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Congratulations on your purchase of our product. This machine provides a number of easy-to-use features. In addition, the red indicators are located on the left-hand side of the keyboard to constantly inform you of the current typing modes.

This Operating Manual is divided into two parts; explanations for typing features and interface mode. The first part — for typing features — describes the operations for this machine in normal typing sequence. The second part — for interface mode — describes the operations of this machine as a terminal printer when connected with a computer.

Your careful study of this manual will maximise your efficient use of this machine and make your work much easier and more enjoyable.

The following symbol is used in this manual.

??....... This section deals with questions that you may have when using this machine.

NOTE

Before you start to use the machine, check the Back Plate to see whether the voltage shown conforms with the power supply. Then turn on the machine.
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# SPECIFICATIONS

## PRINTING
- Keys/Characters: 44/96
- Printing Element: Cassette Type Wheel
- Printing Speed: Max. 10 cps.
- Paper Width: 12" (305mm)
- Printing Width: 10" (254mm)
- Cassette Ribbon: Correctable, One-time, Fabric
- Correcting Tape: Lift-off, Cover-up
- Automatic Correction: 25 characters (1-line)
- Key Buffer: 24 characters
- Typing Pitch: 10, 12, 15
- Line Space: 0, 1, 1 1/2, 2

## OPERATING LEVERS
- Platen knob with platen variable
- Paper Release Lever

## DIMENSIONS
- 407(W) x 346(D) x 128(H)mm
- 16.0(W) x 13.6(D) x 5.0(H) inches
- Weight: 6.5kg (14.3 lbs.)

## ELECTRICAL RATING
- USA spec.: 115V ± 10% 60Hz
- Power Consumption: 52W
- EUROPEAN spec.: 220V ± 10% 50Hz
- Power Consumption: 57W
- UK/OCEANIAN spec.: 240V ± 10% 50/60Hz
- Power Consumption: 57W

## INTERFACE
- Parallel-Centronics compatible

## OPTION
- Serial Converter

Specifications are subject to change without notice.
DESCRIPTION

MULTILINGUAL KEYBOARD (FULL NAME)

1. ON/OFF switch
2. Paper guide
3. Paper bail
4. Platen
5. Platen cover (paper table)
6. Paper release lever
7. Top cover
8. Connector port
9. Spacebar
10. Margin/Pitch scale
11. SHIFT key
12. SHIFT lock key
13. Signal indicators for operation mode
14. Selectors
15. Carrier indicator
16. Platen knob with platen variable
17. Line space selector

NOTE

On the Keyboards other than the above Keyboard, function keys are shown with arrow marks.
Features and Functions

- Automatic carrier return
- Automatic centering
- Automatic underline
- Automatic correction (25 char.)
- Relocation
- Repeat key
- Required space
- Index
Signal Indicators and Selectors

You can select your desired operation mode by depressing the selectors successively; the red indicators are lit up from one to another in rotation.

The selection of the operation modes (AUTO, XXX, KBII) is, as well as margins and tabs, cleared and the typing PITCH is retrieved to 10 by turning off the machine. (Details will be discussed on pages 13-14.)

By holding the CODE key down and touching the "S" key, the signal indicators of PITCH are blinking and the Carrier moves to the center of the platen. This operation is used when replacing a ribbon, wheel and correcting tape. (Details will be discussed later.) To cancel it, hold the CODE key down and touch the "S" key again.

24 characters can be stored in the buffer. To insure that you do not exceed keyboard buffer, a buzzer will warn you and the typewriter will momentarily (approximately one second) hesitate before "printing" you selected words.
HARDWARE

Accessories

The following accessories are packed together with the machine.

1. Keyboard Cover
2. Top Cover
3. Power Cord
4. Correctable Film Ribbon
5. Cassette Type Wheel—10 pitch
6. Lift-off Correcting Tape
Remove/Install the Cover

**Keyboard Cover and Top Cover**

To Remove the Cover
Lift the Cover up while pulling towards you both the Release Latches (a) on the Cover.

To Install the Cover
Put the latches (b) of the Cover in the groove (c) on the machine and push the Cover down until it clicks into position.

**Platen Cover (Paper Table)**

The Platen Cover (d) covers the Platen (e) when the machine is not in use.

