

GETTING STARTED

SELECTING THE TYPE OF POWER SUPPLY (BATTERY/AC)

Each time you are about to switch on the system, consider which type of power supply you wish to use:

- a) AC (through the AC adapter); the batteries will automatically be charged if they have reached a certain level of discharge
- b) battery supply

Your decision should be based on the following points:

- a) AC supply: connect the system to an AC outlet whenever there is one available.

AC supply with simultaneous charging of the batteries: if, when operating on batteries, the indicator light beside the display shows that the batteries have become discharged, connect the system as soon as possible to an AC outlet through the AC adapter, powering the system and recharging the batteries at the same time.

- b) Battery supply: if you are travelling, or you find yourself in places where there is no AC outlet, you can run your system independently on the rechargeable batteries.

Battery operation entails certain time limits, and it is therefore advisable to plan your use of the system in advance when you intend to run it on batteries (this is explained in detail in Chapter 7).

Each time you switch off after using the batteries, you should consider whether they need to be recharged.

BEFORE SWITCHING ON - USING AN AC OUTLET, CABLE CONNECTIONS

The first time you switch on we recommend the use of an AC power supply. When doing so, it is essential to proceed as follows:

1. Check that the ON/OFF switch (17) is in the 0 Position (= OFF), before making or changing any of the cable connections.
2. Ensure that the voltage and frequency values available from the AC outlet are in the range indicated on the AC adapter (100 - 240 V, 50 Hz, 60 Hz).
3. Insert the DC cable jack (18,A) of the AC power supply in the DC socket on the rear of the computer.
4. Plug in the AC supply cable (19,A) into the AC adapter.
5. **IMPORTANT:** The last step, when connecting the system through the AC adapter to the AC outlet, should always be the connection of the AC cable to the AC outlet (20,A) , even when you intend to charge the batteries. The green indicator light on the AC adapter (16,A) lights up when the adapter is connected to a wall outlet.

BEFORE SWITCHING ON - AC POWER - SYSTEMS WITH HARD DISK

Whenever you operate a system with hard disk on AC power the hard disk will be switched on automatically and recognized by the system as soon as the power switch (22,A) is switched ON. This is independent of the position (0/1) of the hard disk switch (18,B).

A small note: your system is equipped with a backup facility. That means that if there is an AC power failure

GETTING STARTED

or an unintended cable disconnection the system will automatically be powered by the batteries. No data will be lost.

In such a case the hard disk will continue working (on battery power) **only** if the hard disk switch is in the position ON (=1).

When you work in environments where the AC power is not very reliable, we recommend as a matter of routine, that you leave the hard disk switch in position ON (=1) if the hard disk is needed while you are working.

SWITCHING ON - AC POWER

1. Turn the contrast control knob (21,A) to the maximum brightness position (anti-clockwise). Maximum brightness means minimum contrast.
2. Switch the backlight switch (21,B) into the OFF position.
3. Switch the system on (setting the ON/OFF switch (22,A) to position ON (=1).

The power indicator light (23,A) (green - power ON) comes on.

WARNING - HARD DISK SWITCH

Important: After you switched ON a system with hard disk, don't change the position of the hard disk switch (18,B). The results may be unpredictable.

Before changing the position of the hard disk switch, save your current work session and switch the system OFF.

READJUSTING THE CONTRAST, USING THE BACKLIGHT

Turn the contrast control knob (23,B) slowly clockwise so that the information appearing on the screen can be read clearly. In the maximum and minimum positions (maximum/minimum contrast) nothing can be distinguished on the screen.

At this point we recommend you switch **ON** the backlight and readjust the contrast. Depending on the lighting conditions at your work location you will find a significant improvement in readability/clarity when text/graphic is displayed on your system.

Switch the backlight **OFF** and **ON** and observe the difference.

Since you will be using your system in many different environments adjust the display angle, the contrast knob and the backlight for optimum readability on your display.

THE AUTODIAGNOSTICS

When the system is switched on, an automatic test program is run, which is called the autodiagnostic. This program tests the main hardware components of the system and displays the results.

- The first time you turned your system on, because of the adjustments you have been making to the contrast and to the backlight, it is possible that you could not see some of the information displayed; we therefore recommend, at this point, that you switch the system off, wait for several moments, and then switch on again (**HARDWARE RESET**). (Obviously, this operation of switching the system off and then on again is not necessary when the contrast control knob is left in the normal working position.)

GETTING STARTED

- You can follow the diagnostic messages as they appear. On the left is shown the component reference (24), for example:

CPU (80C88) PASS

- The word PASS appearing to the right of the component reference means that the test has been successful.
- The word FAIL appearing to the right of the component reference means that the component has failed the test. The abbreviations used are in English (e.g. CPU = Central Processing Unit).

Note: A fail message does not necessarily mean that the system cannot be used. Some errors are transient. In case of a fail message we recommend you perform a Hardware Reset (switch the system OFF and ON again). If the fail message continues to appear run the Customer Test (explained in Appendix B).

- On conclusion of the diagnostics (which last some seconds) the LED indicator light (6,A),(7,A) for the right hand disk drive (12,D) (under the LCD) comes on. This indicates that the system is looking for a diskette in the disk drive. While it is doing so, the green indicator light remains lit. (**Never** try to insert a diskette in, or remove one from, a disk drive while the green light is on.)
- This will last some seconds, and then the following message will appear:

**Insert system disk for drive A:
and strike any key when ready.**

This message means that the system is now awaiting an operating system diskette (or a diskette with the operating system and application software) in **disk drive A** (the right-hand disk drive).

As mentioned previously, the operating system diskette is ordered and delivered separately. When you come to insert this diskette, please read the following Chapter on the handling of diskettes before doing so.

THE AUTODIAGNOSTICS (for hard disk systems)

When you have a system with hard disk you will have to distinguish between different situations:

In the situations described below the autodiagnostic shows the additional message: **HDU ready (25,A)**. This means that the system has recognized your hard disk, and it is now available for operations:

- You are operating on AC power. Hard disk switch is in either position.
- You are working on batteries. The hard disk switch is in the ON position.
Note: this switch (**18,B**) must be switched on before the power switch (**17,A**) has been switched on.

In the situations described below autodiagnostic shows the additional message:

HDU is not available (26).

You hear two beeps and the message will be blinking for a few seconds. This message means that the system did not recognize the hard disk. Every access to the hard disk will fail (an appropriate error message is displayed).

- You are working on batteries. The hard disk is not switched on. Hard disk switch (**18,B**) in the OFF position (=0).

GETTING STARTED

- You are working on batteries. The hard disk is switched on. Hard disk switch (18,B) in the ON position (=1); however, you switched the hard disk on **after** the power switch (22,A) has been switched on.

We recommend as a matter of routine that you follow the autodiagnosics (message: **HDU ready**) when you are planning to use your hard disk to make sure that the hard disk is available.

SWITCHING ON - BATTERY POWER - SYSTEMS WITH TWO DISK DRIVES

This does not require any special attention. Switch the power ON switch (22,A) into the ON position and start working.

SWITCHING ON - BATTERY POWER - SYSTEMS WITH HARD DISK

Some attention is required:

- If you are planning to use the hard disk:
 1. With the power ON/OFF switch (17) in the OFF position (=0) switch the hard disk switch (18,B) into the ON position (=1).
 2. Switch the power switch (22,A) into the ON position and start working.
- If you are **NOT** planning to use the hard disk (for example to save battery power):
 1. With the power ON/OFF switch (17) in the OFF position (=0) switch the hard disk switch (18,B) to the OFF position (=0).

2. Switch the power switch (22,A) to the ON position and start working.

NOTE 1:

Before switching OFF your hard disk (for example to save battery power) while you are in a work session proceed as follows (when operating on batteries):

1. Save your current work session.
2. Switch off your system (power switch (22,A) into the OFF position (=0)).
3. Switch the hard disk OFF.
4. Switch the system on again and observe the autodiagnosics.

GETTING STARTED

NOTE 2:

Before switching **ON** your hard disk while you are in a work session proceed as follows (when operating on batteries):

1. Save your current work session.
2. Switch off your system (power switch (22,A) into the OFF position (=0)).
3. Switch ON the hard disk.
4. Switch the system on again and watch the autodiagnosics.

IMPORTANT: The system will not recognize the hard disk when it is switched on after the system has been switched on (when working on batteries).

SWITCHING OFF - SYSTEMS WITH TWO DISK DRIVES

Save the current work session and switch the system off. No special attention is required.

SWITCHING OFF - SYSTEMS WITH HARD DISK

Before you switch off or transport the system, an important step is required in order to protect the hard disk heads.

We recommend you read Chapter 8 which provides all information required on this subject.

HARDWARE RESET – SWITCHING OFF/ON

A Hardware Reset (which is to be distinguished from a Software Reset as explained in the Chapter 6: Working with the keyboard) is performed by switching **OFF** the system and **ON** again. Situations in which a Hardware Reset is to be performed:

- The keyboard is blocked and does not accept any input.
- The hard disk is switched ON **after** the system has been switched ON. A Hardware Reset has to be performed before the system can recognize and use the hard disk when working on batteries.

Use this system feature with care since all data in the memory will be lost.

DISKETTES, DRIVES, HARD DISK

WORKING WITH DISKETTES

- For the operating system and application software, as well as to load and store data, you will be using 3.5" microdiskettes (also called micro floppy disks), storage capacity 720K bytes (when formatted).
- Diskettes are delivered in packages of 10.
- **Which types of diskette should be used in the system?**

Please use microdiskettes which carry the following indications: double sided, double density, double track, 135 tpi. These diskettes have an initial capacity of 1M byte, which gives you a capacity of 720K bytes when formatted.

- Take a look at the illustration (27) . The diskette itself, the part which registers the data, is circular in form, has a magnetized surface (3.5" in diameter), and is placed inside a rigid, square, protective case of about 9 cm x 9.5 cm (3.5" x 3.7").
- The upper side of the diskette is marked with an arrow (27,A). On the underside of the diskette you can see clearly the circular drive mechanism in the center (28,A) .
- At the front of the diskette (beside the arrow) is a sliding metal shutter (27,B) , which is so made that when the diskette is inserted in the drive, it slides away to reveal a part of the surface of the diskette, where the drive accesses the diskette in order to read/write data. (Do not touch the part of the diskette surface which can be uncovered by pulling back the metal shutter.)

When the diskette is taken out of the drive, the metal shutter slides back automatically, and in this way you do not need to take any particular precautions when handling it.

WRITE-PROTECTION

The diskette carries a write-protect mechanism, which you can easily activate and deactivate yourself.

When the write-protect mechanism has been activated, the disk can only be read, but not written to. In this way, you can protect any important information on the disk from being inadvertently erased or written over.

- The write protection is **activated** in the following way:

Hold the diskette in such a way that you are looking at the under side, with the circular drive mechanism visible in the center, and the protective shutter away from you.

Slide the tag (28,B) (in the bottom right hand corner), down as far as it will go using a fingernail, or the point of a pen, as indicated by the arrow in the illustration (28), until you feel a click. The write protect opening should now be clearly visible, from both sides. The diskette can now not be written to, only read.

- The write protection is **deactivated** in the following way:

Hold the diskette as before and slide the tag (29,B) upwards as indicated in the illustration (29), to cover the opening. When the opening is completely covered (you should again feel a click), the diskette can be written to and read.

DISKETTES, DRIVES, HARD DISK

ATTACHING LABELS

The label (30,A) can be used to write information concerning the contents of the disk. There are two types of label:

- 7 x 7 cm. (2.8" x 2.8") format: these labels are attached to the diskette by placing them first of all in the recess provided on the upper side of the diskette (the side which shows the arrow), then folding them around the diskette into the recess on the under side.
- 7 x 3 cm. (2.75" x 1.2") format: these labels are attached to the upper side of the diskette only (the side which shows the arrow).

Do not attach more than one label on top of another.

SOME ADVICE ON THE CARE OF DISKETTES

1. Protect the diskettes from dust.
2. Protect them from extremes of temperature and humidity.
3. Keep the diskettes in the box in which they were supplied, when not in use.
4. Do not expose the diskettes to electromagnetic fields.
5. Protect the diskettes from knocks and stresses, bending and distortion.
6. Be careful when attaching a new label in the place of an old one. When you wish to detach an old label, place the diskette flat on a table, and ensure that the diskette is not being bent in any way.

DISKETTE/HARD DISK ACCESS INDICATOR LIGHTS

Under the display you will find the green indicator lights. If you inserted the template as described follow the explanation below:

Indicator lights, system with two disk drives

Drive indicator lights: one on the left (31,B) for disk drive B and one on the right (31,A) for disk drive A.

Important: These indicator lights come on when the system is accessing a disk drive in order to read or write a diskette. **Never take a diskette out of the drive, or try to put one in, while these indicator lights are on.** If you do this, data may be lost, and the diskette - or worse the disk drive - may be damaged. As a matter of course, you should always look at these indicators before undertaking any action in connection with the disk drives.

Indicator lights, system with hard disk

Drive indicator lights: one on the left (32,C) for the hard disk (drive C:) and one on the right (32,A) for disk drive A.

Important: These indicator lights come on when the system is accessing the disk drive A: or the hard disk in order to read or write.

Never take a diskette out of the drive A:, or try to put one in, while the indicator light (32,A) is on. If you do this, data may be lost, and the diskette - or worse the disk drive - may be damaged. As a matter of course, you should always look at the indicator (32,A) before undertaking any action in connection with the disk drive A.

DISKETTES, DRIVES, HARD DISK

INSERTING AND REMOVING THE DISKETTES

Inserting a diskette

1. Open the disk drive cover (33,A) (Example: Disk drive A, if no operating diskette or any other diskette is available you can use the UTILITIES diskette for the exercises below. Make sure that the diskette is write protected).

Note that the Customer Test program is automatically loaded from this diskette, if no operating system has been loaded after the system has been switched ON.

2. Hold the diskette as in the illustration (34) , with the arrow (34,A) beside the metal shutter pointing towards the disk drive.
3. Push the diskette into the disk drive (35) . When you encounter a slight resistance, push the diskette gently farther in until you hear a click. The diskette should now be lodged securely in the disk drive.

When the diskette clicks into position, the diskette release button (36,A) is automatically pushed out and comes level with the side of the central unit. In this way, the button gives you a visual indication that there is a diskette in the disk drive.

4. Close the drive cover (36,B) .

Removing a diskette

1. Open the drive cover (36,B) .
2. Press the drive release button (37,A) (it should remain in).

The diskette clicks out, and is automatically pushed about one centimeter out of the disk drive.

3. Pull the diskette all the way out of the disk drive.
4. Close the disk drive cover.

THE HARD DISK

The hard disk is a mass storage device capable of storing about 20.000.000 characters (=20 MBytes). If you have a hard disk you will probably be using the hard disk for most operations, since accessing the hard disk is much faster than accessing a disk drive.

Care and handling of the hard disk

The hard disk is an integrated and very complex device which requires some care in order to guarantee its maximum life-time.

- The hard disk when operating is cooled by a little built-in fan.

Make sure that the air inlets behind the keyboard (9) and the air outlets (15,D) are not covered by documents or any other material.

The keyboard can be left in the transport position or taken out as you wish.

DISKETTES, DRIVES, HARD DISK

- When working with the system with the hard disk switched ON (autodiagnostic message: HDU ready) keep the system in a fixed position on your table. Avoid knocks, vibrations etc.

PROTECTING THE HARD DISK BEFORE TRANSPORTING THE SYSTEM

We have provided the means to prepare your hard disk for safe transportation before you switch off the system. To give you a maximum of flexibility we offer different procedures to perform this operation. Depending on the circumstances you can select the most convenient procedure.

If you have a system with a hard disk read Chapter 8 which provides all information needed on this subject.

The next two Chapters explain some general aspects concerning the operating system and the keyboard.

KEYBOARD DRIVERS, UTILITIES

LOADING AN OPERATING SYSTEM FROM A DISKETTE IN DRIVE A:

We assume that you have an operating system (MS DOS 3.2) available which you purchased from your dealer. After the successful completion of the autodiagnosics your system is now expecting an operating system to be loaded from disk drive A:.

Insert the diskette (write protected) with the operating system in drive A:, close the drive door and switch the system on. The operating system will be loaded and you will see the MS-DOS prompt on the display. Now your system is ready for loading special utilities, application programs etc.

LOADING A NATIONAL KEYBOARD DRIVER

By means of the keyboard you communicate with the system, using it to enter text, data, and commands.

Your system is configured at first to recognise the US-ASCII version of the keyboard. If your system does not have this version of the keyboard, it is important when loading your operating system or application software to load also your particular national keyboard driver program and font.

This is a simple operation: after successfully loading the operating system, insert the UTILITIES diskette in drive A and type in the name of the keyboard driver program which corresponds to your version of the keyboard, followed by ENTER, and then type in the name of the font where applicable, again followed by ENTER. You will find further explanations of this subject in the documentation delivered along with the software concerned.

