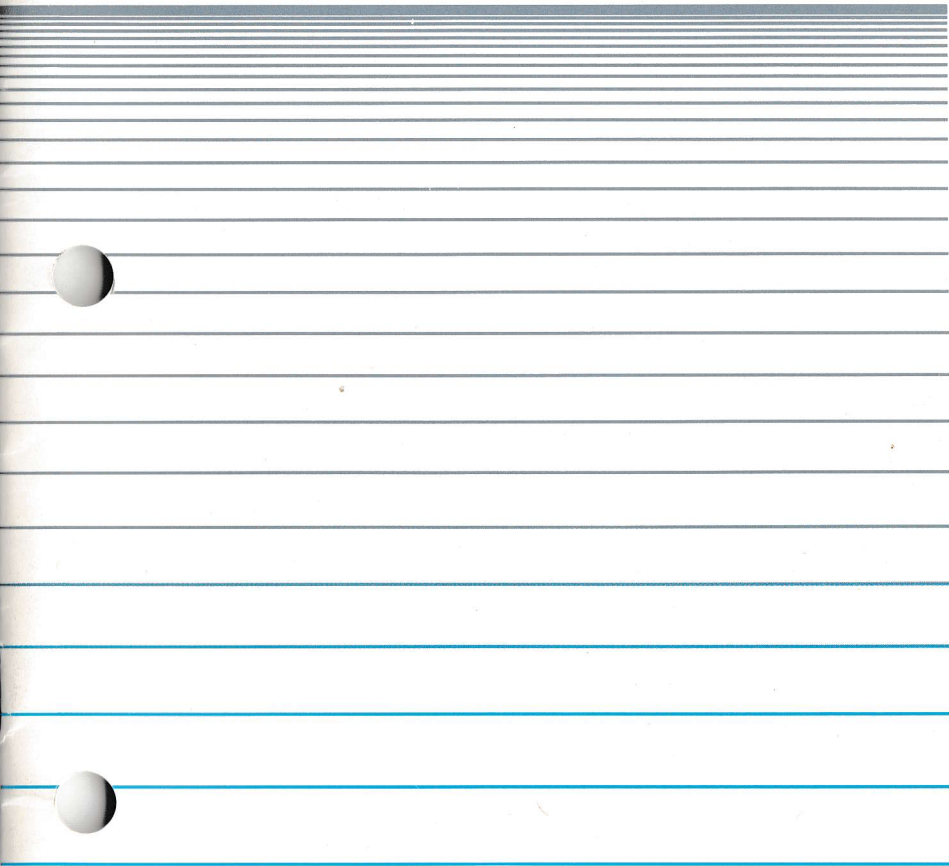


Professional 101 Keyboard



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THE QUALITY GOES IN BEFORE THE NAME GOES ON

REGULATORY INFORMATION

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 with radio and TV reception.

This equipment generates and uses radio frequency energy for its operation and if not installed and used properly, that is, in strict accordance with the instruction manual, may cause interference with radio and television reception. It has been tested and found to comply with the RF emission limits for a Class B computing device which is intended to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference with 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:

- Move the computing device away from the receiver being interfered with.
- Relocate (turn) the computing device with respect to the receiver.
- Reorient the receiver's antenna.
- Plug the computing device into a different AC outlet so that the computing device and receiver are on different branch circuits.
- Disconnect and remove any I/O cables that are not being used. (**Unterminated** I/O cables are a potential source of high RF emission levels.)
- Unplug and remove any circuit boards that are not being used. (Here again, **unterminated** cards can be a source of potential interference.)
- Be certain that the computing device is plugged into grounded outlet receptacles. (Avoid using A/C cheater plugs. Lifting of the power cord ground may increase RF emission levels and may also present a lethal shock hazard to the user.)

If you need additional help, consult your dealer or ask for assistance from the manufacturer. Customer service information may be found in the In Case of Difficult section of the manual. You also may find the following booklet helpful. How to Identify and Resolve Radio-TV Interference Problems. This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402 — Stock No. 0004-000-000345-4.

Professional 101 Keyboard

User's Guide

595-3937-04
ZKB-2

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Zenith Data Systems Corporation
St. Joseph, Michigan 49085

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Introduction

The Professional 101 Keyboard, shown in Figure 1, can be installed into all models of the Z-100 PC Series and Z-200 PC Series, including the Z-138, Z-148, Z-151, Z-152, Z-157, Z-158, Z-159, Z-160, Z-241, and Z-248.