Open the Platen Cover when using the machine. It will act as a Paper Table.
The following print elements are attached to the Carrier.

a. Correctable Film Ribbon
b. Cassette Type Wheel—Courier 10
c. Lift-off Correcting Tape

To Replace the Correctable Film Ribbon
1. Switch the machine ON.
2. Remove the Top Cover and open the Platen Cover. (p. 6)
3. Hold the CODE key down and touch the "S" key. The Carrier moves to the center of the Platen.
4. Release the Cassette Ribbon Holder (d) from the Correctable Film Ribbon by pulling it to the left.
5. Hold the Correctable Film Ribbon and lift it up, first from the ribbon tape side, while pulling it towards you.
6. Turn the Ribbon Tension Knob (e) on the new Correctable Film Ribbon in the arrow direction and keep the ribbon tape tight.
7. Position the recess (f) of the Cassette at the Ribbon Cassette Retainer (g) of the Carrier.
8. Push down the Cassette until it clicks into position with the ribbon between the Type Wheel and the Platen.
9. Restore the Cassette Ribbon Holder to the original position.
10. Turn the Ribbon Feed Knob (h) 2 or 3 times in the arrow direction and keep the ribbon tight.
11. Close the Top Cover.
12. Hold the CODE key down and touch the "S" key. The Carrier returns to the Left Margin.

**NOTE**

- The narrow opening (i) shows the remaining amount of ribbon.
- Carbon Film and Fabric Ribbon can be used in combination with Cover-up Correcting Tape.
- Use the Cassette Ribbons of our own make only.

**Cassette Type Wheel**

The following indications are given on the Type Wheel.

a. Type style (standard)
   COURIER (Sample A)

b. Typing pitch
   10P—10 characters per inch

c. Symbol of typing pitch
   ▲—10 pitch

d. Code number for keyboard arrangements and type styles (4 digits)

**NOTE**

- Set the Typing Pitch to the same pitch as the Type Wheel you are using.
- 12 pitch and 15 pitch Type Wheels are also available. In addition, other typestyles can be selected.
To Replace the Cassette Type Wheel

1. Switch the machine ON.
2. Remove the Top Cover and open the Platen Cover. (p. 6)
3. Hold the CODE key down and touch the "S" key. The Carrier moves to the center of the Platen.
4. Remove the Correctable Film Ribbon. (p. 7)
5. Pull the Wheel Base (a) towards you to open the Type Wheel Holder Unit (b).
6. Lift the Cassette Type Wheel straight up and out of the Holder Unit by grasping the Type Wheel Tab (c).

7. To reset

Important!
Be sure to align the slot (d) of the Type Wheel with the reverse triangle before setting the Wheel.

- Hold the Type Wheel Tab so the Logo is facing you.
- Slide the Type Wheel into the Unit.
8. Close the Type Wheel Holder Unit by pushing the Wheel Base back to its original position. (p. 9)
9. Replace the Correctable Film Ribbon and the Top Cover.
10. Hold the CODE key down and touch the "S" key.

**Lift-off Correcting Tape**

To Replace the Lift-off Correcting Tape
1. Switch the machine ON.
2. Remove the Top Cover and open the Platen Cover. (p. 6)
3. Hold the CODE key down and touch the "S" key. The Carrier moves to the center of the Platen.
4. Remove the Correctable Film Ribbon. (p. 7)
5. Take away the consumed Correcting Tape by pulling the spools away from the Carrier.
6. Pass the tape of the new spools between the Card Holder (a) and the Separator Plates (b), and then thread it through the Correcting Tape Guides (c).

7. Place the full spool onto the right pin (d), and the other onto the left pin (e).

8. Turn the left spool (f) until the white correcting tape comes up to the Typing Pointer (g).

9. Restore the Correctable Film Ribbon in position.

10. Hold the CODE key down and touch the “S” key.

**NOTE**

- Cover-up Correcting Tape can also be used in combination with Carbon Film or Fabric Ribbon.
- Use the dry-type Correcting Tape of our own make only.
- When using the Cover-up Correcting Tape, white powder, which comes off from the tape, adheres to the inside of the machine. Remove it by periodical cleaning. Powder or dust may cause harm to the machine.
GETTING STARTED

ON/OFF Switch

The On/Off Switch is located on the rear of the machine.

The signal indicators light up (p.4), and the Carrier makes an initial movement; the Carrier goes to the Preset Left Margin (p.15) followed by a short beep.

Wait at least 2 seconds before restarting the machine after it has been turned off.