Following is a list of the keyboard drivers which you will find on the UTILITIES diskette, and which you can refer back to as necessary when installing operating systems and

software:

COUNTRY	KEYBOARD DRIVER	FONT
Denmark	KEYBDA	NORDIC
France	KEYBFR	GRAFTABL
Germany	KEYBGR	GRAFTABL
Greece	GREEK	--
Italy	KEYBIT	GRAFTABL
Norway	KEYBNO	NORDIC
Portugal	KEYBPO	PORTUGAL
Spain	SPAIN1	--
Spain International	KEYBSP	GRAFTABL
Sweden/Finland	KEYBFS	GRAFTABL
Switzerland (French)	KEYBSF	GRAFTABL
Switzerland (German)	KEYBSG	GRAFTABL
United Kingdom	KEYBUK	GRAFTABL
US/ASCII	--	GRAFTABL

The following keyboard versions are shown in the illustrations: US (58), Italy (59), France (60), Germany (61), Spain International (62), Spain (63), United Kingdom (65), Switzerland (66), Finland/Sweden (67), Norway (68), Denmark (69), Portugal (71), Greece (72).

Please open out the illustration which corresponds to your national version. You will see the US-ASCII keyboard also shown on the same or adjacent page.

KEYBOARD DRIVERS, UTILITIES

RECOMMENDED STEPS AFTER LOADING THE OPERATING SYSTEM

At this point we recommend you perform the following steps which are fully explained in your MS-DOS manual:

Copying the national keyboard driver to the operating system diskette

Copy your national keyboard driver and font to the operating system diskette if you are using a keyboard other than the US ASCII keyboard (example: if you want to copy the Italian keyboard driver from this diskette you have to copy the file named: keybit.com).

Creating an AUTOEXEC.BAT file

Create an autoexec.bat file on your operating system diskette, if you wish certain commands to be executed automatically after loading your operating system diskette.

Commands in the autoexec.bat file on your operating system diskette are automatically executed when the operating system is loaded. For example an autoexec.bat file can be used to automatically load your national keyboard driver version.

Creating a CONFIG.SYS file on your operating system diskette

If needed, create a config.sys file on your operating system diskette. The config.sys file is needed for example when special drivers are to be loaded.

SYSTEM WITH HARD DISK

If you have a system with hard disk some basic steps are required to prepare it before starting work.

1. Partitioning, formatting the hard disk
2. Loading an operating system to the hard disk
3. Copying the national keyboard driver to the hard disk
4. Creating an AUTOEXEC.BAT file on the hard disk
5. Creating a CONFIG.SYS file on the hard disk

Follow the instructions in your operating system manual to perform these steps.

COPYING THE TRAVEL UTILITY

Another step which we recommend when you have a system with hard disk is to - copy the file "travel.exe" from the UTILITIES diskette to the operating system diskette and to the root directory of the hard disk.

The command for copying the Travel utility from the utilities-diskette (inserted in drive A:) to the root directory of the hard disk is:

```
copy a:travel.exec C:\
```


KEYBOARD DRIVERS, UTILITIES

Using the travel utility

After the Travel utility has been copied from the UTILITIES diskette to the operating system diskette it can be called and executed directly from the operating system diskette or from the hard disk.

This utility will be useful when you are about to switch OFF your system with hard disk and want to transport it.

Refer to Chapter 8 for a full description of this **important** utility.

WORKING WITH THE KEYBOARD

After loading the operating system software and the keyboard driver (if you do not have the US-ASCII keyboard), as explained in your software documentation, you will then have available all the functions and capabilities which are described below.

Your keyboard has the following types of keys:

- 10 Function Keys at the left of the keyboard:

These keys have certain functions which are defined by the software which has been installed. Once defined, you can then use one of these keys to replace a complete command entry on the keyboard.

- The alphanumeric keys :

These keys are used to enter text and numbers, as on a normal typewriter.

- A numeric keypad (58,H) integrated into the alphanumeric section.
- A number of special keys.

ENTERING TEXT IN UPPER CASE

This is done as follows: Press and hold down one of the SHIFT keys (58,G)(58,E) (marked with a broad arrow pointing upwards), and then press the letter to be entered in upper case.

When you wish to enter text all in upper case, the **alphabetic section** of the keyboard can be locked in the upper case mode by means of the **CAPS LOCK** key (58,D) . Thereafter, you can enter letters in lower case by pressing one of the **SHIFT** keys along with the letter to be entered in lower case.

To revert to lower case mode, simply press the **CAPS LOCK** key once more.

An LED indicator on the **CAPS LOCK** key lights up when the **alphabetic section** of the keyboard is in upper case mode.

MULTI-CHARACTER KEYS

Some keys, on certain national keyboards, are capable of entering up to five characters, depending on which key combination is used along with them. The illustration (39,A) shows which key combination accesses which character on one of these multi-character keys (on the left is shown a general example, on the right is shown a special key from the Norwegian keyboard):

Each character has a corresponding key combination as follows:

- A - The key alone is pressed (unshifted)
- B - Press and hold down **ALT** and then the key (unshifted)
- C - Press and hold down **SHIFT** and then the key
- D - Press and hold down **ALT** and **SHIFT** and then the key
- E - Press and hold down **CTRL** and **ALT** and then the key.

Note concerning the above:

When entering one of the above combinations, press the keys in the order shown, holding down the first while pressing the second, and so on. Hold down the keys until the desired action has taken effect.

The above table concerns only the alphanumeric keys and **does not apply to the numeric keypad**, which will be explained later on. Dual function control keys (e.g. the cursor keys) will be explained separately. The number key

WORKING WITH THE KEYBOARD

pad will also be dealt with in a separate paragraph.

THE CURSOR CONTROL KEYS

In the normal mode, i.e. without combining other keys, the block of keys marked with arrows on the right side of the keyboard (58,C) are used to direct the cursor on the screen as follows:

→	Cursor one character to the right
←	” ” ” ” left
↑	” ” ” upwards
↓	” ” ” downwards

THE EDIT/SHIFT KEY

This is a toggle key, i.e. when pressed, it remains inserted until pressed a second time, when it returns to normal position; you can easily see, therefore, if the key has been activated, simply by looking at it. When it is pressed (in conjunction with certain application programs), the cursor keys on the right of the keyboard assume their secondary functions, which are as follows:

HOME	Cursor to start of text
END	to end of text
PG UP	to start of preceding page
PG DN	to start of following page

The EDIT/SHIFT key returns to normal position when pressed a second time; the above keys then return to their normal (cursor control) functions.

Note: Even the **INS** key and the **DEL** key assume their secondary function, which is indicated on the keys.

THE AUTOMATIC REPEAT FUNCTION

As long as a key is pressed, the corresponding letter or function will be repeated. This feature also applies to combinations of keys.

All keys for which the automatic repeat function serves a purpose possess this feature.

DEAD KEY SYMBOLS

On the various national keyboards, there are keys marked with symbols which, when pressed, do not appear on the screen. These characters are used only in conjunction with other keys to produce certain seldom-used characters for which no separate key has been provided (for example accented letters). These keys are known as the **Dead Keys**. For example, the following symbols may appear, depending on the keyboard:

‘ ’ ^ “ ~

Each national version of the keyboard possesses its own particular 'dead keys'. For example, in order to produce an accented character on a German keyboard, you would press first the dead key, followed by the letter which is to appear with the accent. When this is done, the system checks in order to verify that the accent + character entered is a valid combination. If it is an illegal combination, both character and symbol appear on the screen and at the same time there is an audible signal to bring the error to your attention. (Please note: on the Spanish keyboard, the ~ character appears in this case as ■ .) The table below shows all the valid letter-dead key combinations for all the national keyboard versions:

WORKING WITH THE KEYBOARD

KEYBOARD	DEAD SYMBOL SUPPORTED	CHARACTER PRODUCED
FRANCE	¨ ^	ä Ä ë ï ö Ö ü Ü ÿ â ê î ô û
GERMANY	/ \ ^	á é Ê í ó ú à è ì ò ù
GREECE	/ ¨	ά έ η ί ó υ ώ ï ü Á É Η Í Ó Υ Ω
PORTUGAL	/ \ ^ ~	á é í ó ú Á Ê Í Ó Ú à è ì ò ù À Ê Ì Ò Ù â ê ô Â Ê Ô ã õ ñ Ã Õ Ñ
SPAIN INTERNATIONAL DENMARK, NORWAY SWEDEN/FINLAND	/ \ ^ ¨	á é Ê í ó ú à è ì ò ù â ê î ô û ä ë ï ö ü ÿ Ä Ö Ü
SPAIN	/ \ ¨	á é í ó ú Á Ê Í Ó Ú à è ì ò ù À Ê Ò ä ë ï ö ü Ä Ì Ö Ü
SWITZERLAND (FRENCH) SWITZERLAND (GERMAN)	/ \ ^ ¨ ~	á é í ó ú É à è ì ò ù â ê î ô û ä ë ï ö ü ÿ Ä Ö Ü ñ Ñ

THE NUMBER KEY PAD

The keyboard has a block of number keys especially for entering sets of numbers. Since the keyboard has been designed to be compact, these keys do not appear as a separate block, but are included inside the alphanumeric area (it is indicated by the outlined area in the Figure (58,H)).

The numeric key area is activated as follows:

Press the **NUM LOCK** key (58,A) . The indicator light on the key comes on.

Press the **EDIT/SHIFT** key (58,F) (this is a toggle key and remains in, until pressed a second time).

The shaded area shown in the illustration can now be used to make numeric entries. On the numeric keypad, you should now have access to the following characters, which are marked on the front of the keys: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, +, .

You can de-activate the numeric keypad by releasing the **EDIT/SHIFT** key, and then pressing the **NUM LOCK** key (the indicator light on the latter goes out). All the above keys then return to their normal functions.

HOW TO COMPLETE AN ENTRY

When you make a data input through the keyboard, the entry is not processed by the system until you press the **ENTER** key (58,B) (also sometimes called CR - Carriage Return). This key is to be found on the right hand side of the alphanumeric area of the keyboard, and is marked with an arrow bent to the left (↵).

The data entered on the keyboard, and subsequently processed by the system when the **ENTER** key is pressed, constitute an "Entry". When this entry consists of a

WORKING WITH THE KEYBOARD

Command given to the system to execute certain functions, execution of the command will begin only after the abovementioned ENTER key is pressed.

CORRECTING SPELLING MISTAKES WHEN MAKING ENTRIES

Before you complete an entry by pressing the ENTER key, you may still correct any errors in the entry by using the Backspace key to bring the cursor back to the mistaken character or characters.



The Backspace key (58,K) is found in the top right part of the keyboard. This key will erase each character to the left of the cursor until you arrive at the mistaken character. You can then recompose your entry and press the ENTER key.

OTHER SPECIAL CHARACTERS

All the other special keys, which have not been mentioned so far, can be found in the following table, with an explanation of their functions. The keys are explained from left to right of the keyboard, starting from the top.

Please note that the explanations given serve only as a general guide, and that the function of each key still depends on the particular program which has been loaded.

KEY SYMBOL (US-ASCII)	FUNCTION
ESC	A function key, never used in combination with other keys: frequently used to return to the previous page of a menu (ESC = ESCAPE)

	Used to jump to the next tabulation point on a line
SCROLL LOCK	Stops scrolling on the screen, or changes the type of scrolling
BREAK	Interrupts an output, or a listing, or the running of a program; used together with SHIFT
NUM LOCK	Switches to the numeric keypad, in order to make numeric entries; used only in conjunction with EDIT/SHIFT
CTRL	Function key used only in conjunction with other keys (CTRL = CONTROL)
ENTER or CR 	Used to complete an entry (CR = Carriage Return)
DEL	The character indicated by the cursor is erased

WORKING WITH THE KEYBOARD

SHIFT ↑	Only used together with other keys, to switch to the upper case, or to select the alternative function of a key
INS	Entries are added to the screen, without overwriting; striking the key again returns to overstrike mode (INS = INSERT)
PRT SC	Prints the contents of a screen (PRT SC = PRINT SCREEN); used together with SHIFT
EDIT/SHIFT	This is a toggle key: when used in conjunction with Num Lock, it activates the numeric keypad. Otherwise, when pressed, it activates the alternative functions of the cursor keys. Then in conjunction with word-processing programs, it activates the Home, End, Pg Up, Pg Dn, functions
ALT	Function key, used only together with other keys (ALT=ALTERNATE)
CAPS LOCK	Locks into upper case: a second action on the key returns to lower case

SWITCHING BACK TO THE US-ASCII KEYBOARD

After loading a national keyboard driver, you can return to the US-ASCII keyboard by pressing the key combination **CTRL + ALT + F1** .

You can then select your national keyboard version using the key combination **CTRL + ALT + F2** .

THE SWISS-GERMAN/SWISS-FRENCH KEYBOARD

There is only one Swiss keyboard version, which serves for both the Swiss-French and Swiss-German character sets. If you have this keyboard, you must load the correct keyboard driver. The keyboard driver affects three keys, which are shown in the illustration (39,B).

THE GREEK KEYBOARD

Both Greek and Latin characters can be entered on this keyboard. When delivered, the keyboard is configured for the Latin alphabet. In order to change to the Greek alphabet, simply press the **ALT** and **ENTER** keys, at the same time. To return to the Latin alphabet, use the same procedure.

Only the alphabetic area of the keyboard is affected by this procedure. The other keys retain the same functions for both, with the exception shown in (39,C).

WORKING WITH THE KEYBOARD

THE PORTUGUESE KEYBOARD

On the Portuguese keyboard, the characters ü and Ü are produced by first pressing the ~ key, and then either u or U.

SOFTWARE RESET (CTRL + ALT + DEL)

The Reset is an important function of your computer system, and is used, for example, when the computer is blocked or is not accepting commands from the keyboard.

When a Reset is made, all the data stored in the system's memory are lost. All memories, registers, etc., are set to zero, and the operating system is reloaded.

Once the operating system has been successfully loaded, a Reset is made by pressing the key combination CTRL + ALT + DEL . This is called a **Software Reset**.

If the operating system has not been loaded successfully, or if for any reason the system is not accepting commands from the keyboard, a system reset can only be performed by switching OFF and ON (this is called a **Hardware Reset**).

IMPORTANT: Both types of Reset should be used carefully since all data stored in your system memory will be lost after a Reset.

AC/BATTERY OPERATION, CHARGING THE BATTERIES

GENERAL

Your portable PC is equipped with rechargeable batteries which allow the the system to be operated with or without AC supply, as you wish. This chapter provides all information needed when working on AC power or on batteries.

BATTERY BACK UP (IN CASE OF POWER FAILURE, UNINTENDED CABLE DISCONNECTION)

Your system is equipped with an automatic backup facility. This means that in case of a power cut (due to a power failure or due to an unintended cable disconnection when operating on AC power, the system will automatically be powered by the batteries. No data will be lost.

IMPORTANT: In such a case the hard disk will **only** continue working (on battery power) if the hard disk switch (**38,B**) is in the ON position (=1).

When you work on AC power in environments where the AC power is not very reliable, we recommend as a matter of routine you leave the hard disk switch in position ON (=1) if the hard disk is needed while you are working.

DURATION OF OPERATION ON BATTERIES UNDER DIFFERENT CONDITIONS

Systems with two disk drives

See the following table. Note the differences in the duration of battery operation when using the backlight.

SITUATION	DURATION OF BATTERY OPERATION WITH FULLY CHARGED BATTERIES
FLOPPY DISKS BEING ACCESSED AT 5% OF THE OPERATING TIME; (5% DUTY)	
- BACKLIGHT OFF	5.5 hours
- BACKLIGHT ON	2.5 hours

If the disk drives are used for a higher percentage of the time, the battery duration is reduced; if lower, then the duration is increased.

AC/BATTERY OPERATION, CHARGING THE BATTERIES

Systems with hard disk

See the following table. Note the differences in the duration of battery operation when using the backlight and/or the hard disk.

SITUATION	DURATION OF BATTERY OPERATION WITH FULLY CHARGED BATTERIES
<hr/>	
HARD DISK SWITCHED OFF	
FLOPPY DISK BEING ACCESSED AT 5% OF THE OPERATING TIME; (5% DUTY)	
- BACKLIGHT OFF	5.5 hours
- BACKLIGHT ON	2.5 hours
<hr/>	
HARD DISK SWITCHED ON	
HARD DISK BEING ACCESSED AT 5% OF THE OPERATING TIME; (5% DUTY)	
- BACKLIGHT OFF	1 hour
- BACKLIGHT ON	40 minutes

If the hard disk is used for a higher percentage of the time, the battery duration is reduced; if lower, then the duration is increased.

WORKING ON BATTERIES; BATTERY LOW INDICATOR

You will be informed in two ways that the batteries have become discharged:

1. The battery indicator light beside the display (40,B) comes on.
2. An acoustic signal is emitted through the speaker (40,A) (5 beeps), at short intervals.

When the battery indicator light comes on and you hear the acoustic signal, this means that the batteries have become discharged and there remains between **one** and **five** minutes of battery power. The exact time remaining depends on the age of the batteries and on the working conditions (hard disk on/off, backlight on/off etc.).