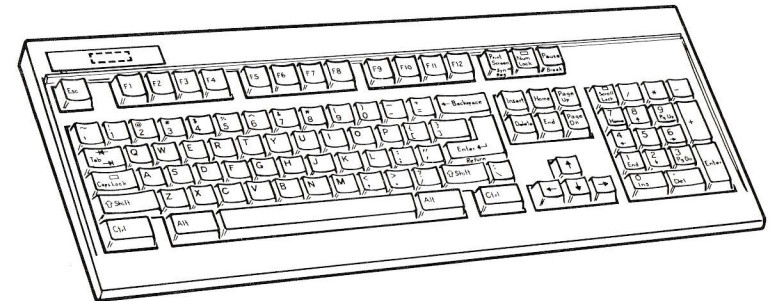


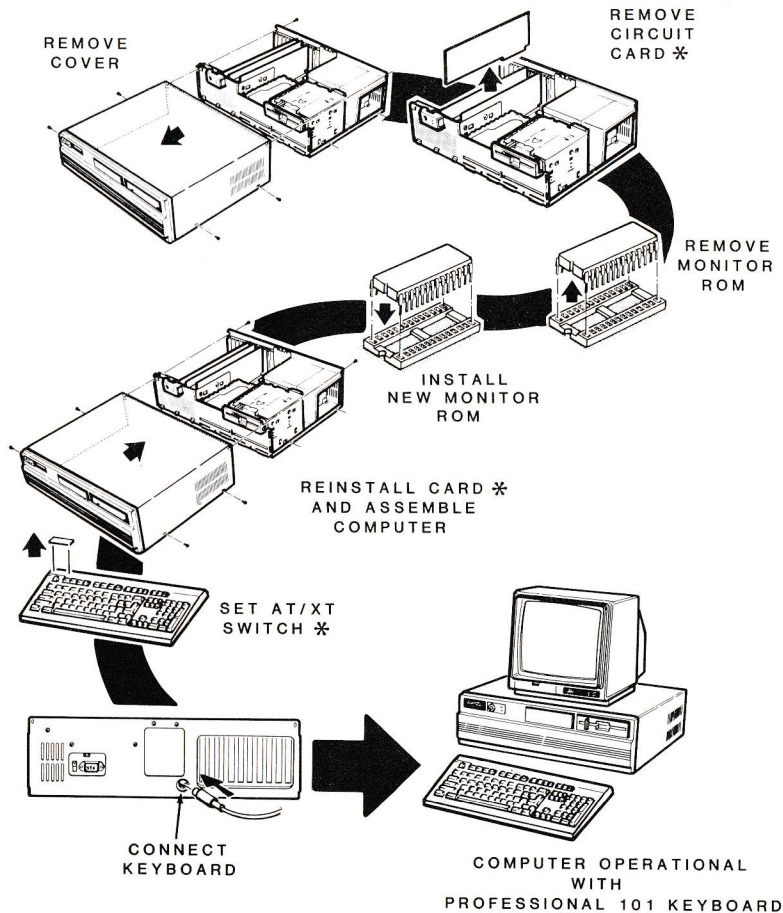
Figure 1. Professional 101 Keyboard

Take a few minutes to read through this manual before you install the keyboard and its associated ROM IC. This manual will guide you through the installation of the ROM IC and the keyboard. The Keyboard Operation section explains how the keyboard works. Before you attempt installation:

- Be sure your computer operates properly.
- If a hard disk drive is installed in your computer, run the SHIP utility, or equivalent, before you proceed (refer to the MS-DOS documentation for instructions.)
- Disconnect the computer power cord from the AC outlet.
- Disconnect any peripherals that are attached to the computer.
- Have a 1/4-inch flat blade screwdriver and a phillips screwdriver ready.

Installation

Two things are required to install the keyboard: replacement of the Monitor ROM IC inside the computer, and connection of the Professional 101 Keyboard. Refer to Figure 2 for an overview of the installation process.



* THIS STEP MAY NOT BE NECESSARY FOR ALL COMPUTERS.

Figure 2. Overview of Installation

Installing the Monitor ROM IC

1. Remove the computer cover by following the instructions in the Owner's Manual for your computer.
2. Locate the CPU, CPU/memory, or system card in your computer (refer to the Owner's Manual for your computer).
3. Identify the Monitor ROM IC on the CPU, CPU/memory, or system card.

Refer to Table 1 and identify the printed circuit board (PCB) illustration (Figures 3 - 12) that applies to your computer. Refer to that illustration for your computer to locate the ROM IC (or ICs) to be replaced. Refer to the "order number" column in Table 1 for the orderable part number of your IC (or ICs).

Table 1: Monitor ROM IC Identification

CIRCUIT CARD	PCB PART PART NO.	COMPUTER MODEL	MONITOR ROM IC (or ICs)	
			COMPONENT NUMBER	ORDER NUMBER
CPU	85-2889-XX (Fig.3)	Z-151, Z-161	U207,	444-229-16*
			U208	444-260-16*
CPU	85-3017-XX (Fig.3)	Z-151, Z-152, Z-161	U207,	444-229-16*
			U208	444-260-16*
CPU	85-3000-XX (Fig.4)	Z-151, Z-161	U207,	444-229-16*
			U208	444-260-16*
CPU	85-3330-XX (Fig.5)	Z-159	U108	ZCA-11
CPU	85-3116-XX (Fig.6)	Z-138, Z-148	U477	444-380-5*
System	85-3305-XX (Fig.7)	Z-157	U137	444-561-3*
CPU/	85-3118-XX (Fig.8)	Z-158	U237	444-358-6*
memory				
CPU/	85-3162-XX (Fig.9)	Z-158	U237	444-358-6*
memory				
CPU/	85-3200-XX (Fig.10)	Z-158	U237	444-358-6*
memory				
CPU/	85-3119-XX (Fig.11)	Z-241	U216 and	ZCA-10**
RAM			U217	
CPU/	85-3261-XX (Fig.12)	Z-248	U216 and	ZCA-10**
memory			U217	

* Later version ROM ICs are also applicable. These ROM ICs are available only from the Parts Replacement Department at the St. Joseph, Michigan location.

** Refer to the Installation Guide supplied with the ZCA-10 for all instructions to install a 101-key keyboard in your Z-200 Series computer.