Paper Insertion

Paper Guide
The Paper Guide (a) moves horizontally and the paper can be inserted at any desired position.

Paper Release Lever and Paper Bail
Lift the Paper Bail (b) up, and it is released from the Platen to make it easy to adjust the paper.

Pull the Paper Release Lever (c) towards you, and the paper will be released to move freely. The paper can now be adjusted.
To Insert Paper
1. Open the Platen Cover.
2. Lift the Paper Bail up.
3. Insert the paper behind the Platen until it stops.
4. Turn the Platen Knob to feed paper.

If the paper is not inserted correctly, confirm that the Platen Release Lever is returned to its original position.

5. Put the Paper Bail back to its original position.

Selectors
Select your desired operation modes by depressing the selectors on the left-hand side of the keyboard.

If this light is on, you have access to the second keyboard* (KBII).

If it is off, characters on the standard machine keyboard can be typed.

What is the *second keyboard?

The second keyboard provides special symbols indicated on the right-hand corner of the keytops. On the Multi-Lingual Keyboard, they are Ñ, ñ, Ç, ç, l, Ŕ, ř, i.

To type the upper character or symbol, depress the required key while holding down the SHIFT key.
**PITCH**

The pitch can be changed when the Carrier is positioned on the Left Margin.

- 10 — For 10 pitch typing
- 12 — For 12 pitch typing
- 15 — For 15 pitch typing

**AUTO**

Auto Carrier Return Mode (p.19)

**XXX**

Auto Underline Mode (p.26)
MARGINS AND TABS

Margin/Pitch Scale and Carrier Indicator

The Margin/Pitch Scale (a) shows three kinds of graduation for 10, 12 and 15 pitches.

The Carrier Indicator (b) moves horizontally along the graduations, as the Carrier moves.

Margin Setting

The distance between left and right margins must be no less than 9 spaces in 10P. (12P-11/15P-14)

When the machine is switched ON, the Carrier automatically goes to the Preset Left Margin (1 inch = 10 spaces in 10P).

To Set the Left Margin

1. Move the Carrier to the required position, using the Spacebar. If you spaced too far, go back using the BACK SP (←) key.
2. Depress L MAR (←).
To Set the Right Margin

1. Make sure that the AUTO indicator is off. If it is on, hold the CODE key down and touch the "R" key. (Refer to "Auto Carrier Return" on page 19.)

2. Move the Carrier to the required position, using the Spacebar or BACK SP (→) key.

3. Depress R MAR (←→).
Margin Clear

Margin Release Key

If you want to cancel the Left or Right Margin temporarily, move the Carrier to the Margin set position and depress the MARREL (←→).

Setting a new Margin clears the old one.

Hot Zone

The range of approximately 8 spaces before the Right Margin is called the Hot Zone.

When the Carrier reaches the Hot Zone, a short beep sounds and alerts you that you can type only 8 more characters.

The Hot Zone is automatically set when the Right Margin is set.

Tab Setting

To Set the Tab

1. Move the Carrier with the Spacebar to the required position.
2. Depress the T SET (T+) key.

• How many Tabs can be set?

Up to 13 Tabs can be set.
To Use the Tab

1. Depress TAB (→) key.

   Each successive depression of the TAB (→) key moves the Carrier
   one additional Tab stop to the right. If you desire to move to the
   second Tab stop from the Left Margin, depress TAB (→) key
   twice.

Tab Clear

To Clear the Individual Tab Set

1. Depress TAB (→) to move the Carrier to the Tab set position to
   be cleared.
2. Depress T CLR (T−) key.
Carrier Return Modes

**CARRIER RETURN**

Carrier Return Modes

This machine provides two different ways of Carrier Return; automatic and manual.

When the AUTO indicator is on, the machine is in Automatic Carrier Return Mode, and when it is off, in Manual Carrier Return Mode.

The indicator is turned on or off by holding the CODE key down and touching the "R" key.

**Manual Carrier Return**

The Carrier is returned by depressing the RETURN (↓) key at the end of each typing line.

**Auto Carrier Return**

The Carrier is automatically returned when the Spacebar is touched within the Hot Zone. (p. 17)
Required Spaces

There are certain typing situations where you should not return the Carrier by a space. For example, the month and day, should remain on the same writing line.