BATTERY OPERATION, CHARGING UP THE BATTERIES

When the battery indicator light comes on, it is very important to take the following steps immediately:

1. Switch off the backlight to save battery power.
2. Bring your current work session to a close.
3. Avoid as far as possible all activities which involve long read/write operations on the disk drive(s)/hard disk. (For example: do not execute the FORMAT command.)
4. Store all your data.
5. Switch the system off.
If your system is equipped with a hard disk: switch the hard disk off.

AC/BATTERY OPERATION, CHARGING THE BATTERIES

6. Connect the battery charge cable, in the order shown below, if you wish to charge up the batteries again:
 - a) insert the charge cable connector jack into the socket on the rear of the computer marked (18,A).
 - b) Connect the AC cable to the AC adapter (19,A) .
 - c) The last step, as always, should be the connection of the AC cable to the AC outlet (20,A) .
 - d) If the cable connections are made correctly, the green indicator light (18,C) on the AC adapter comes on.
 - e) Leave the cables connected in this way for about 15 hours. The batteries cannot be overcharged. When the batteries have been charged completely, charging stops automatically. The indicator light (16,A) remains on as long as the AC adapter is connected to a wall outlet.
 - f) To disconnect the power supply from the PC, first disconnect the power supply cable from the wall outlet, then disconnect the DC cable from the PC.

WORKING ON AC AND CHARGING BATTERIES

Battery charging is independent of the position of the power ON/OFF switch.

Switch the system on again, if you wish to continue working. In this situation the system is powered by the power supply and the batteries are being recharged at the same time. Charging of the batteries stops automatically after the batteries have been completely charged.

The indicator light (16,A) remains ON as long as the AC adapter is connected to the wall outlet even if the AC

adapter is disconnected from the PC.

To disconnect the power supply from the PC, first switch the system off, then disconnect the power supply cable from the wall outlet, then disconnect the DC cable from the PC.

IMPORTANT FEATURE: AUTOMATIC CHARGING OF BATTERIES WHEN WORKING ON AC

When you are working on AC (power supply) the batteries will automatically be recharged if the discharge has reached a certain point.

In this situation nothing will be indicated (no acoustic/optical signal).

To make sure that the batteries are completely charged leave the AC adapter connected (for a maximum of 15 hours).

IMPORTANT: If you are working on AC power most of the time, the batteries remain almost completely charged.

NOTE ON FILE SAVING

We assume here that you know how important it is, during a working session, to store your files and data regularly, in order to avoid any loss which might be caused by unexpected circumstances. This regular saving of files and data is **also recommended** when working on battery.

AC/BATTERY OPERATION, CHARGING THE BATTERIES

IMPORTANT ADVICE ON WORKING WITH BATTERIES

The rechargeable batteries which equip your system have a limited life. The batteries, system, and AC adapter are so made that the batteries can support 500 charge/recharge cycles.

If you keep to the following guidelines, you will get the maximum operating time from your batteries:

1. If an AC outlet is within reach, connect your system to it.
2. Always recharge the batteries when you have seen the battery indicator light come on (batteries in low condition).
3. Once the recharging is complete (15 hours) we recommend that you remove the battery charging cable.
4. When you are no longer using the system, before putting it away, be careful to switch the system off in order to avoid completely discharging the batteries.
5. You should charge the batteries up in advance if you plan to run the system on them for long periods, or in places where there is no AC outlet.

CHARGING UP THE BATTERIES FOR THE FIRST TIME

The batteries which you will find inside the central unit have been only partially charged in the factory. We therefore recommend that you charge them up as described in this Chapter.

A FEW TIPS ON CABLE CONNECTION/DISCONNECTION

Keep in mind the following points when connecting or disconnecting cables.

1. Before making any changes to cable connections, switch the system off, after first terminating your work session and storing all your data.
2. While working on AC power the DC cable may be disconnected, since the battery back-up facility guarantees automatically that the system continues operating on batteries (no data will be lost); this disconnecting should be avoided if possible.

SYSTEM FEATURE: ACOUSTIC WARNING IN CASE OF NO DRIVE/KEYBOARD ACCESS

Your system is equipped with a useful feature that prevents you from forgetting to switch off the system when it is no longer being used.

When neither the disk drive(s)/hard disk nor the keyboard has been accessed for more than 10 minutes, the system automatically emits two beeps (duration 1-2 seconds) to indicate that it is not being used.

This feature helps to prevent the batteries from being discharged if you have forgotten to switch the system OFF.

AC/BATTERY OPERATION, CHARGING THE BATTERIES

WHEN IS BATTERY REPLACEMENT NECESSARY?

If, after a full charging cycle, the battery indicator light beside the display comes on within a time period which is 50% below the values described in the tables in this Chapter, the battery needs to be replaced.

Since operating with hard disk and/or the backlight involves some uncertainty in judging the condition of the battery, use the following example to evaluate the battery conditions.

If, after a full charging cycle, you start working on batteries with the backlight switched OFF and the hard disk switched OFF (if your system is equipped with a hard disk) and the battery indicator light beside the display comes on within 3 to 4 hours, (assuming the diskette drive(s) are in use for about 5 to 10% of this time), the battery needs to be replaced.

Follow the instructions given in Appendix A, to change the batteries.

SWITCHING OFF, TRANSPORTING YOUR SYSTEM

NOTE ON FILE SAVING

Before you switch off your system (two disk drives/hard disk), finish your current working session and save the files.

SWITCHING OFF A SYSTEM WITH TWO DISK DRIVES

A system with two disk drives does not require any special attention before you switch it off/transport it.

PROTECTING THE HARD DISK BEFORE SWITCHING OFF A SYSTEM WITH HARD DISK

Systems equipped with a hard disk require an extra step before they are switched off/transported.

The information on the hard disk is read and written to by means of the hard disk heads which are moved rapidly by the system to the positions on the hard disk where information is to be accessed.

These heads, if not protected by the procedure described below, are likely to damage the hard disk when you move/transport your system unless they are parked in a safe position.

As a matter of routine we recommend you perform this procedure to protect your hard disk before you switch off your system.

Note that this precaution protects your system from being damaged if, for example, it is being moved by an unauthorized person not familiar with the system. Beware of leaving the system unattended!

The built-in automatic hard disk protection utility

An automatic built-in hard disk protection utility is provided, which functions as follows:

When the hard disk is not accessed (no read/write operations) by the system for more than one minute, the hard disk heads will automatically be parked in a safe position.

The hard disk indicator light (32,C) starts blinking (blink frequency: approximately 0.5 Hz).

When the hard disk indicator light is blinking as described above, you may switch off the system and move it without risk.

Note: Of course you need not switch off the system. You may continue working. As soon as the hard disk is accessed by any system command the hard disk heads will be moved again. The system should not be switched off/transported immediately after that.

The procedure described above functions whether or not the hard disk is formatted or the Operating System loaded.

The travel utility for protecting the hard disk

The above procedure may be inconvenient if you want to switch off your system immediately after finishing your work session.

If an operating system has been loaded (from hard disk or from the operating system diskette) you may proceed as follows:

- Load the Utilities diskette into disk drive A and type the command:

a:travel <ENTER>

SWITCHING OFF, TRANSPORTING YOUR SYSTEM

- If you copied the Travel utility to the operating system diskette as described in this manual you can type the command

a:travel <ENTER>

with the operating system diskette inserted in drive A:.

- If you copied the travel utility to the root directory of the hard disk as described in this manual you can type the command

\ travel <ENTER>

directly with the C> prompt on the screen. No diskette needs to be inserted into drive A:.

NOTE: After the Travel utility has been loaded you will be informed in two different ways that the hard disk heads have been parked in a safe zone:

1. A message (42) appears on the screen to inform you that the hard disk heads have been parked.
2. The hard disk indicator light (41,C) starts blinking (frequency: 0.5 Hz).

The system will not accept any further input from the keyboard. The system **must** be switched off. Now the system can be moved/transported without any risk to the hard disk.

Whenever the system is switched on again, the keyboard and system will function normally.

The ship disk utility in the Customer Test

A third procedure is provided to protect the hard disk heads. Since this procedure is part of the Customer Test which must be loaded from the UTILITIES diskette and since this procedure will be useful, when you are running the Customer Test or if for any reason an operating system cannot be loaded, refer to Appendix B for a fuller description.

SPECIAL SITUATIONS

To protect the hard disk heads when no operating system or UTILITIES diskette is available, the hard disk heads can only be protected using the built-in automatic hard disk protect utility (the first procedure described). Wait about one minute without performing any activities on your system, until the hard disk indicator light (41,C) starts blinking. Then switch the system off.

TRANSPORTING YOUR SYSTEM

The shoulder strap can be used to transport and to handle your system.

When carrying the system to a new location, use the carrier bag supplied. This bag gives protection against knocks and jolts, and provides space for transporting the system, together with cables, AC adapter, manuals, and diskettes.

Before carrying the computer anywhere, take any diskettes out of the disk drive(s).

ADJUSTMENTS, UPGRADING, REPLACING BATTERIES

SETTING/RE-ADJUSTING THE RESISTANCE OF THE DISPLAY HINGES

The display unit, when opened, has a certain resistance to movement which is adjusted by means of the two screws (43,A)(44,A) . These screws have been set in such a way in the factory that no adjustment is necessary. After a certain period, however, some re-adjustment may appear necessary in order to increase or decrease the resistance; in this case you can proceed as follows:

1. Find a medium-sized coin.
2. To increase the resistance of the display hinges, turn both screws one quarter turn clockwise (43), (44) .
3. To decrease the resistance of the display hinges, turn the screws one quarter turn anti-clockwise (46),(47) .
4. Never turn the screws more than one quarter turn (45) at a time, and check after each turn the screen's resistance to movement back and forth. The screen is at its optimum setting when it remains securely in any of the working positions (opened over 90 degrees), and there is only a slight or medium resistance to a change of position.

UPGRADING THE SYSTEM WITH THE 5.25'' OPTIONAL DISK DRIVE

A 5.25'' disk drive is available, which can be connected to the disk drive interface (15,B) . This disk drive uses diskettes which have a capacity of 320K bytes (when formatted), and is powered independently of the system by connection to an AC outlet.

It is considered by the system as disk drive C (symbol C:) if you have a system with two disk drives, and as drive D if you have a system with hard disk. It can be used to read and write data and programs directly from/to 5.25''

diskettes. When connected, you can easily use programs and data available on 5.25" diskettes, either directly, or after transferring them to 3.5" diskettes.

If you have a system with hard disk and you want to connect an external disk drive, add the following command line to your **config.sys** file:

device=driver.sys/d:2/t:40/f:0

After this configuration, you will work on the external floppy drive as drive D:. Your local service center will be able to give you further details about the optional disk drive.

REPLACING THE BATTERIES

(If for any reason you wish to take the battery out after a charging cycle, please allow some time for the battery to cool down before touching it.)

To replace the battery, proceed as follows:

1. Switch the system off.
2. Open the rear panel cover (48,A) and slightly bend it so that the plastic pins at the ends come out from their holes; you can then remove it and put it aside.
3. Loosen the two screws (49,B)(49,A) and put them aside.
4. Remove the battery compartment cover (50,A) .
5. Pull out the battery connector. Press the small catch (51,A) on top of the connector whilst pulling at the same time (51,B).
6. Take out the battery (52,A) .

ADJUSTMENTS, UPGRADING, REPLACING BATTERIES

7. Insert a new battery (same type), and reconnect the battery connector (53) until you hear a slight click.
8. Set the battery compartment cover in place (taking care to insert the tabs at the edges of the cover into the corresponding slots (50,B)) in the computer housing, and replace the screws.
9. Slightly bend the rear panel cover (48) before inserting it back in place, so that the pins at the ends enter back into their holes.
10. New batteries are to be recharged, as explained previously, for the full charging cycle of about 15 hours.

REPLACING THE BACKLIGHT

The backlight has been designed to support your system for a long period of time before replacement may become necessary.

Replacement should be considered when you note a significant decrease of brightness.

The backlight has to be replaced by an authorized technician.

TROUBLE SHOOTING, CUSTOMER TEST

TROUBLESHOOTING

There are many situations in which problems may arise, for which you can yourself pinpoint the cause, and then easily supply the remedy.

The following list gives you guidelines for solving many of these problems.

1. PROBLEM:

When the system is switched on (Power indicator light ON) nothing appears on the screen.

POSSIBLE CAUSE 1:

When working on AC supply: You have not adjusted the contrast control correctly.

POSSIBLE SOLUTION 1:

Turn the contrast control slowly in both directions, and find the optimum setting.

POSSIBLE CAUSE 2:

When working on batteries: The battery is completely discharged. You may have forgotten to switch the system off. (In this case the POWER indicator light does not come on.)

POSSIBLE SOLUTION 2:

Change back to AC operation. Recharge the batteries.

2. PROBLEM:

On battery: after switching the system on, several lines appear on the screen, the diagnostics do not run, the battery indicator does not light, and there is no acoustic signal (or only one beep).

POSSIBLE CAUSE:

Batteries too discharged.

POSSIBLE SOLUTION:

Change to AC. Charge the batteries.

3. PROBLEM:

You are working on batteries: relatively new batteries seem not to be sufficiently charged up after a full charging cycle of fifteen hours).

The "battery low" indicator light (40,B) on the system lights up when you return to battery operation.

POSSIBLE CAUSE :

Batteries fully discharged. You might have forgotten to switch the system off.

POSSIBLE SOLUTION:

In this case try a second charging cycle. If the second charge cycle is not successful, consult your dealer. The battery may need to be replaced.

4. PROBLEM:

Systems with HARD DISK, operating on batteries:

After switching ON the system, the hard disk is not recognized by the system (an appropriate error message will appear on the screen).

POSSIBLE CAUSE:

You forgot to switch the hard disk on, before you switched the system on.

POSSIBLE SOLUTION:

- Save your current work session (use the disk drive A: to store your data).

TROUBLE SHOOTING, CUSTOMER TEST

- Switch the hard disk on and perform a hardware reset (switch the system off and on again). Observe the autodiagnosics and make sure that the message **'HDU ready'** appears.

THE CUSTOMER TEST

In the Starter Kit you will find a diskette labeled UTILITIES. This diskette contains a diagnostic program (Customer Test) that allows you to identify problems which might occur in a system module.

You can test completely each module of the system with this diskette. The tests will tell you which module(s) is (are) not working correctly.

When you have a problem with the system, you should use this diskette before calling your Field Service Representative for assistance. These tests will help you save time in finding exactly where the fault is.

Note: Before using this diskette make a copy of it. Put the original diskette in a safe place and perform the tests using the copy. Write protect the original diskette and the copy. You will find instructions on how to make a copy of a diskette in the MS-DOS User Guide.

We recommend that you use the Customer Test whenever you believe that there might be some hardware defect, or when the keyboard does not appear to be transmitting information correctly, or when the read/write operations in the disk drives appear to be running abnormally.

The AC adapter, the batteries and the backlight are not covered by this test program.

LOADING AND USING THE CUSTOMER TEST

Important:

If for some reason you are planning to check your diskette drive(s) by means of the Customer Test, note the following:

When the diskette drive is tested, a message will ask you to remove the UTILITIES diskette and to insert a formatted diskette. This diskette must be formatted as explained in the MS-DOS User Guide.

It is important then, in the following cases, to have specially formatted diskettes available:

- a) When you wish to select the Customer Test option: SYSTEM CHECKOUT, in which case the disk drives will be tested in turn if you have a system with two disk drives.
- b) When, in TEST ONE MODULE mode, you select the individual test of the disk drive(s).

You should proceed as follows to start the Customer Test:

1. Check that the system is switched off.
2. Before beginning the Customer Test, we recommend that you make the power cable connections between the AC outlet and the computer and run the test on AC supply, because the extensive read/write operations made during the test are very power-consuming.
3. Activate the write-protect tag on the UTILITIES diskette and insert the diskette in disk drive A (the right-hand disk drive).
4. If you have a system with a hard disk switch, set this switch to the ON position (=1).

Switch the system on (setting the ON/OFF switch (22,A)

TROUBLE SHOOTING, CUSTOMER TEST

to position 1).

5. If the system was already on, then perform a system reset through the keyboard by pressing the **CTRL+ALT+DEL** key combination.

The Customer Test is loaded automatically, and is made self-explanatory by means of the messages appearing on the screen. You merely have to follow the simple instructions which you will be given.

6. After each test, you will be shown the results on the screen. If there is a "fail" indication, make note of the details and pass these on to your after-sales service or repair technician.

Once the diagnostic program is loaded, a menu will appear. You can select one of the options on the menu by pressing one of the vertical cursor control keys (`↑` or `↓`) to highlight the option, and then pressing the **ENTER** key to confirm the selection.

You can follow the same procedure for each menu that appears after making a selection from the first. The first screen displays a menu to select the language for the program messages (54). Select the language you wish. After you have chosen a language, an initial message and the **CUSTOMER TEST** version number are displayed (55). To continue press the **ENTER** key. Then a new menu appears on the video screen offering three options:

- . **TEST ONE MODULE** (to test a single module)
- . **SYSTEM CHECKOUT** (to test the entire system automatically, with user interaction required during the keyboard test, the disk drive test and the video).
- . **PARK DISK HEADS** (to set the read/write heads of the hard disk in a safe zone for transporting the system).