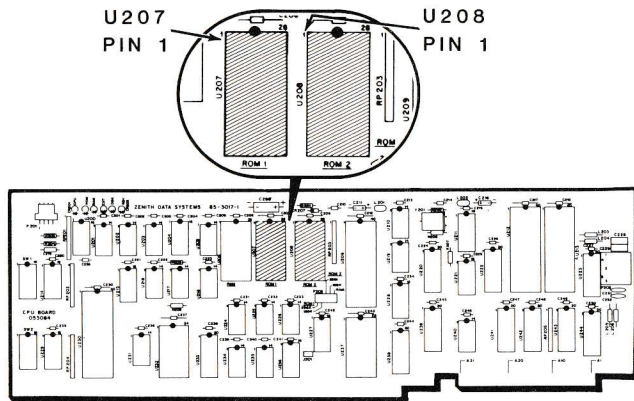


Figure 3. CPU Card (PCB Part No. 85-2889-XX and 85-3017-XX)

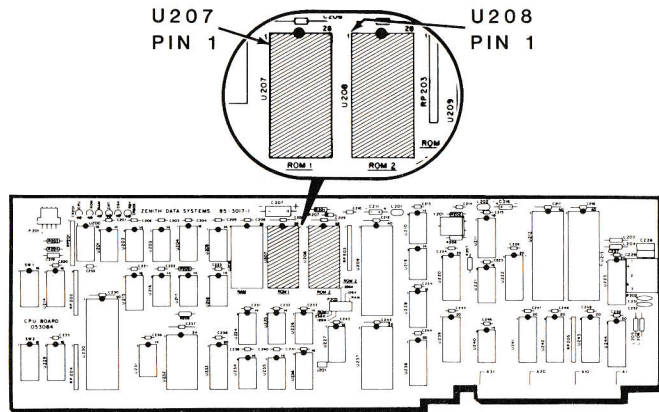


Figure 4. CPU Card (PCB Part No. 85-3000-XX)

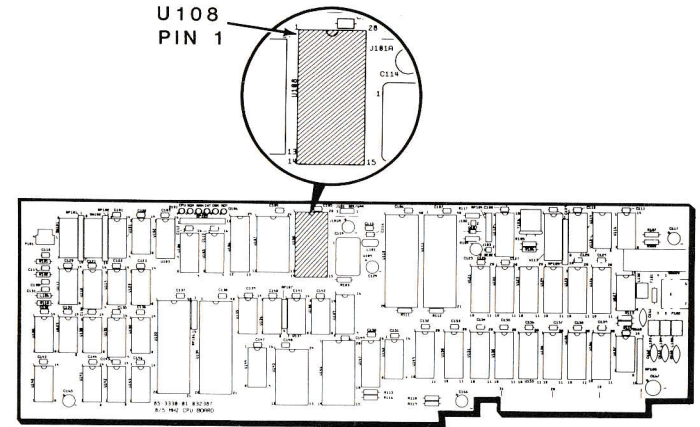


Figure 5. CPU Card (PCB Part No. 85-3330-XX)

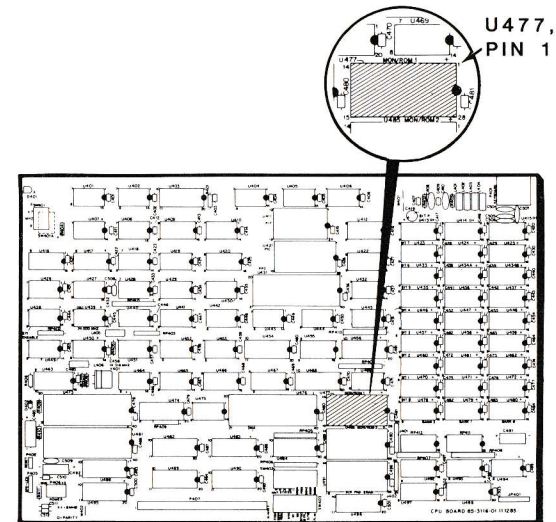


Figure 6. CPU Card (PCB Part No. 85-3116-XX)

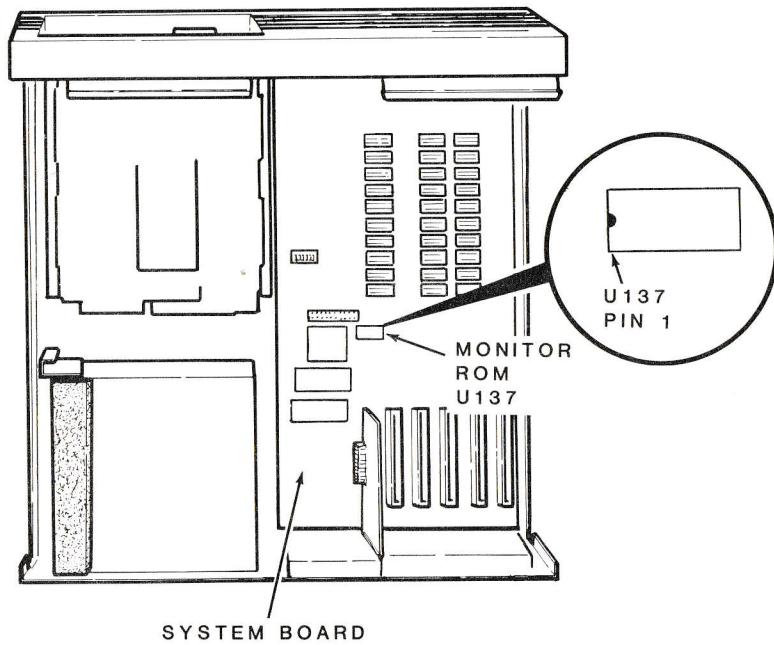


Figure 7. System Card (PCB Part No. 85-3305-XX)

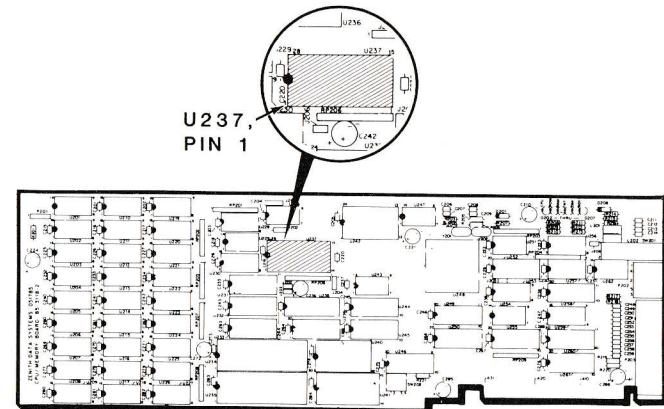


Figure 8. CPU/Memory Card (PCB Part No. 85-3118-XX)