For these kinds of spaces, hold the CODE key down and touch the Spacebar, if you are in the Auto Carrier Return Mode and already in the Hot Zone.
**PAPER FEED**

**Index**

By holding the CODE key down and touching the RETURN (←), the paper is fed by one line with the Carrier in a fixed position. When depressed continuously, the paper feed repeats.

0    — no spacing  
1    — 1/6” (4.23mm)  
1 1/2 — 1/4” (6.35mm)  
2    — 1/3” (8.46mm)

**Platen Variable**

The Platen can rotate freely and be set at any line position regardless of the line spacing by turning the Platen Knob while pulling it to the left.
CORRECTION METHODS

Automatic Correction

In this machine, a 25-character correction memory is provided, which allows you to automatically erase the last 25 characters in the current line.

To Correct
1. Align the Carrier one pitch after the incorrect characters.
   When erasing a character farther back on the same line, align the Carrier at the incorrect character.
2. Depress the < key.
3. Depress the REPEAT (R) key or keep depressing the < key. The Carrier moves to the left, erasing the characters.

After corrections are made in the middle of the typing line, depress RELOC (~~). The Carrier moves to one pitch after the last printed character.

NOTE

If you depress the following keys or a selector within a correction memory, the automatic correction will not work.

RETURN (←),
CODE + RETURN (←),
Tab (→), BKSP ½ (←),
CODE + BKSP ½ (←),
PITCH
Manual Correction

If errors occur outside of the automatic corrections memory, make manual corrections as follows:

1. If the incorrect character is on the previous line, move the Carrier back to that line by rotating the Platen Knob.
2. Align the Carrier with the incorrect character using the Spacebar, BACK SP (→) key, or BKSP \( \frac{1}{2} \) (←) key.
3. Hold the CODE key down and touch the \( \Box \) key.
4. Type the incorrect character.
5. Type the correct character.

If there are two or more incorrect characters, repeat Steps 1 to 5.

*When the paper is re-inserted into the machine to correct errors, the Carrier sometimes does not exactly align with an incorrect character. What should I do?

*Hold the CODE key down and touch the BKSP \( \frac{1}{2} \) (←) key. The Carrier back-spaces 1/60 inch at a time when the key is depressed with the CODE key.

Also, Platen Variable (p. 21) can be used to align the Carrier with the typing line.
- Can I insert one more character within a word? (e.g. shoud → should)

Use the BKSP $\frac{1}{4}$ key after erasing an error. The Carrier back-spaces $\frac{1}{2}$ pitch at a time when depressing the BKSP $\frac{1}{4}$ key.

Card Holder and Typing Pointer

The upper edge of the Card Holder (a) is aligned with the bottom of a writing line.

The Typing Pointer (b) on the Carrier indicates the position of the character to be printed.

Use the Pointer when setting the Carrier position at the typing point and for making correction.
AUTOMATIC CENTERING AND UNDERLINE

Centering between Margins

1. Hold the CODE key down and touch the "C" key when the Carrier is at the Left Margin.

   The Carrier moves to the center between the margins.

2. Type the characters.

   The characters are not printed at this stage.

3. Depress the RETURN (↓↓) key. After printing the characters, the Carrier will return to the Left Margin.

   • If I make a typing error using the Centering feature, how can I cancel it before printing?

   Keep depressing the ← key until the Carrier returns to the Left Margin. All the characters are canceled together with the Centering command.
Automatic Underline

1. Hold the CODE key down and touch the "U" key.

   The signal indicator of the XXX is on.

2. Type characters and they will be automatically underlined.

   Depressing the Spacebar types an underline.

3. To cancel automatic underline, hold the CODE key down and touch the "U" key once.

   The signal indicator of the XXX goes off.
INTERFACE MODE

Setting the interface mode

Connecting the terminal with a computer

The terminal's functions are controlled from the computer.

Auto Return

Interface Mode

ON OFF

Typewriter mode

Typewriter mode

If set to ON, the typewriter mode is selected.

If set to OFF, the terminal mode is selected.

Always set the typewriter mode when using the typewriter function.
INTERFACE MODE

This machine is equipped with a Centronics compatible parallel interface and functions as a terminal printer when connected with a computer. This machine can also be interfaced with a computer which has an RS232C serial interface by using a serial converter. The serial converter is available as an option.

In this “Interface Mode” section, this machine is referred to as a “terminal” for the convenience of the explanation.