Select the option you want. If you have selected the option for performing a single module test, a list of modules and system components to be tested will be displayed. Select the module you want to test. When the test of the module is finished, press **ENTER** to continue testing the next module. If you have selected the automatic test, each module is tested in sequence.

During the test of a specific module (both in SYSTEM CHECKOUT or TEST ONE MODULE mode), the module name and a graphic representation of the module are displayed. The percentage of time that remains to complete the test appears in a rectangle on the screen.

A message will appear asking you to wait for the test to be completed. At the completion of the test, a message will appear stating that the test has passed or failed.

When the diskette drive(s) is (are) tested, a message will ask you to remove the CUSTOMER TEST diskette and insert a formatted diskette as described above.

IMPORTANT: When the diskette drive test(s) is (are) finished, you will need to re-format the diskette(s) if you want to use it (them) for anything else.

You will find the CUSTOMER TEST program easy to use. The messages which appear during the test will guide you through the program. You need not worry about making wrong selections.

If you find a malfunction which cannot be solved with the recommendations in the table above, then call your Field Service Representative for assistance. You can explain the problem and the results of the CUSTOMER TEST.

Whenever you wish to change diskettes during the Customer Test, make sure that the diskette in the drive is not being accessed. Look at the access indicator light for the drive concerned and ensure that it is not lit.

TROUBLE SHOOTING, CUSTOMER TEST

A point to remember:

When you wish to test only certain components, select the **TEST ONE MODULE mode** from the first menu, and then select the appropriate component from one of the next menus. You may then choose any component from the list which will be displayed. A complete test of all the system's components, which includes the test of the disk drive(s)/hard disk which can last for up to 30 minutes.

BEFORE TRANSPORTING THE SYSTEM: THE PARK DISK HEADS OPTION

The **PARK DISK HEADS** option in the Customer Test is the utility mentioned in Chapter 8 which can be used to park the hard disk heads in a safe position before you switch off and transport the system.

After you select this option:

1. A message (57) will appear on the screen informing you that the hard disk heads have been parked in a safe position;
2. The hard disk indicator light (41,C) starts blinking twice a second (frequency: 0.5 Hz).

Switch the system OFF, since no further input from the keyboard will be accepted. The system can now be moved/transported.

We recommend as a matter of routine that you always select this option after finishing the Customer Test.

HOW TO EXIT THE CUSTOMER TEST

To exit the CUSTOMER TEST, switch the system OFF and take the UTILITIES diskette out of drive A:.

TECHNICAL CHARACTERISTICS

TECHNICAL CHARACTERISTICS

CPU: 80C88 (4,77 MHz)
ROM: 32K bytes
RAM: User RAM: 512 K bytes
Video RAM: 16K bytes
CLOCK: Battery-backed clock/calendar

EXTERNAL STORAGE:

SYSTEM WITH TWO DISK DRIVES:

Two 3.5" disk drives, each 720K
bytes
Diskettes used: double sided, double
density, 135 t.p.i.

No. of heads: 2
No. of cylinders (tracks): 80
Data transfer rate: 250K bits/sec.

SYSTEM WITH HARD DISK:

1 3.5" disk drive, 720K bytes
1 integrated hard disk (HDU) 3.5"
storage capacity: 20 MByte (formatted)
average access time: 80 msec

Power supply to Central Unit:

17 V DC (AC adapter)
12 V DC (from battery)

System power consumption:

system with two disk drives: max. 30 W

(max.)	system with hard disk	: max. 40 W
Display:	Liquid crystal display (LCD); super twist backlight	
Resolution:	Alphanumeric: 25 lines of 80 characters 25 lines of 40 characters (by selection) Graphic: 640 x 200 pixels 320 x 200 pixels	
Keyboard:	78 keys 10 Function keys Numeric keypad (integrated into alphanumeric area) LEDs indicating numeric keypad and upper case mode	
Battery:	Ni-Cad-Battery set, 12 V 500 charge/recharge cycles 15 hours (max.) recharging time	
Interfaces:	Parallel (Centronics) Serial (RS 232C) Interface for the optional 5.25" disk drive	
Ambient conditions:	Temperature range: from 10° to 40°C (50 to 104 F). Relative Humidity: from 20 to 80 per cent (non-condensing). Altitude (max.): operating 3000 m. (10.000 feet) non-operating 10.000 m. (33.000 feet)	

TECHNICAL CHARACTERISTICS

AC adapter: Input: A.C. 100-240 V, 50 Hz or 60 Hz;
(universal) Output: 17 V

AC supply current variations tolerated:
110/220 V: Voltage +/-10 per cent
 Frequency +/-1 per cent

Weight: System with two disk drives: 6.2 kg
 System with hard disk : 6.6 kg

Dimensions: 358 x 290 x 85 mm.
 (14.09 x 11.4 x 3.34 inches)

LIST OF FIGURES

- 1) checking your order
- 2) connecting the strap
- 3) opening the system
- 4) system opened (two disk drives)
- 5) system opened (hard disk)
- 6) inserting the template into systems with two disk drives
- 7) inserting the template into systems with hard disk
- 8) taking out the keyboard, step 1
- 9) taking out the keyboard, step 2
- 10) positioning the keyboard at the maximum distance
- 11) reinserting the keyboard
- 12) the system, display etc.
- 13) the system controls, on the display
- 14) the keyboard
- 15) the back panel
- 16) the power supply
- 17) the on/off switch in OFF position
- 18) connecting the DC cable to the system
- 19) connecting the AC cable with the power supply
- 20) connecting the AC cable to the outlet
- 21) contrast to maximum, backlight in OFF position
- 22) on/off switch in ON position
- 23) a) readjusting contrast, b) using the backlight
- 24) autodiagnostic (no hard disk)
- 25) autodiagnostic (HDU ready)
- 26) auto diagnostic (HDU not available)
- 27) floppy disk , general
- 28) floppy disk (write protected)
- 29) floppy disk (not write protected)
- 30) attaching a label to diskette
- 31) diskette indicator lights (A:, B:)
- 32) HDU, disk drive indicator lights (C:, A:)
- 33) opening the drive door
- 34) inserting a diskette into the drive, step 1
- 35) inserting a diskette into the drive, step 2
- 36) drive release button
- 37) removing a diskette
- 38) system with hard disk, controls
- 39) special keys on Swiss and Greek keyboard
- 40) indicator: battery discharged

41) indicator: hard disk heads parked
42) message when using the travel utility
43)- increasing the resistance of the display hinges
45) "
46)- decreasing the resistance of the display hinges
47) "
48)- replacing the batteries
53) "
54)- screens: Customer Test
57) "
58)-
72) keyboards:
58) US ASCII
59) ITALY
60) FRANCE
61) GERMANY
62) SPANISH SPEAKING COUNTRIES
63) SPAIN
64) US ASCII
65) UNITED KINGDOM
66) SWITZERLAND
67) SWEDEN/FINLAND
68) NORWAY
69) DENMARK
70) US ASCII
71) PORTUGAL
72) GREECE

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

Warning: This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

INFORMATION TO THE USER

This equipment generates and uses radio frequency energy and if not installed and used properly, i.e., in strict accordance with the operating instructions, reference manuals and the service manual, may cause interference to radio or television reception. It has been tested and found to comply with the limits for a Class B computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a residential installation.



If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the computer with respect to the receiver.
- Move the computer away from the receiver.
- Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.
- Check that PC board mounting screws, connector screws, and ground wires are well secured.
- Check that PC board slot covers are in place when PC boards are not mounted.

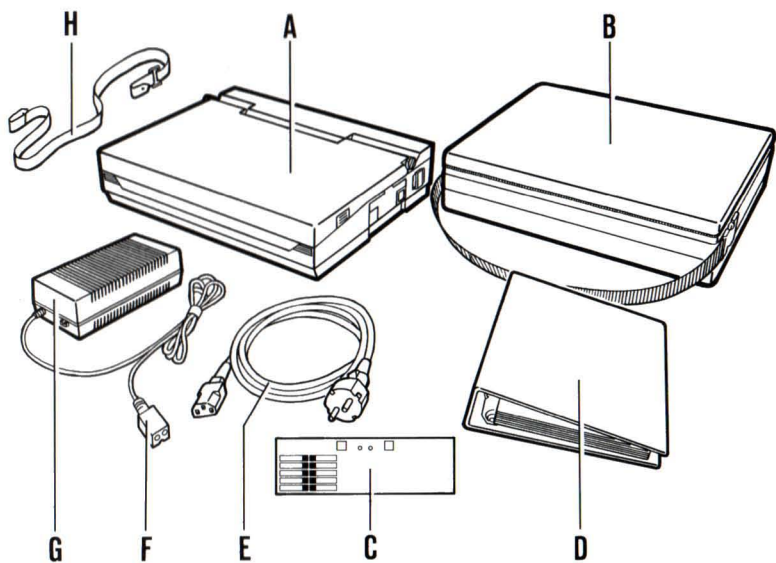
If necessary, the user should consult the dealer for additional suggestions.

The manufacturer cannot be held responsible for the interference caused by unauthorized modifications to the computer.

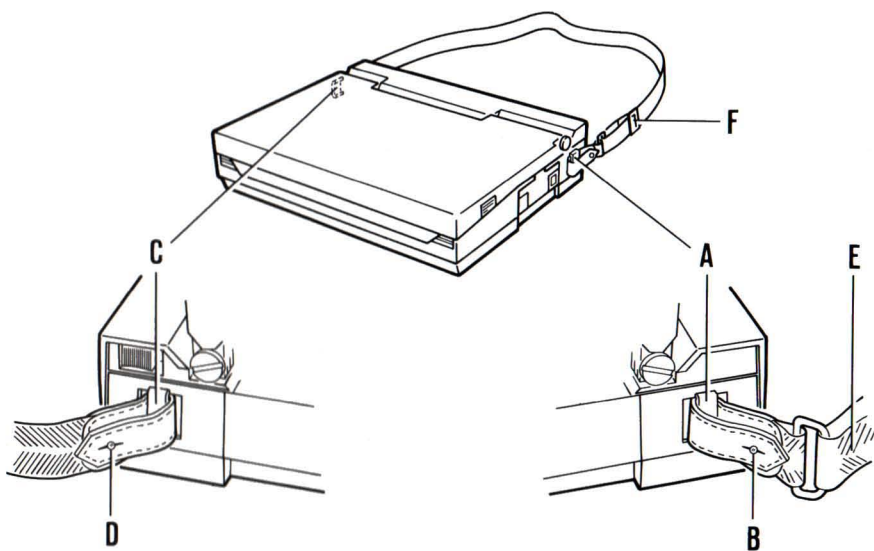
Connecting of peripherals not supplied by the manufacturer to this computer, requires the use of grounded shielded cables with in-line filter if needed.

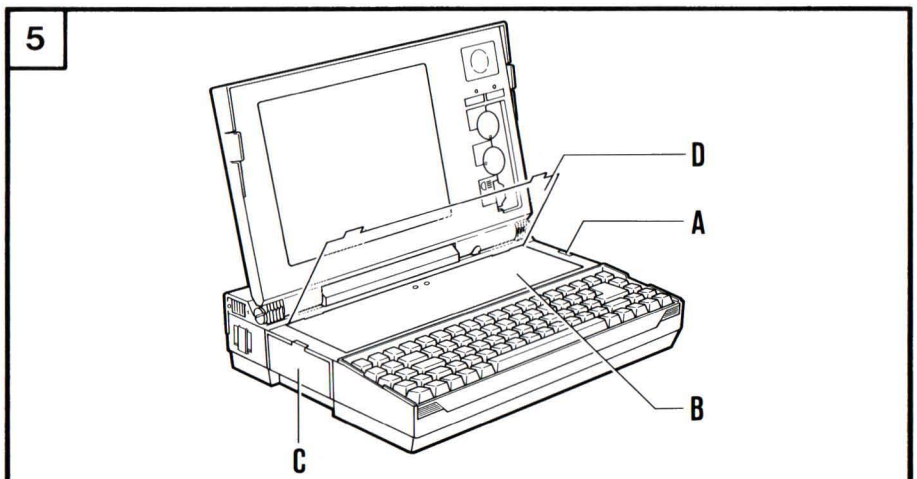
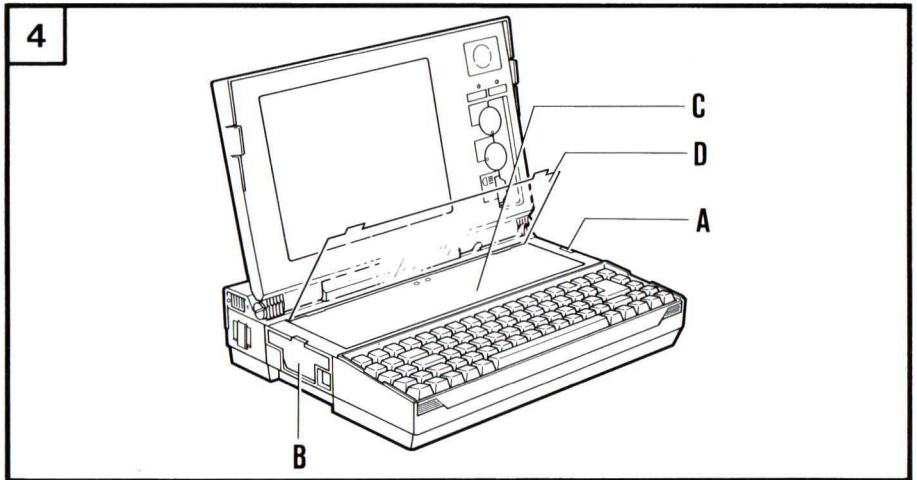
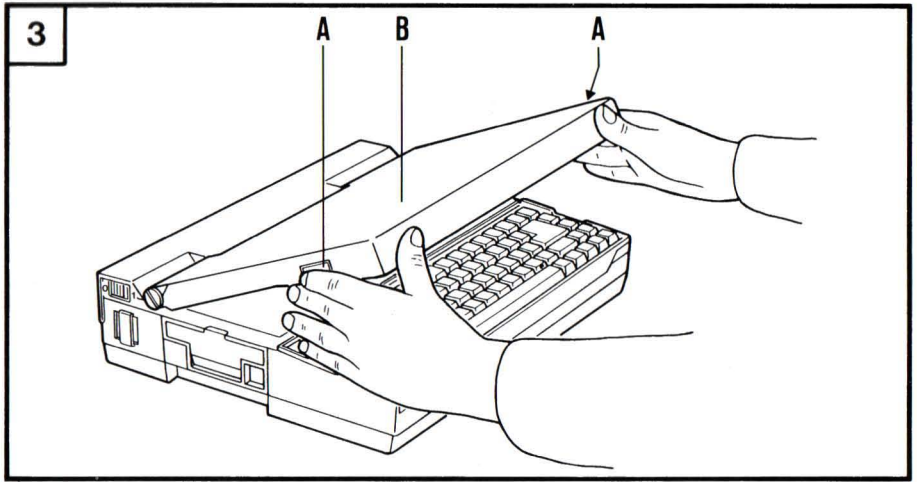
- **ILLUSTRATIONS**
- **FIGURE**
- **ILLUSTRATIONS**
- **ILLUSTRATIONEN**
- **FIGURAS**

1



2

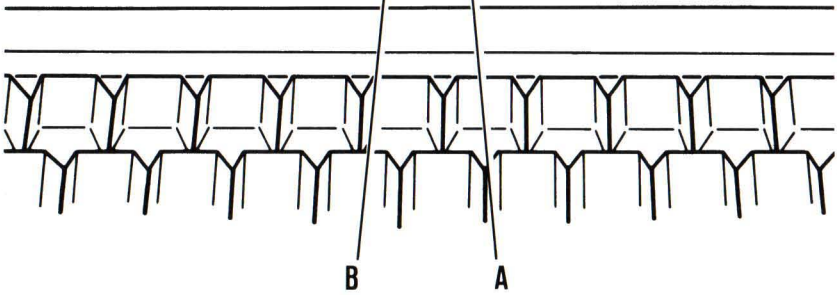




6



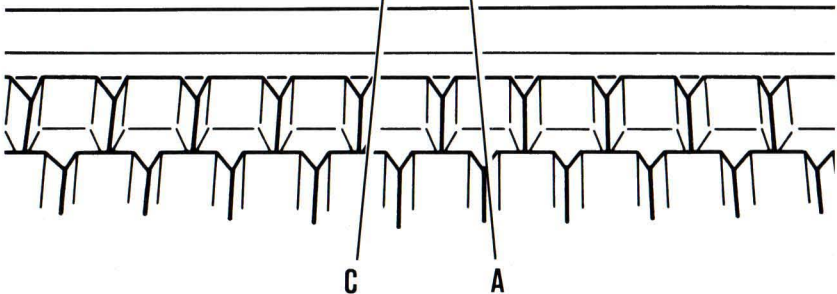
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F 3	F 4
F 5	F 6
F 7	F 8
F 9	F 10