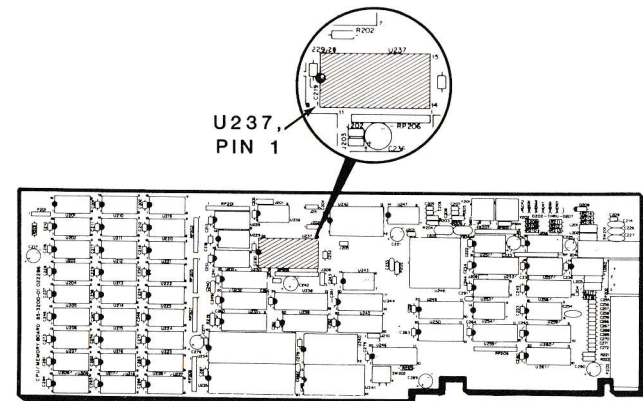


Figure 9. CPU/Memory Card (PCB Part No. 85-3162-XX)

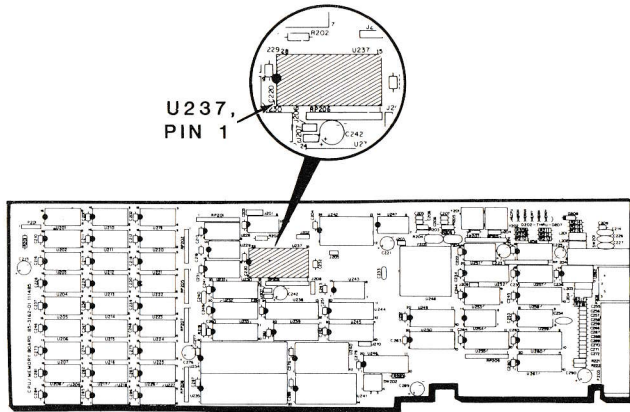


Figure 10. CPU/Memory Card (PCB Part No. 85-3200-XX)

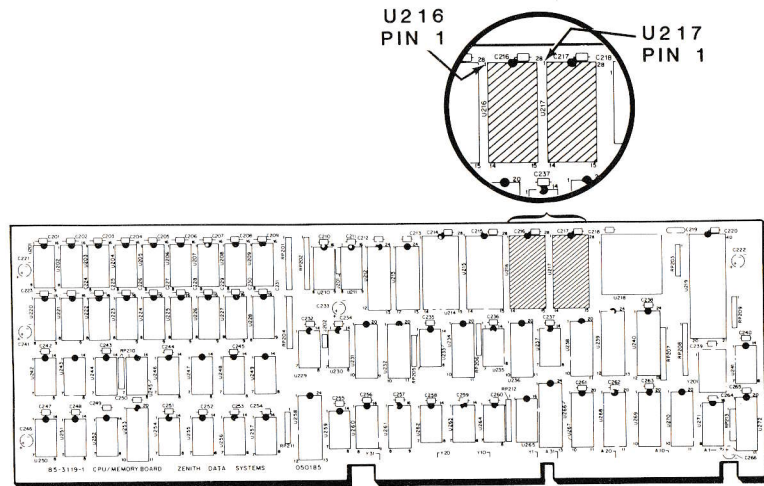


Figure 11. CPU/RAM Card (PCB Part No. 85-3119-XX)

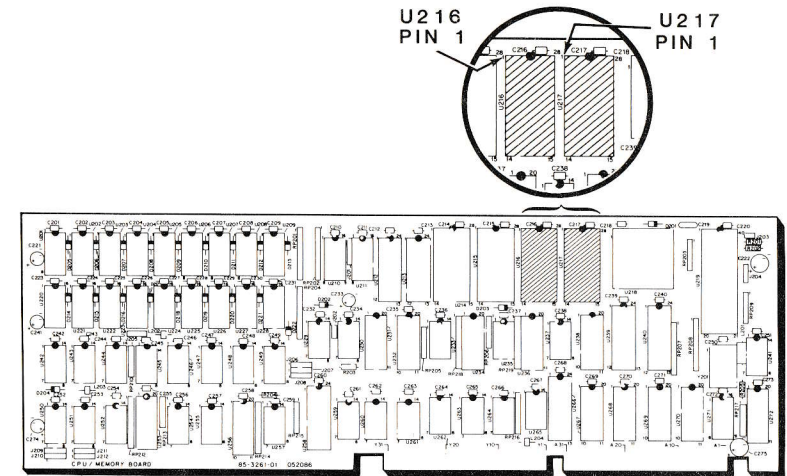


Figure 12. CPU/Memory Card (PCB Part No. 85-3261-XX)

- Remove the circuit card from the computer (refer to the Owner's or Operator's Manual for your computer).

NOTE: Removal of the card is not necessary if the ROM IC is accessible with the card installed. For example, the Z-157 computer has the Monitor ROM IC on its system board (see Figure 7). It is not necessary to remove the system board, but other boards may have to be removed for access to the Monitor ROM IC.

- Remove the Monitor ROM IC by inserting an IC puller or small screwdriver beneath the IC, as shown in Figure 13. Gently rock the puller back and forth until you are able to grasp the IC with your fingers and lift it out of its socket. Be careful not to bend the pins of the IC as you remove it. Place the IC in conductive foam and keep it with your original keyboard. You can use the conductive foam (black material) that your new ROM IC is packaged in.

CAUTION: The ROM IC can be damaged by static electricity. Once you pick up the IC, do not lay it down or let go of it until you either install it in its socket or place it on conductive foam.

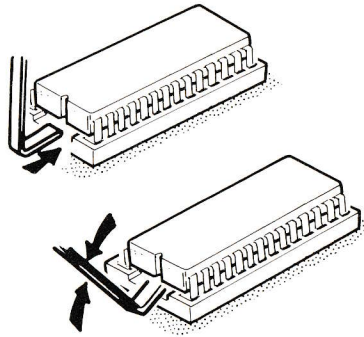


Figure 13. Removing the IC

6. Refer to Figure 14 to identify pin 1 of Monitor ROM IC.

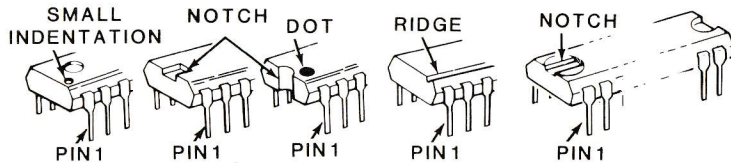


Figure 14. Pin 1 Identification

7. Check the new Monitor ROM IC to make sure its pins are straight and aligned to match the socket.

NOTE: If the pins do not line up with the socket, you may need to straighten them. To straighten the pins, hold the IC in one hand and place the other hand on the work surface. This will equalize the static electricity between the work surface and the IC. Then, lay the IC on its side as shown in Figure 15 and very carefully roll it toward the pins to bend them into line. Turn the IC over and bend the pins on the other side in the same manner.

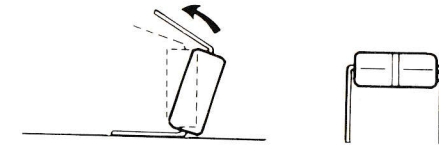


Figure 15. Straightening IC Pins

8. Check the part number of the new ROM to make sure it matches the original ROM. This is especially true when replacing ROMs in cards that have two ROMs, because ROM 1 and ROM 2 are not interchangeable.
9. Install the Monitor ROM IC, making certain that pin 1 of the IC is aligned with pin 1 of the socket, as shown in Figure 16. Make sure that all the other pins are aligned and then press the IC into the socket with steady, firm force.

NOTE: If your computer has a SmartWatch installed in the Monitor ROM IC socket, install the new Monitor ROM IC into the top of the SmartWatch, as shown in the inset of Figure 16.

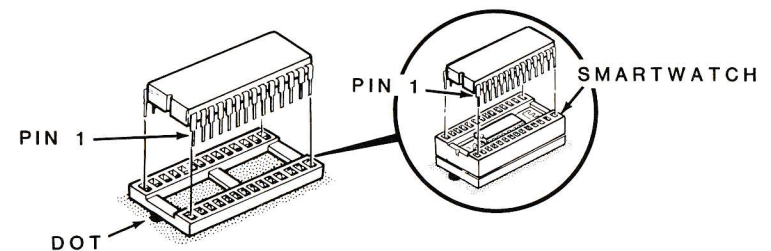


Figure 16. Installing the IC

10. Inspect the IC and the socket to make sure that all the pins are fully engaged and that no IC pin has been bent or broken.
11. Reinstall the circuit card into your computer and reconnect all internal cables.

12. Replace the computer cover.
13. Reconnect any peripherals that were previously connected to your computer.
14. Reconnect the computer power cord.

Installing the Keyboard

Before you can install the Professional 101 Keyboard, the AT/XT switch must be set for the type of computer you have. This switch is located under the keyboard's nameplate and is factory-set to the AT-compatible position (refer to Figure 17). The factory-setting (AT compatible) is the correct setting for computer models such as models Z-241 and Z-248.

Perform the following steps if you have an XT computer, such as Z-138, Z-148, Z-151, Z-152, Z-157, Z-158, Z-159; or Z-161:

1. Gently pry up the nameplate with a small, flat blade screwdriver.
2. Set the switch to the XT position.
3. Carefully press the nameplate back into place.

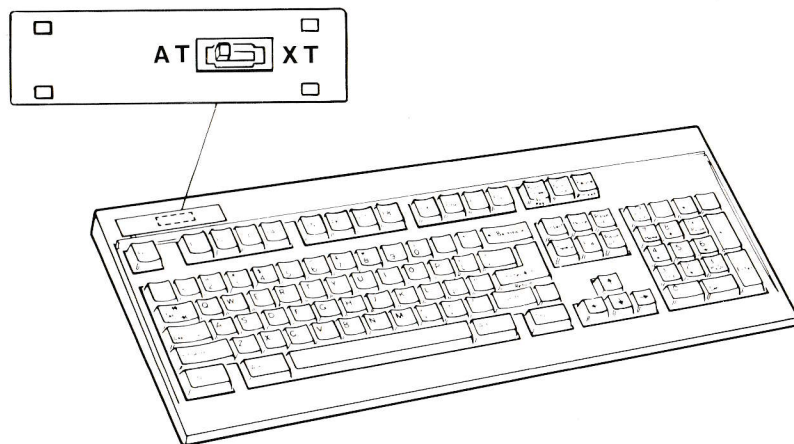


Figure 17. AT/XT Switch

To install the Professional 101 Keyboard:

1. Locate where the keyboard cable plugs into the back of your computer and disconnect your present keyboard (see Figure 18).

NOTE: The keyboard connector may be in a different location on the back of your computer than that shown in Figure 18.