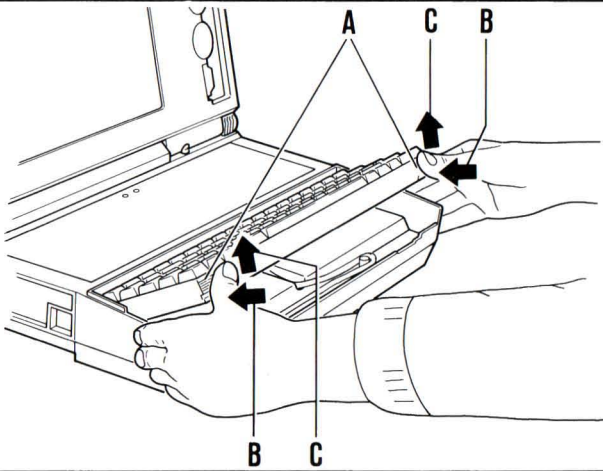
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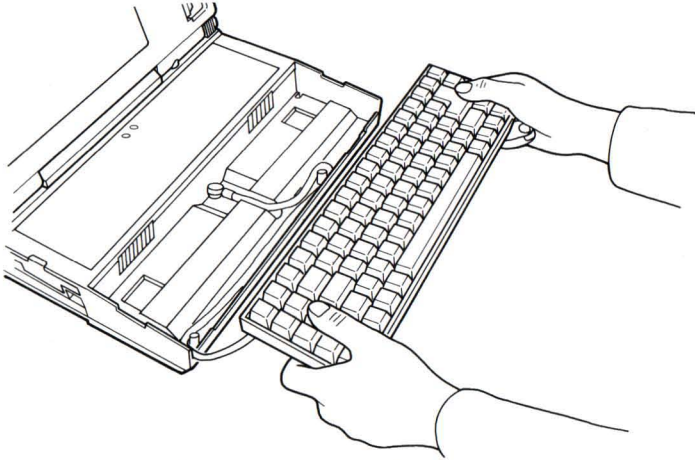
F 1	F 2
F 3	F 4
F 5	F 6
F 7	F 8
F 9	F 10



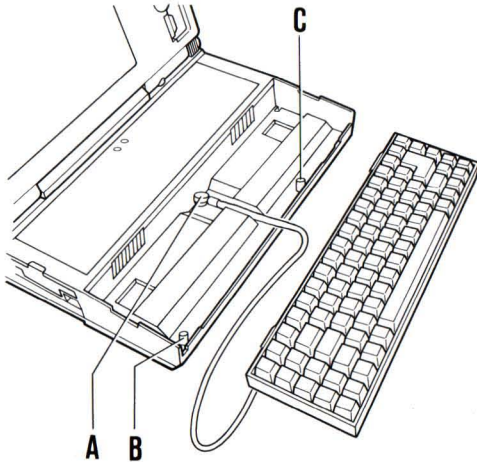
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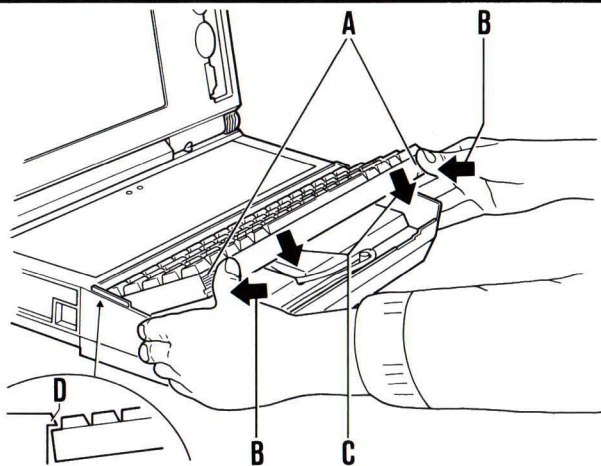
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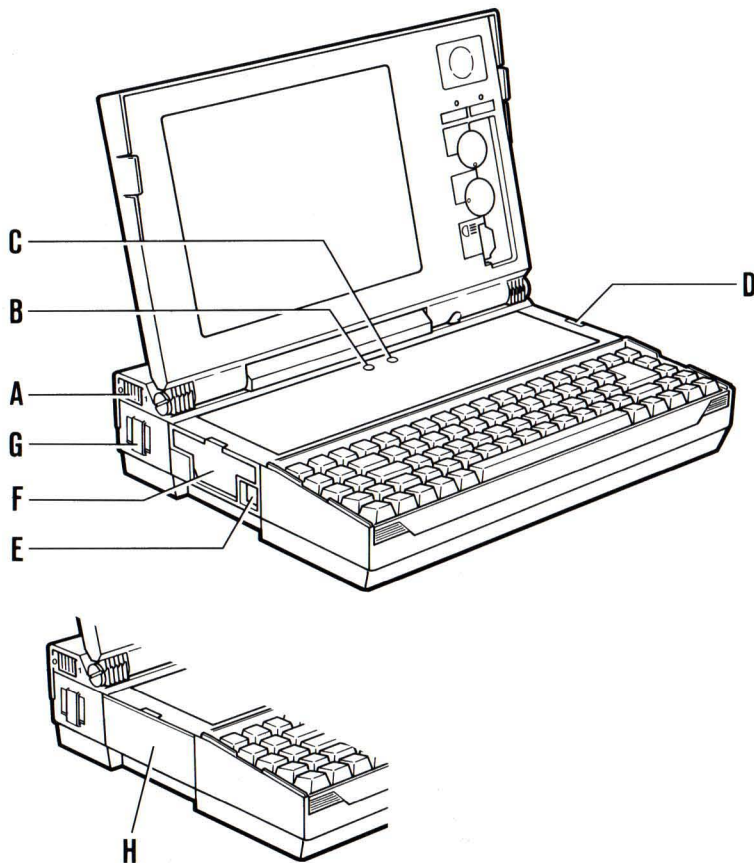
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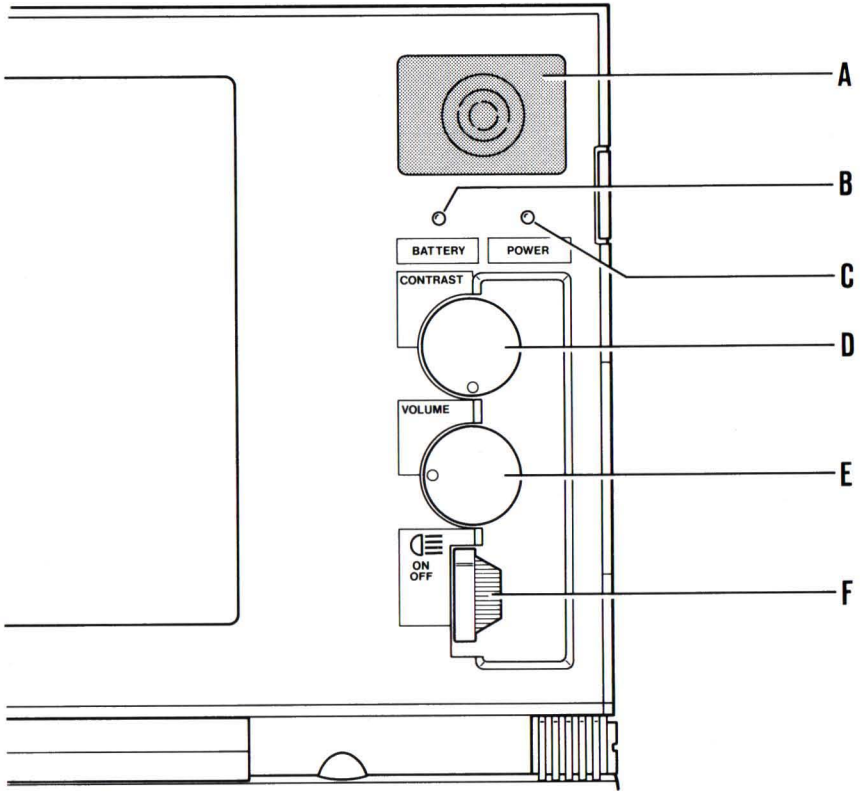
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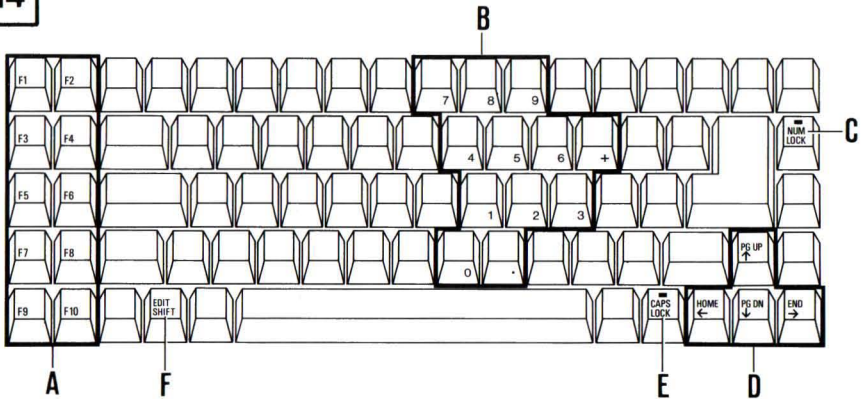
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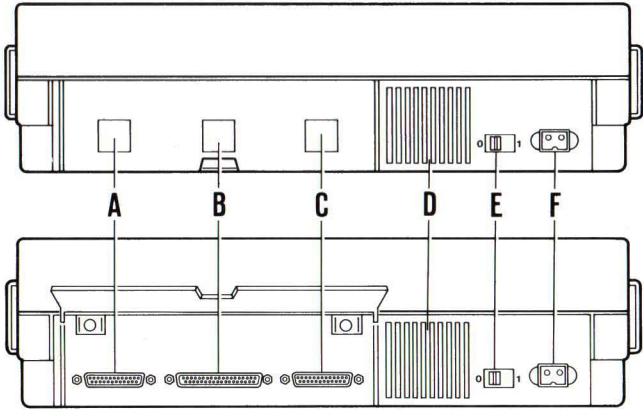
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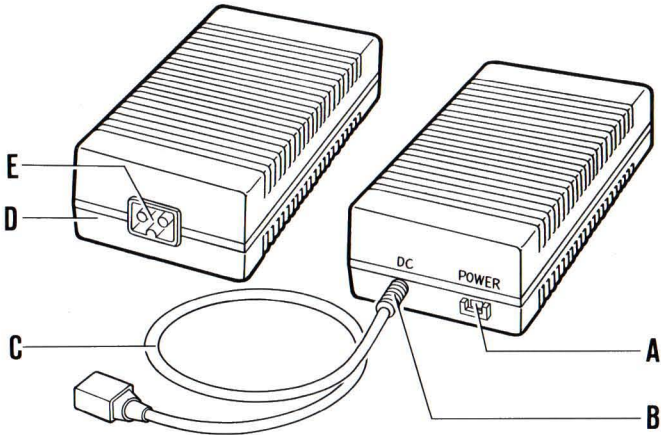
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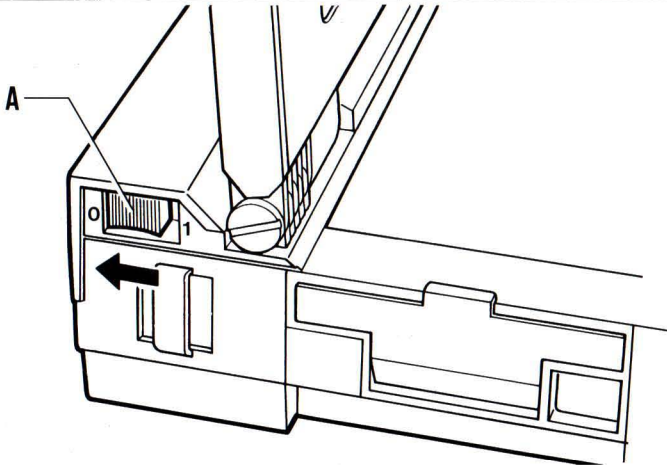
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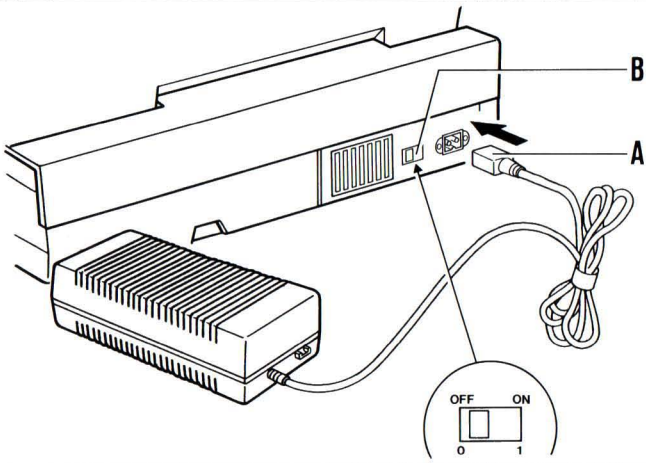
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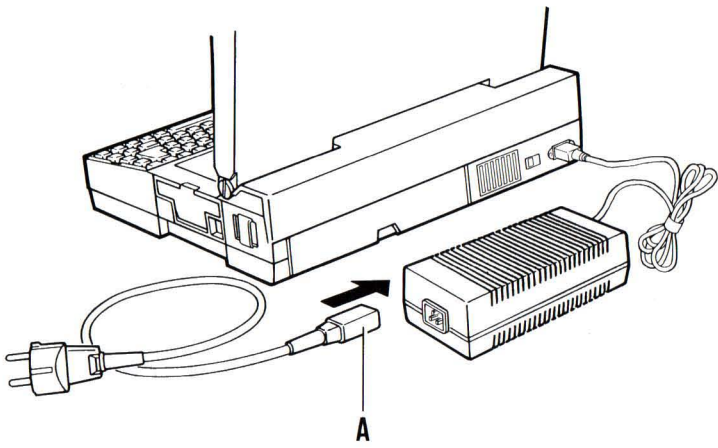
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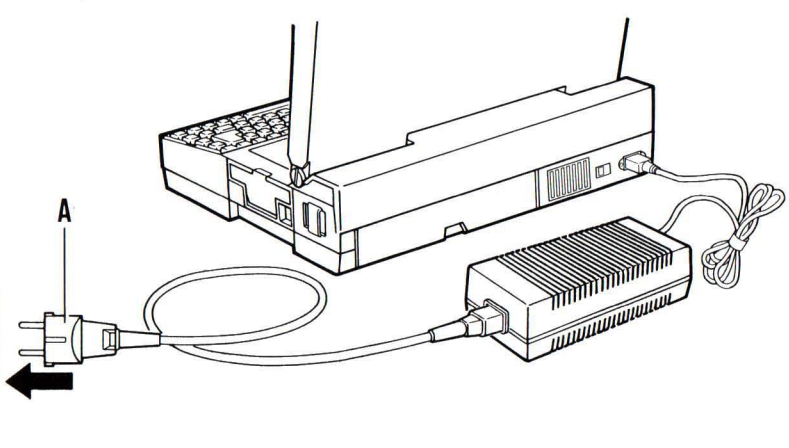
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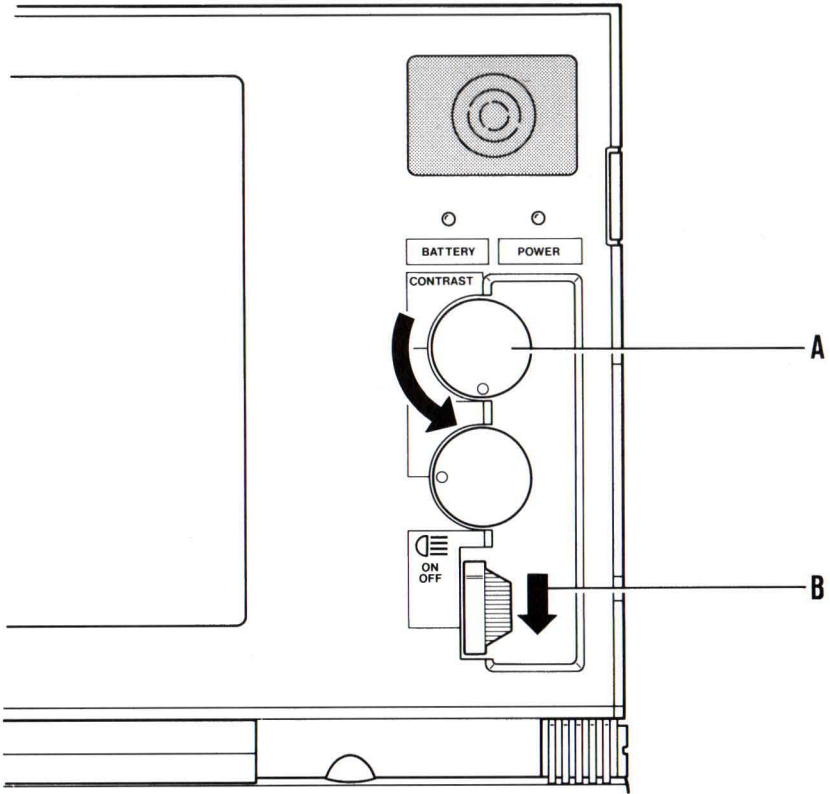
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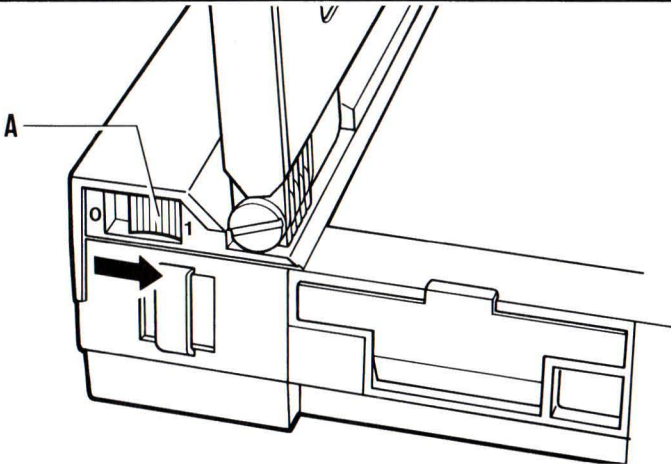
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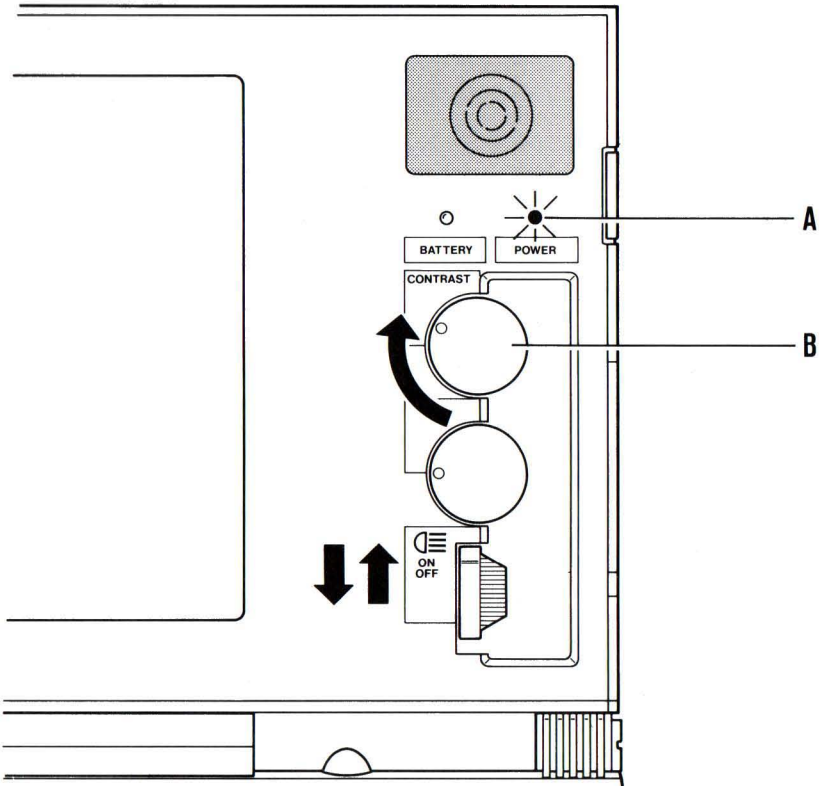
21