2. Connect the Professional 101 Keyboard to the same connector that was used for your present keyboard.
3. Reconnect the computer power cord.

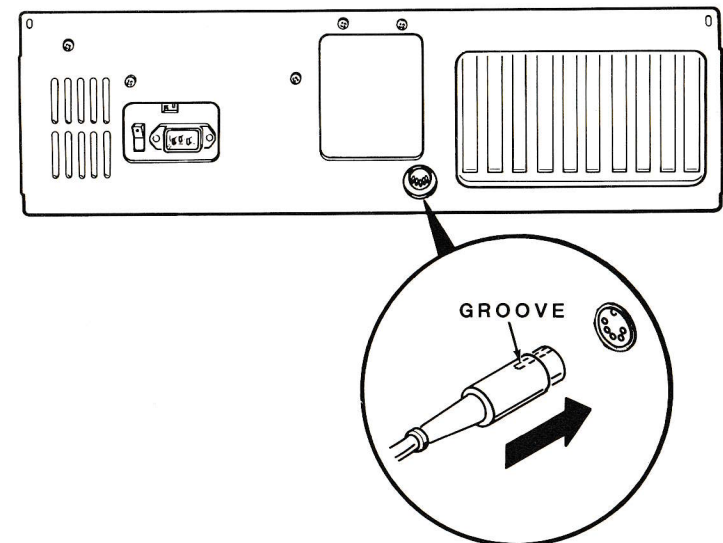


Figure 18. Connecting the Keyboard

Keyboard Operation

The Professional 101 Keyboard features 101 keys with positive, firm feel and response. The layout of the keyboard makes it easy to use for all keyboard entries. It has many of the same keys that a typewriter has, plus other unique keys which are discussed in this section. Refer to Figure 19 for the layout of the keyboard.

Every key on the keyboard except the PAUSE/BREAK key has an auto-repeat feature. This feature is most useful with keys that move the cursor, like the DELETE keys, the ENTER/RETURN key, the space bar, and the arrow keys.

All keys except the SHIFT keys, CTRL (control), and ALT (alternate) keys have audible feedback; that is, they make a clicking sound when they are pressed. This feature can be turned off.

To help touch typists keep their fingers on the proper keys, the F and J alphanumeric keys and the 5 key on the calculator keypad have a raised dot.

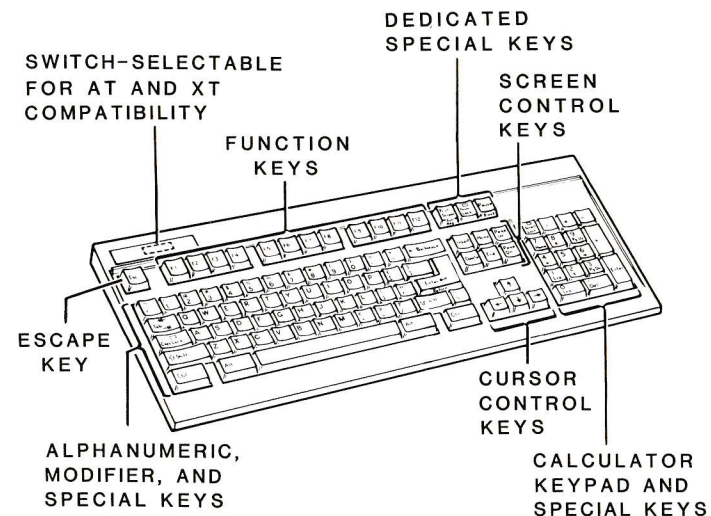


Figure 19. Keyboard Key Groups

There are three basic groups of keys, as shown in Figure 19:

- The large central block of keys resembles a typewriter keyboard and functions very similarly.
- The blocks of keys on the right side are the calculator keypad and cursor control keys.
- The remaining keys are in a row at the top of the keyboard and include the ESC key, the twelve function keys, and three keys dedicated for special purposes.

Alphanumeric Keys

This block of keys contains the alphanumeric keys, which are like the keys found on a typewriter. They include alphabetic characters, numerals, punctuation marks, and spaces (see Figure 20).

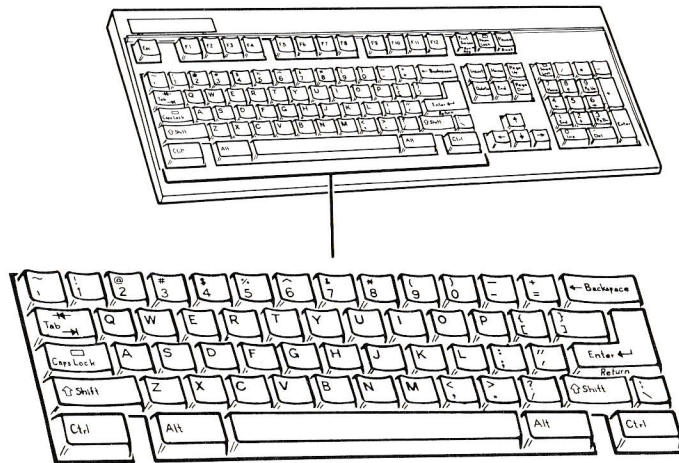


Figure 20. Alphanumeric Keys

CAPS LOCK — This key is almost the same as a typewriter shift lock key; press it once to shift to capital letters, press it again to shift to lower case. The difference is that it only affects letter keys. You still need to hold either the right or left SHIFT key to change the upper case function of the other keys. A light on the top of the key tells you if CAPS LOCK is engaged (lit) or not.

ENTER/RETURN — The ENTER/RETURN key is used to return the cursor to the left side of the display (software usually moves the cursor to the next line). Also, pressing the ENTER/RETURN key after data or instructions have been entered tells the computer to process them.

TAB — Pressing this key moves the cursor to the next tab setting.

Space Bar — Pressing the space bar enters a blank character (space).

BACKSPACE — The BACKSPACE key moves the cursor back one space. In many software programs, pressing the BACKSPACE key also erases characters as it moves the cursor to the left.

The following three keys, SHIFT, CTRL (control), and ALT (alternate), are always used with other keys. They perform no function when used alone. The side-by-side arrangement of the CTRL and ALT keys on both the right and left side of the keyboard makes it convenient to use these keys in combination with other keys.

SHIFT — There are two SHIFT keys on the keyboard, one on the right side and one on the left. Normally, capital letters, symbols, and extra punctuation marks are generated when a SHIFT key is pressed. However, if the CAPS LOCK key is active, pressing the SHIFT key causes the letter keys to generate lowercase letters.

CTRL (Control) — There are two CTRL keys, one on the right side of the keyboard and one on the left. The CTRL keys are the main keys for entering commands. Customarily, the CTRL key is pressed and held, and then another key or keys are pressed. The CTRL key is often symbolized by a caret (^).

These are some of the commonly used CTRL key combinations:

CTRL-ALT-DELETE — When the CTRL and ALT keys are pressed and held and the DELETE or DEL key is then pressed, the computer goes through the same process as when it is first turned on. This is also known as resetting or warm booting.

CTRL-ALT-INSERT — When the CTRL and ALT keys are pressed and held and the INSERT or INS key is pressed, the computer returns to the Monitor prompt (->). Since the computer is not actually reset, you can boot from an alternate drive using Monitor commands, even though the computer is set to autoboot.

CTRL-S — When these keys are pressed, output on the display pauses until you press another key. It is used to halt scrolling.

CTRL-BREAK — Pressing these keys will halt any Monitor program command that is in progress and returns the computer to the Monitor prompt (->).

ALT (Alternate) — There are two ALT keys, one on the right side of the keyboard and the other on the left. The ALT keys are similar in operation to the CTRL keys. They are used the same way for entering commands; however, they are used far less frequently. The ALT key and tilde (~) key can be used together to turn the key click off or on.

Cursor Control Keys and Calculator Keypad

The cursor control keys and the calculator keypad make up the second group of keys (see Figure 21). When you are working with spreadsheet software programs, the separate cursor control and numeric keypad makes entering numeric data far easier.

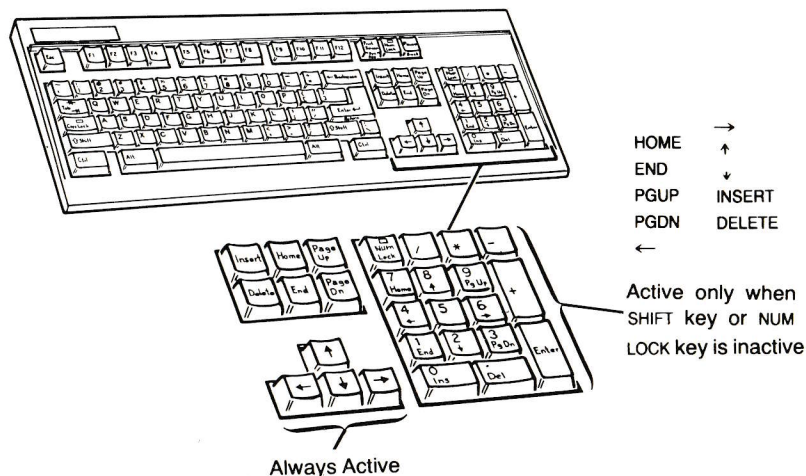


Figure 21. Cursor Control Keys and Calculator Keypad

There are two sets of HOME, END, PAGE UP (PG UP), PAGE DOWN (PG DN), and arrow keys. One set is on the cursor control key section; these key functions are always active. The other is on the calculator keypad section and these functions are only active when the SHIFT key or the NUM LOCK key is inactive.

A very small number of older software programs may not allow all functions to be performed using the separate cursor control keys and the keys immediately above them (INSERT, DELETE, HOME, PAGE UP, etc.). If you are running such an application, it may be necessary to use the corresponding keys in the calculator keypad section of the keyboard.

This is how the keys in this group operate:

Arrows — The two sets of arrow keys indicate the direction in which they move the cursor in most applications programs and in the operating system. The arrow keys make it easy to position text in word processing programs or to quickly enter cell values in spreadsheet programs.

HOME — In many programs, pressing the HOME key moves the cursor to the upper-left corner of the screen. With spreadsheet programs, pressing the HOME key usually moves the active cell indicator to the upper-left corner of the spreadsheet.

END — The END key is typically used by applications programs to move the cursor to the lower-right corner of the screen display. In some spreadsheet programs, pressing the END key moves the cell indicator to the most remote cell.

PAGE UP (PG UP) and PAGE DOWN (PG DN) — These keys are used by many programs to move the cursor up or down a certain number of lines.

INSERT (INS) — The INSERT keys allow you to enter the insert mode. In certain application programs, the insert mode determines whether text you type pushes existing text aside to make room (on), or simply types over and replaces existing text (off). To enter the insert mode, press an INSERT key; to exit the insert mode, press the INSERT key again. When used simultaneously with the CTRL and

ALT keys, the INSERT keys can also be used to return to the Monitor prompt.

DELETE (DEL) — By pressing either of these keys, you can backspace and erase the character to the left of the cursor in some application programs. When used simultaneously with the CTRL and ALT keys, DELETE resets the computer.

NUM LOCK (NUMBER LOCK) — When this key is pressed, the LED indicator on the key lights and the number keys and decimal point on the calculator keypad are active. To turn this feature off, press the key once again. The LED will go off and the cursor control functions, INS, and DEL will once again be active. However, if either SHIFT key is pressed when the NUM LOCK feature is active, the number keys will become inactive.