22



23



24

CPU (80C88)	Pass
Rom module	Pass
TIMER	Pass

.....

25

CPU (80C88) Pass
Rom module Pass
TIMER Pass

HDU ready

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A

26

CPU (80C88) Pass
Rom module Pass
TIMER Pass

HDU is not available

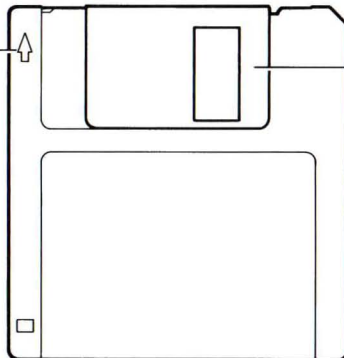
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27

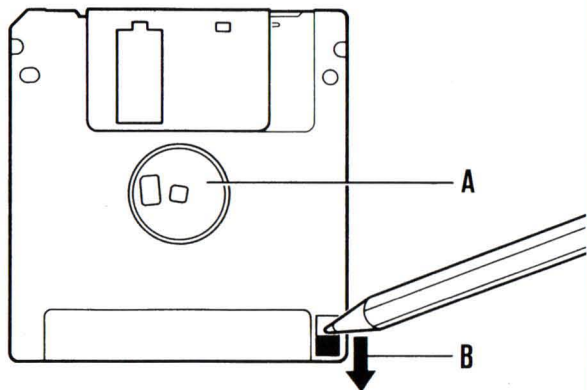
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B



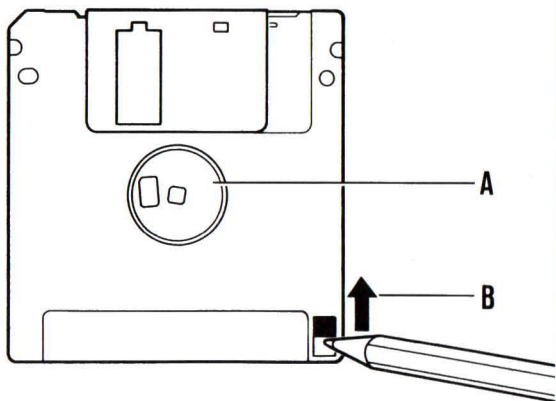
28

WRITE PROTECTED
PROTETTO DA SCRITTURA
PROTEGEE' CONTRE L'ECRITURE
SCHREIBGESCHÜTZT
PROTEGIDO CONTRA ESCRITURA

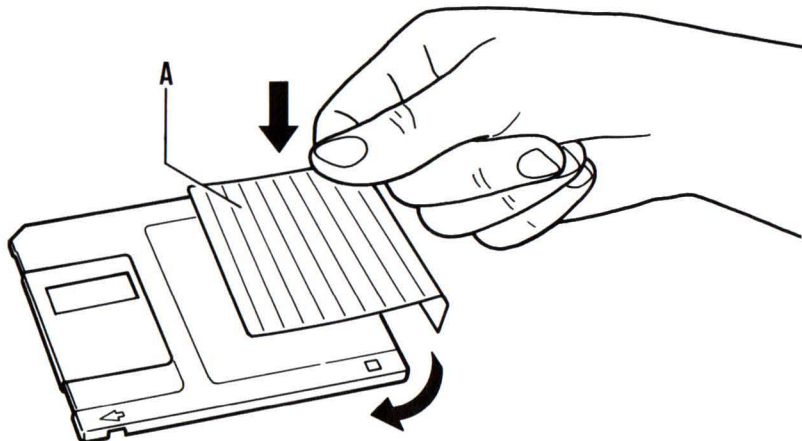


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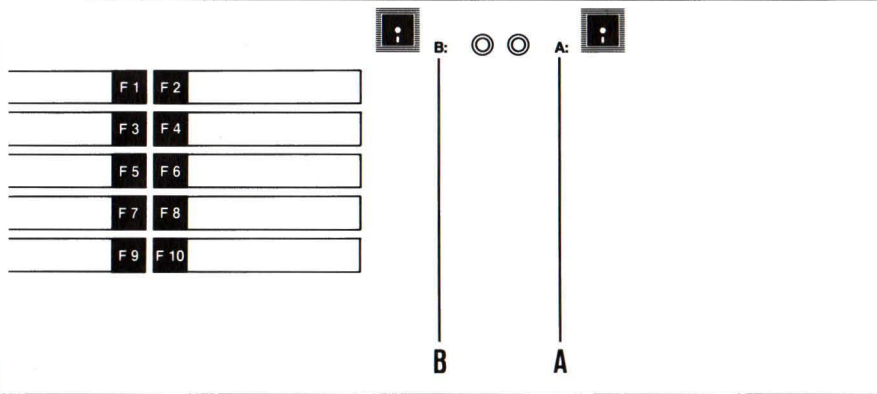
NOT WRITE PROTECTED
NON PROTETTO DA SCRITTURA
NON PROTEGEE' CONTRE L'ECRITURE
NICHT SCHREIBGESCHÜTZT
NO PROTEGIDO CONTRA ESCRITURA



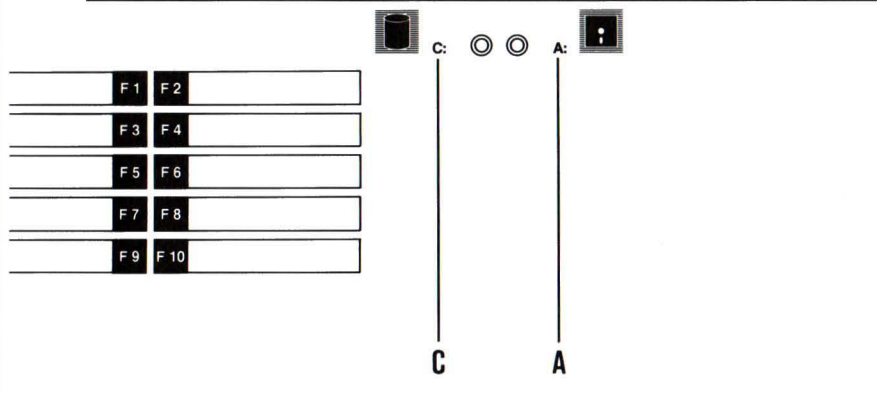
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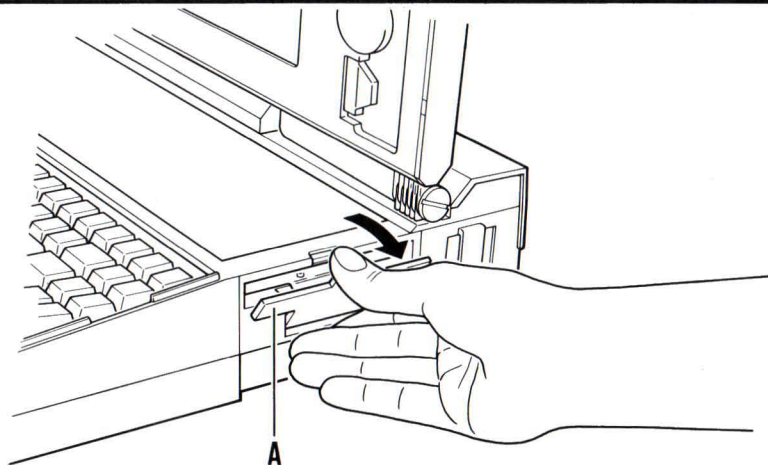
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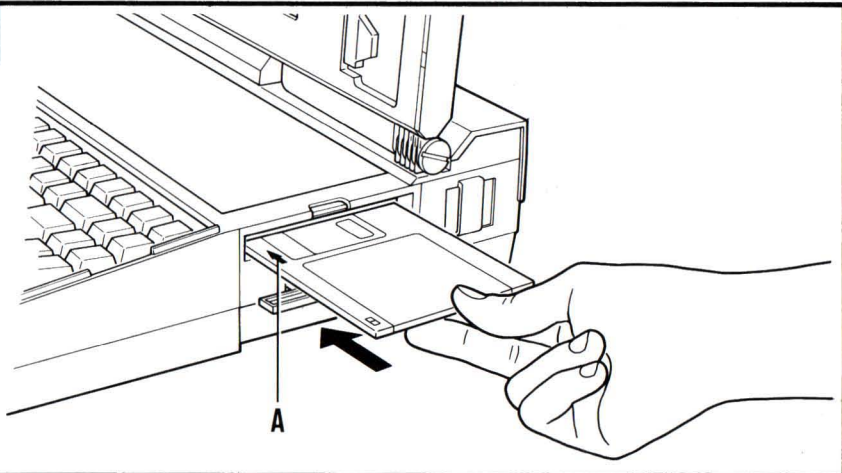
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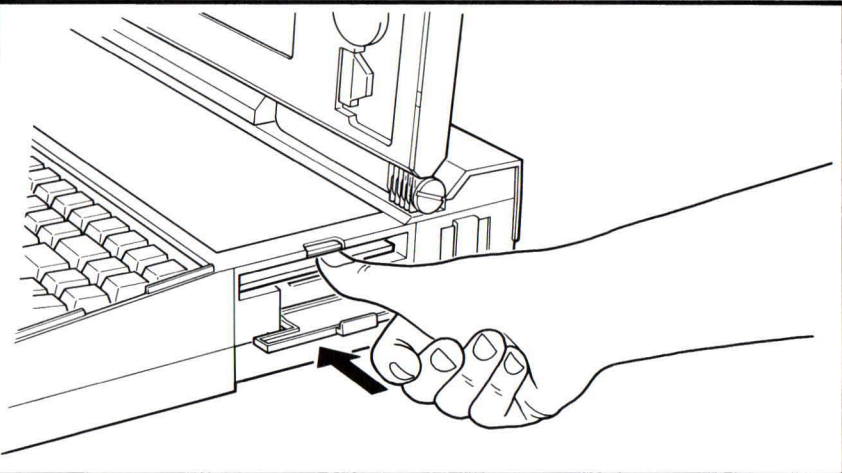
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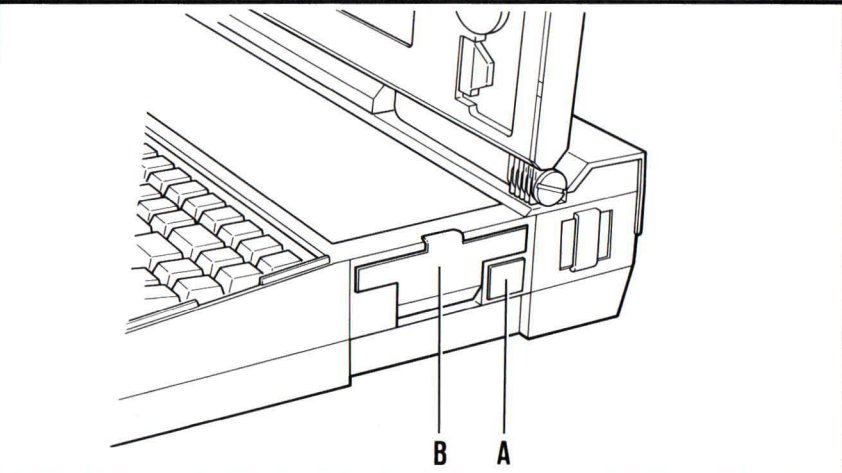
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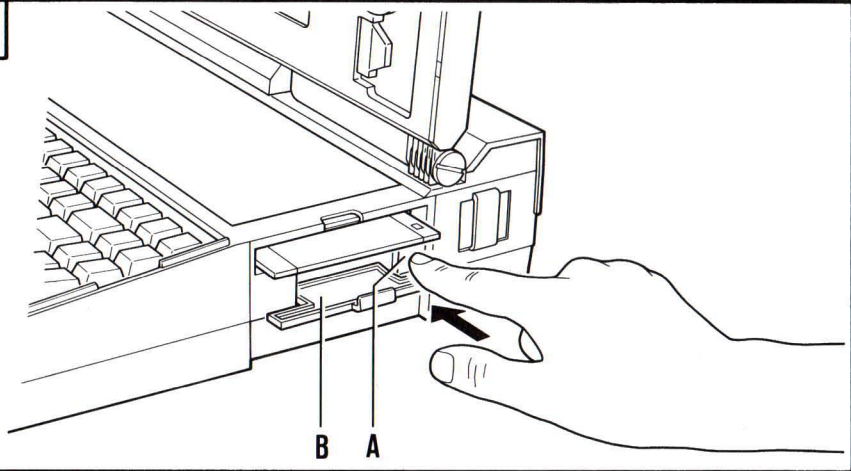
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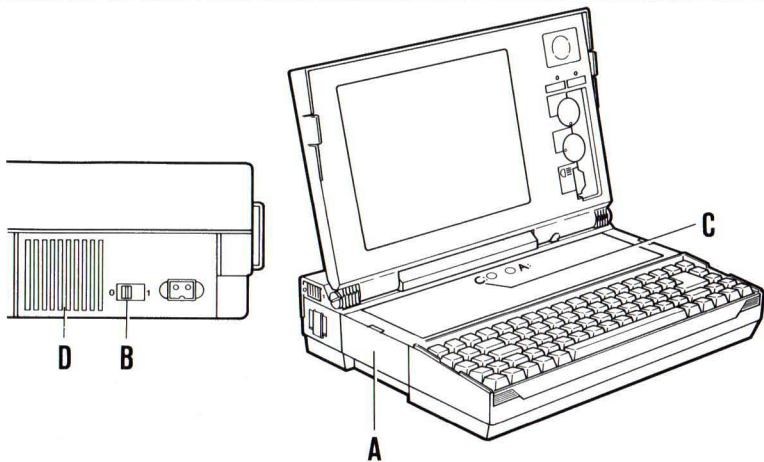
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37



38



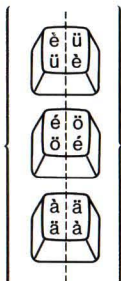
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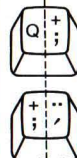
SWISS-GERMAN
SVIZZERA-TEDESCA
SUISSE-ALLEMANDE
SCHWEIZ-DEUTSCH
SUIZA-ALEMANA



B

SWISS-FRENCH
SVIZZERA-FRANCESE
SUISSE-FRANCOFONE
SCHWEIZ-FRANZÖSISCH
SUIZA-FRANCESA

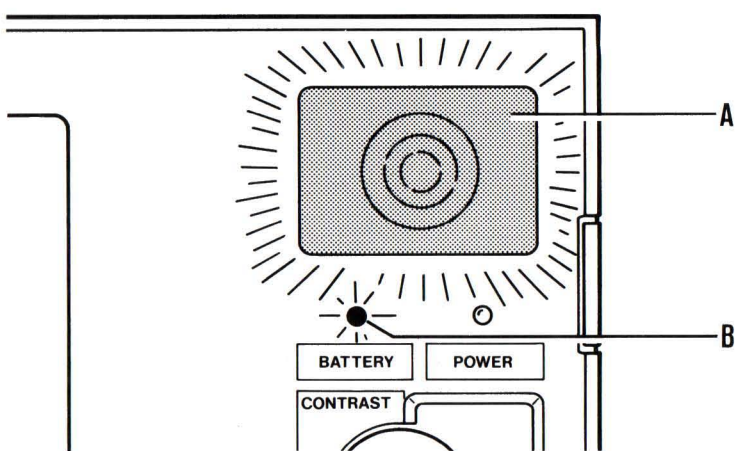
LATIN
LATINA
LATEIN
LATINA



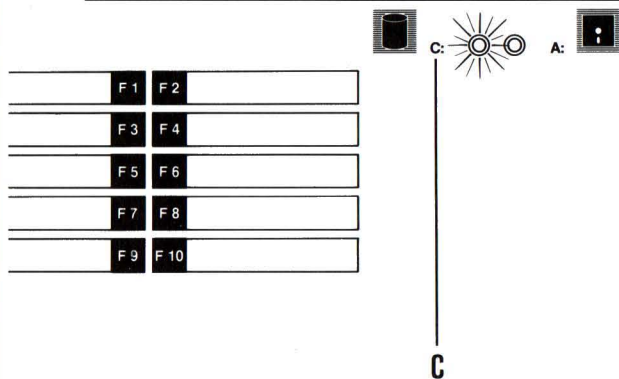
C

GREEK
GRECA
GREC
GRIECHISCH
GRECIA

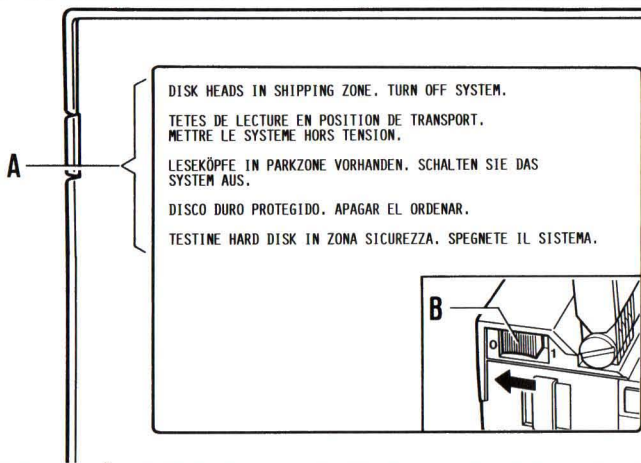
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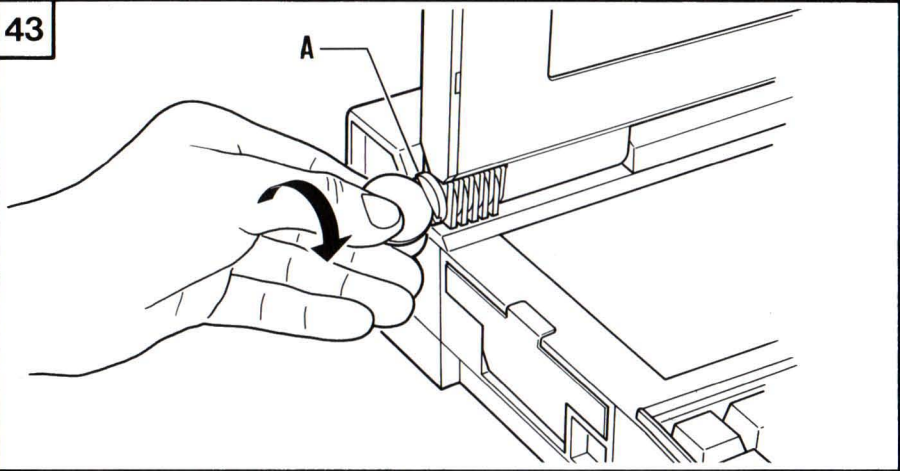
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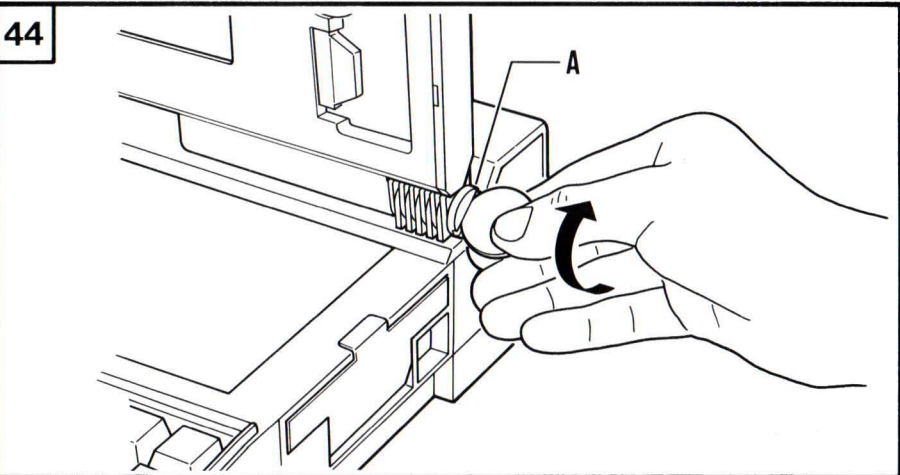
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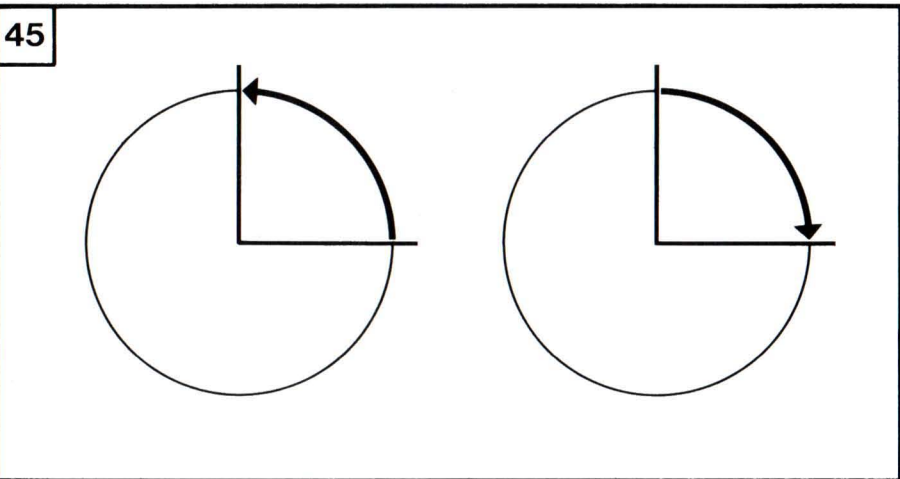
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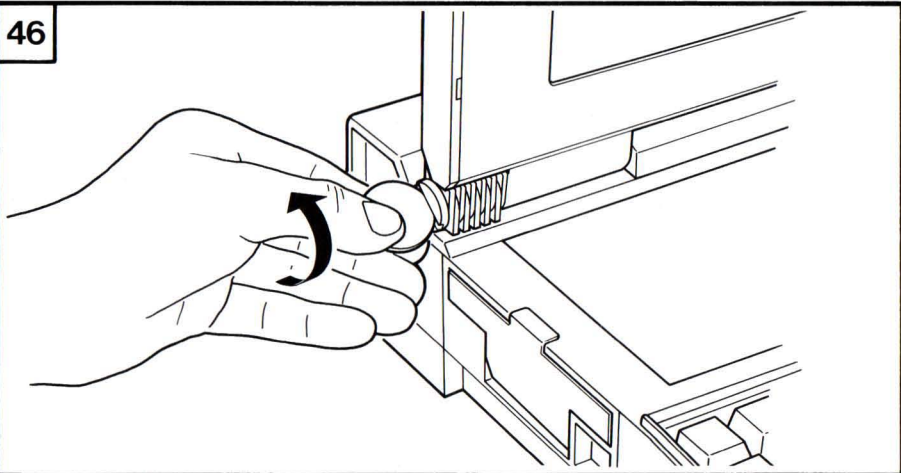
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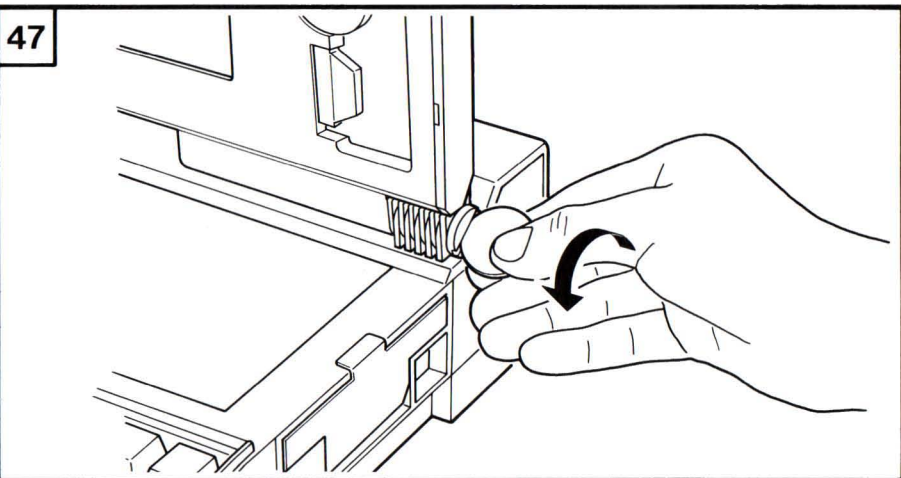
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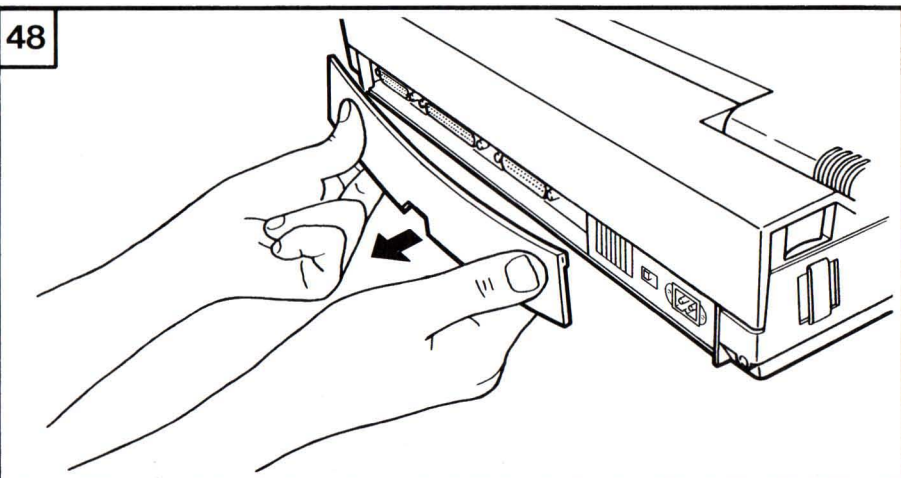
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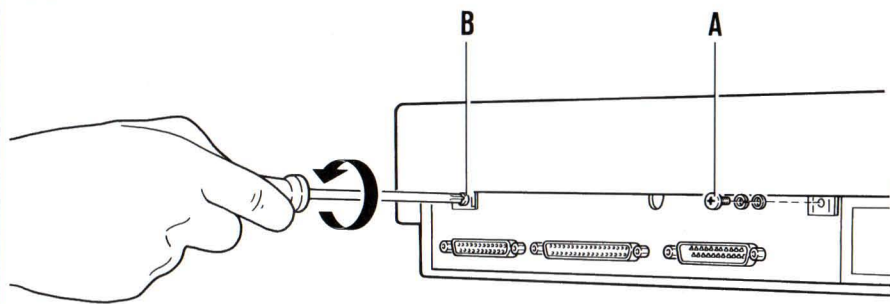
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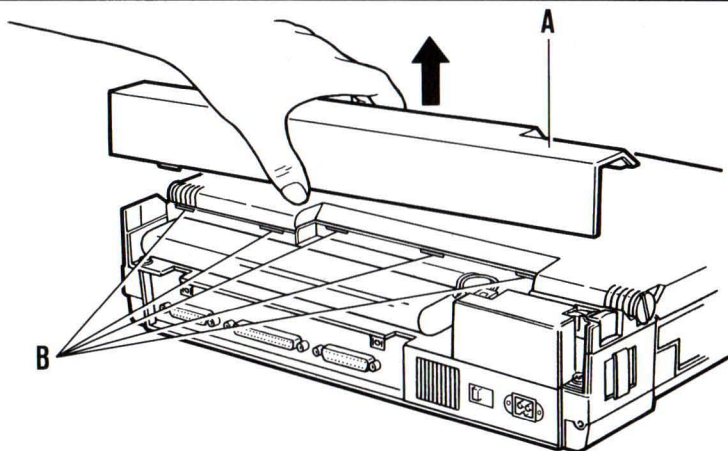
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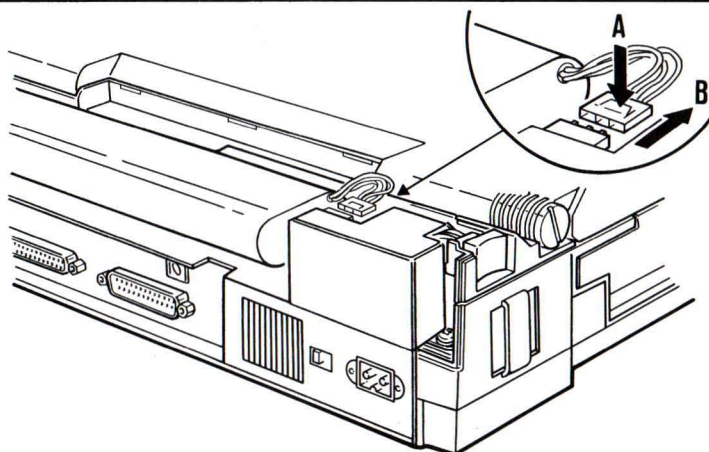
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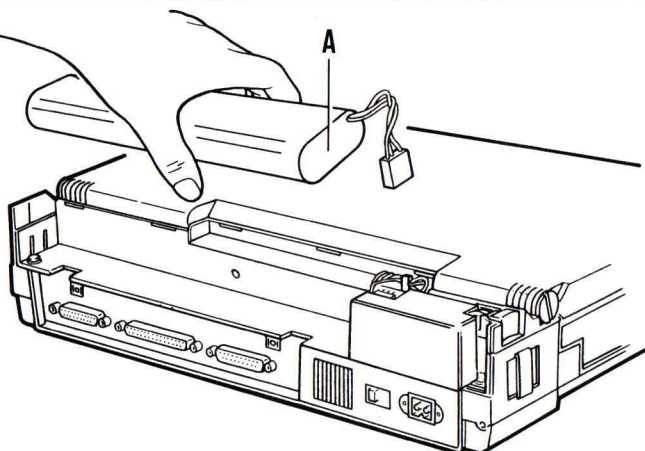
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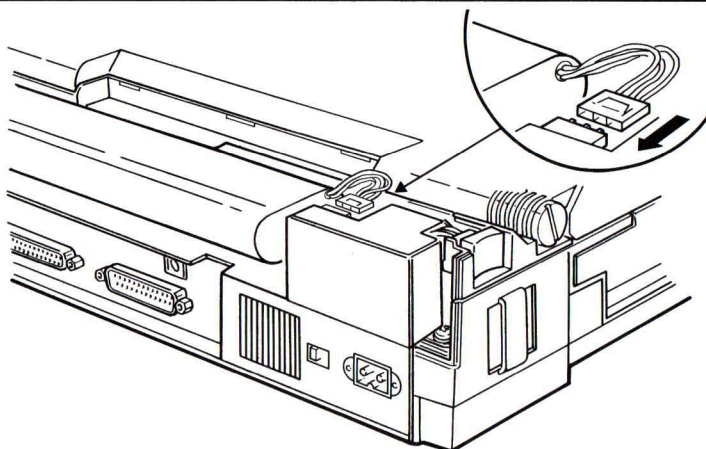
51



52



53



54

O L I V E T T I M 1 5 P L U S

- English - Press ↓ and keys to highlight desired language.
Press ← to select.
- Français - Frappez les touches ↓ et ↑ pour la langue désirée.
Frappez ← pour sélectionner.
- Español - Pulsar sucesivamente la tecla ↓ o ↑ para resaltar el idioma deseado. Luego pulsar ← para seleccionarlo.
- Deutsch - Bewegen Sie sich mit den Cursor-Steuertasten ↓ und ↑ zur gewünschten Landessprache. Wenn diese in Leuchtschrift erscheint, drücken Sie ←.
- Italiano - ↓ e ↑ pongono in alta luminosità il linguaggio desiderato. Premete ← per selezionarlo.