Top Row Keys

The top row of the keyboard makes up the third group of keys. There are 12 function keys for increased automatic operation, three dedicated function control keys, and an ESC key (see Figure 22).

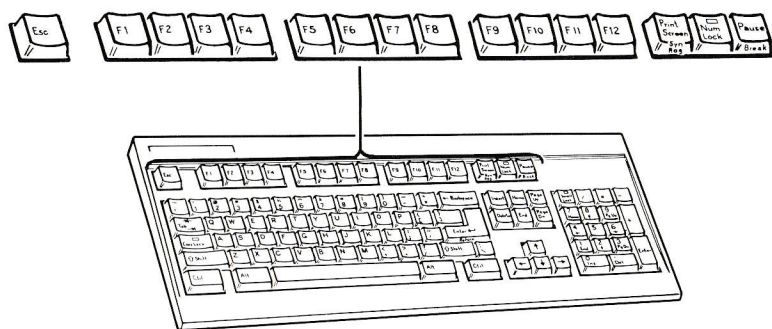


Figure 22. Top Row Keys

ESC (Escape) — Since the ESC key is typically used to discontinue a program or function, it is isolated from the other keys so it is less likely to be inadvertently pressed. The ESC key also performs special duties when used in combination with another key in some applications.

F1 through F12 — These function keys are used for special purposes by some programs. For example, in some word processing programs, the function keys perform such functions as indenting, setting right and left margins, underlining, and boldfacing. In addition, the function keys have special capabilities in the operating system. For example, function key F3 allows you to reuse all or part of a previously-entered command. (For further information, refer to the MS-DOS User's Guide.) In some older software programs, the F11 and F12 keys may not perform any function.

PRINT SCREEN/SYS REQ (System Request) — Whatever is on the screen will be sent to the printer when this key is used. The printer must be on, online, and have paper ready. If not, the computer pauses until the printer is made ready. PRINT SCREEN sends out a full 25 lines of data. If you want to print graphics or special characters, refer to the Prt Sc command in the MS-DOS User's Reference manual. SYS REQ (system request) is used in conjunction with the ALT key and is similar to the BREAK key. It is usually defined by the program that is using it.

SCROLL LOCK — In some spreadsheet programs, this key allows the cursor to remain stationary while the screen scrolls. When inactive, the cursor can be moved while the screen remains stationary. To activate this feature, press the SCROLL LOCK key. The LED indicator will light. To cancel the feature, press the key again. When the SCROLL LOCK key is used with the ALT key, it empties the system's type-ahead buffer.

PAUSE/BREAK — When this key is pressed, it freezes the display of text on the screen. If you enter the Type command in MS-DOS, for example, the text of the file rolls up the screen faster than you can read it. Pressing the PAUSE key will stop it temporarily. Pressing any other key will allow it to resume. With some software packages the BREAK key halts execution of the program.

Keyboard Adjustment

You can adjust the tilt of the computer keyboard so that it is at the most comfortable angle for you. To increase the tilt, raise the feet on the bottom of the keyboard (see Figure 23). To decrease the tilt, place the feet in their closed position.

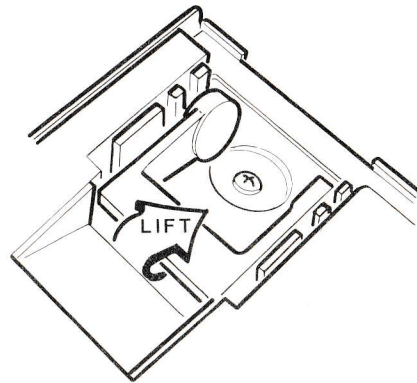


Figure 23. Keyboard Adjustment

In Case of Difficulty

If your computer does not function properly after installation of the Professional 101 Keyboard and it appears that the problem is related to the keyboard installation:

1. Check the keyboard cable connection at the back of the computer to be sure that the connector is fully engaged.
2. Check the power cord connections at the computer and at the wall outlet.
3. Check all other peripheral equipment cabling for proper connections.

If all external connections are correct, and the computer still does not work:

1. Turn computer off and remove the computer cover.
2. Make sure that all cards, including the CPU or CPU/memory card, are fully seated in their backplane board connectors.
3. If the cards are installed correctly, check the Monitor ROM IC again to be sure that:
 - It is installed in the correct location.
 - IC pin 1 is connected to socket pin 1.
 - All pins are fully engaged in the socket and no pins are bent or broken.
 - The correct Monitor ROM IC is installed (refer to Table 1).

If no solution to the problem can be found, contact your Zenith Data Systems dealer or authorized service center for service. To help your dealer diagnose and repair your computer, list the following information:

Professional 101 Keyboard

- The model number of your computer and any other equipment you are using with it.
- The problem you are having.
- Any diagnostic tests you ran and the messages, if any, that were displayed.
- Any additional information that describes your system, such as the software that you are using.

Professional 101 Keyboard

Specifications

Keys:	101 keys.
Microprocessor:	8748 microcomputer or 8048 or 8031 (8048 emulator).
Operating temperature:	-20° to 60° C (-4° to 140° F)
Storage temperature:	-30° to 70° C (-22° to 158° F)
Contacts:	Single-pole, single-throw.
Power source minimum ratings:	+5 VDC, 5 mA.

Table 2. Keyboard Connector Pinout

PIN	SIGNAL
Pin 1	Clock in/out
Pin 2	Data in/out
Pin 3	Power-on reset
Pin 4	Ground
Pin 5	Power (+5 volts)
Shield	Chassis ground