55

M I 5 P L U S B A S I C C U S T O M E R T E S T
Version 1.00 12/87

This program will test the hardware of your M15Plus computer. You should use it if you suspect that the computer is not working properly or if you just want to verify that everything is functioning.

See your Olivetti Service Representative if any failure occurs during these tests.

Press ← to continue...

56

M I 5 P L U S . B A S I C C U S T O M E R T E S T
Version 1.00 12/87

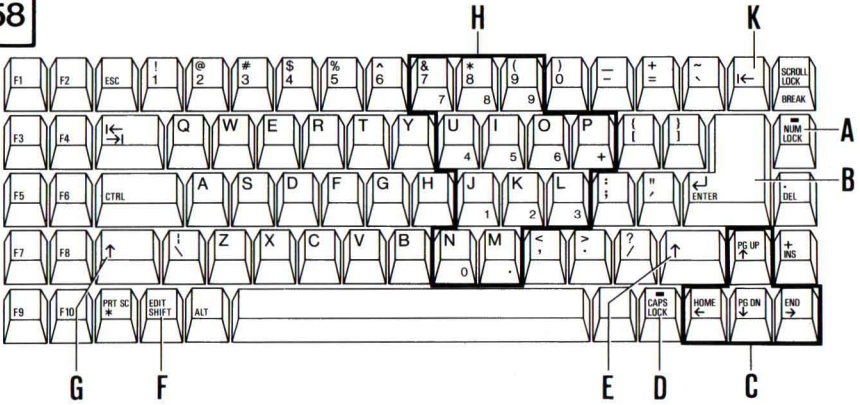
Choose one of the following options. Use the arrow keys (↑ and ↓) to highlight your choice. Press ← to select the option. Press the <ESC> key to exit.

Test One Module
System Checkout
Park Disk Heads

57

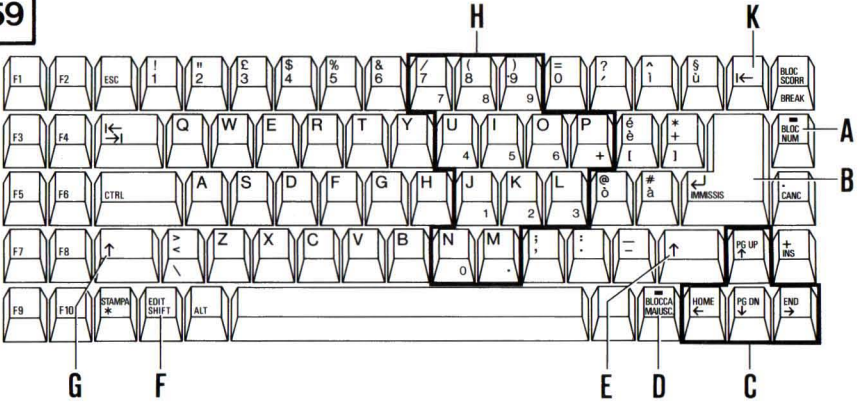
DISK HEADS IN SHIPPING ZONE FOR ALL DRIVES PRESENT
TURN OFF SYSTEM

58



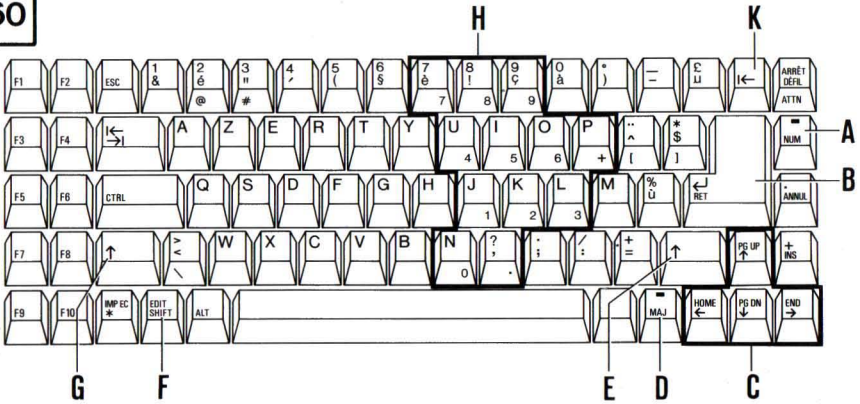
US-ASCII

59



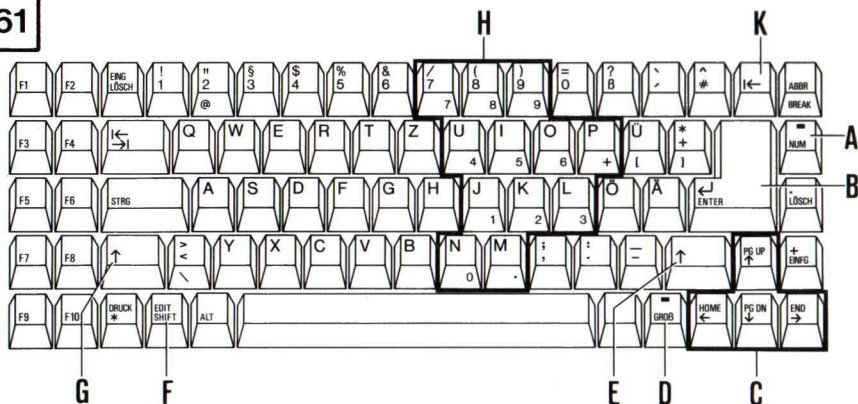
Italy, Italia, Itale, Italian, Italia

60



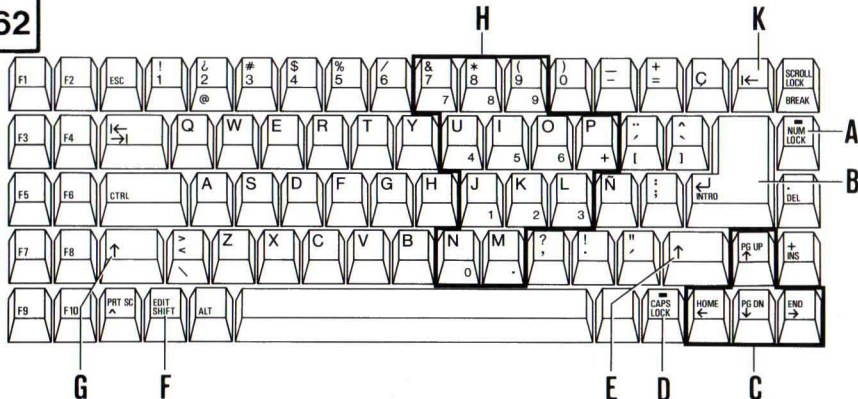
France, Francia, France, Frankreich, Francia

61

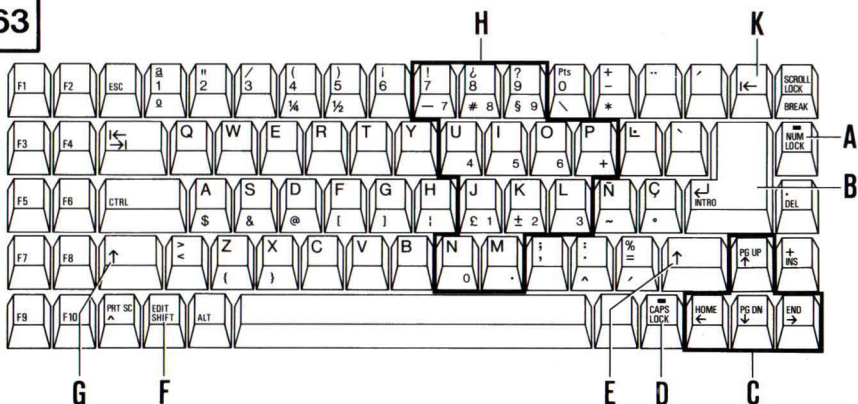


Germany, Germania, Allemagne, Deutschland, Alemania

62

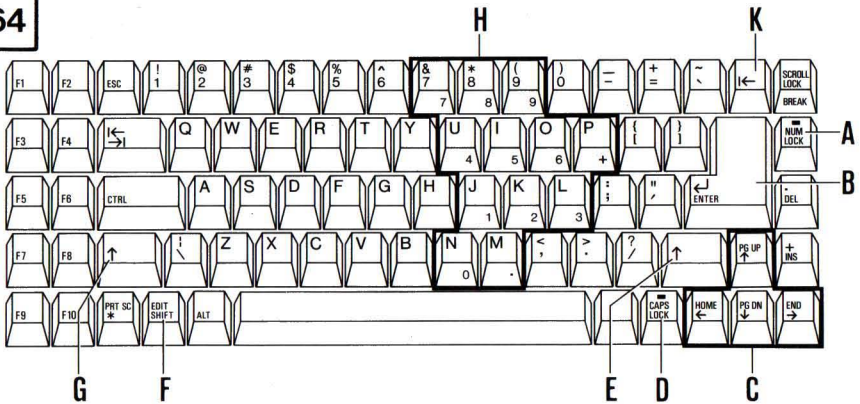
Spain International, Spagna Internazionale, Pays Hispanophones,
Spanien International, Países de Habla Hispana

63



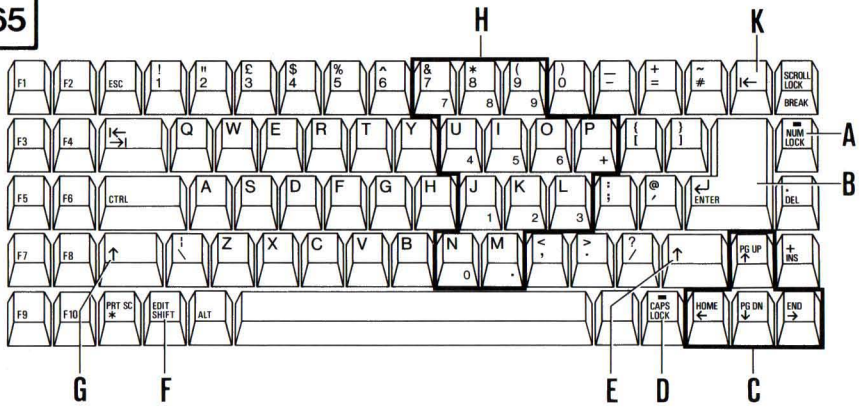
Spain, Spagna, Espagne, Spanien, España

64



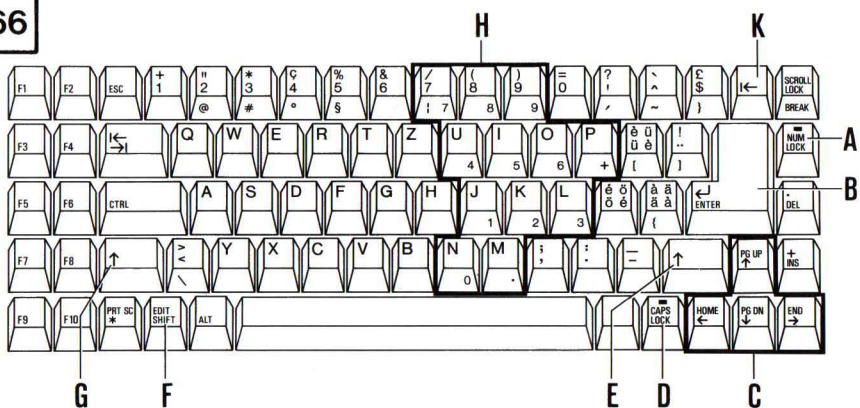
US-ASCII

65

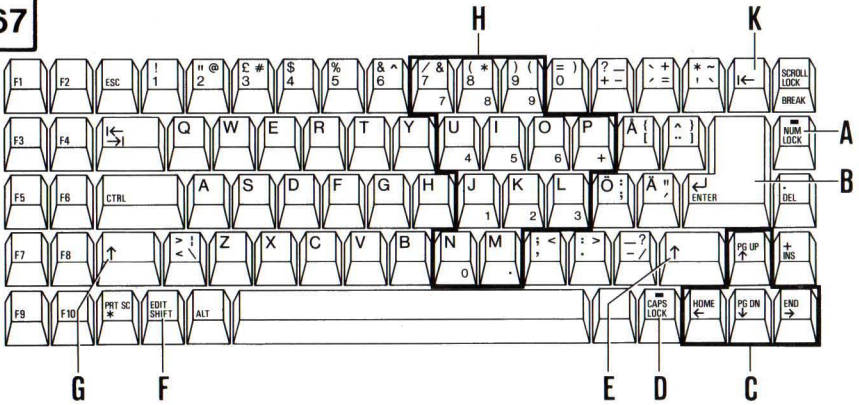


United Kingdom, Inghilterra, Royaume Uni, Großbritannien, Reino Unido

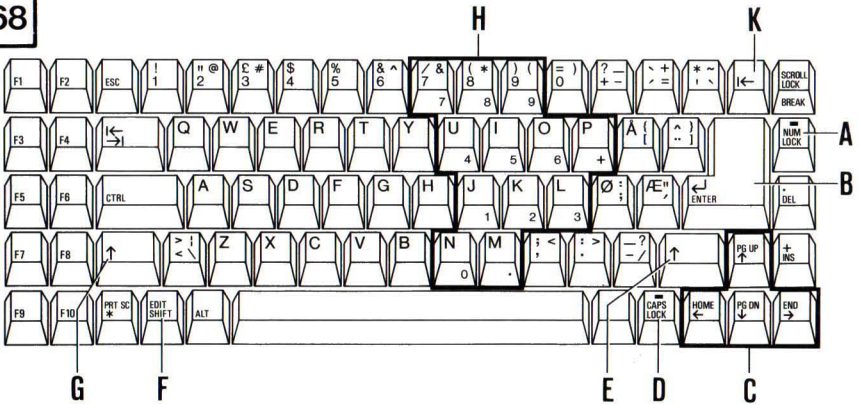
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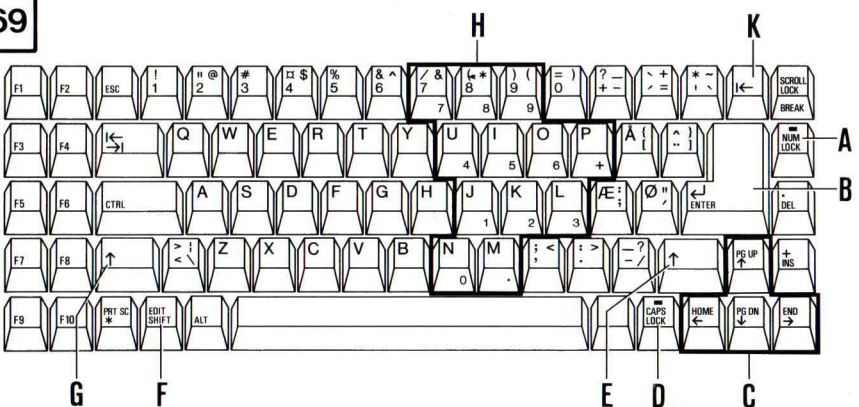
Switzerland, Svizzera, Suisse, Schweiz, Suiza

67

Sweden/Finland, Svezia/Finlandia, Suede/Finlande, Schweden/Finnland, Suecia/Finlandia

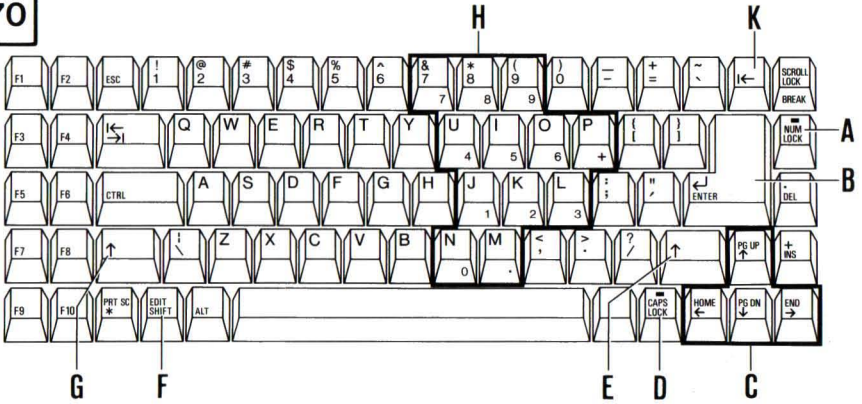
68

Norway, Norvegia, Norvege, Norwegen, Noruega

69

Denmark, Danimarca, Danmark, Dänemark, Dinamarca

70



Code 01200001 W
Printed in Italy



olivetti