Connecting the terminal with a computer

1. Make sure that both the terminal and computer are turned OFF.

2. Remove the connector port cover located on the lower right hand side of the terminal’s bottom cover.

3. Connect one end of the interface cable to the connector port of the terminal and the other end to the parallel port of the computer.
Setting the interface mode

When you have connected the terminal to the computer, place the terminal in the interface mode following the diagram below.

![Diagram showing the interface mode settings](image)

**Typing Mode**

- Power ON the computer then the terminal.
- The terminal can be used for normal typing.
- CODE + P will directly put the terminal back in Typing Mode.

**Interface Mode**

- OFF LINE
  - Depress CODE + P
  - AUTO LF and ASCII code can be selected.
  - No printing possible.
- ON LINE
  - Depress CODE + S

The terminal functions as a printer and prints data sent from the computer.

* Auto Return lamp and Pitch Selector lamp flash in the OFF LINE state.
* Auto Return lamp flashes in the ON LINE state.
* Printing is interrupted by depressing CODE + S. (The terminal is placed OFF LINE.) Depress CODE + S again to resume printing.
* Print pitch is determined by the setting of the Print Pitch Selector which has been set in the typing mode. It is not changeable in interface mode whether it is ON LINE or OFF LINE. Therefore, if you need to change the print pitch once the terminal is in interface mode, put the machine back to the typing mode by depressing CODE + P, adjust the selector to your desired pitch, then re-enter the interface mode.
Selecting functions

Following functions are selectable by depressing the assigned keys after taking the machine OFF
LINE.

1. **Auto Line Feed**

   Line feed (advancing paper to the next line) is usually caused by a LF code. However, some computers send a CR code for line feed. If your computer is that type, select the Auto Line Feed function. When you are not sure whether this function should be selected or not, first try printing with AUTO LINE FEED OFF. In most cases, line feed is carried out properly with Auto Line Feed OFF. But if the paper does not automatically line feed and text is overprinted, reset the interface mode and set Auto Line Feed ON.

   Depress “9”— Auto Line Feed ON
   The terminal executes Carrier Return and Line Feed when it receives a CR code from the computer.

   Depress “0”— Auto Line Feed OFF
   The terminal executes solely Carrier Return when it receives a CR code. Line Feed is caused when it receives a LF code.

2. **ASCII Code**

   ASCII code can be selected by depressing “7”. Use an ASCII type wheel when you select ASCII code. Depression of “8” will reselect the code table of the terminal’s keyboard-arrangement which is selected when the terminal is turned ON. See the section “Code Table” for more detailed explanation of ASCII code.

   Depress “7”— ASCII Code ON
   Depress “8”— ASCII Code OFF

**NOTE**

ASCII type wheel (642) will be available in September 1985. Other ASCII wheels will be available during 1986.
Code Table

Data sent from the computer to the terminal includes alpha characters, numbers, symbols and also non-printing characters like printer control codes. Each data is expressed in a group of bits, either 7 or 8, because the computer system adopts a binary number system. For example, the computer transmits the uppercase character "Z" to the terminal in the form of (01011010). The machine interprets that combination of "0" and "1" as "Z" and prints "Z" on paper. All other data are coded in the same manner appropriate for the communication between computers and peripherals. A code table shows how each data is coded. As both transmission and reception of data are carried out according to code tables, the code table of the sender (e.g. computer) and that of the receiver (e.g. this terminal) must be the same so that a data is interpreted in the same way by the sender and the receiver.

The terminal keeps two code tables inside the ROM (read-only memory) and prints characters referring to the selected code table. One of them is ASCII type code table listed on page 33. ASCII stands for American Standard Code for Information Interchange and is now adopted by most computer systems. Binary, decimal and hexadecimal numbers are assigned for each character. For example, "3" is expressed as (00110011) in binary, 33H in hexadecimal and 51 in decimal. You may use the numbering system appropriate to the data format on your computer. ASCII type code tables, just as typewriter keyboards, vary according to languages to include characters specific to each language. They are shown on a separate sheet. Use an ASCII type wheel when you select ASCII code table.
When you see the code table on the next page, you will find that the data from 21H to 7EH are symbols, numbers and alphabets. Data 20H is a Space. Data from 00H to 1FH are printer control codes. Control codes are explained in the “Control Codes” section. In the original ASCII code table, all columns from 00H to 1FH are occupied. But the codes which this machine can not understand (ie. the codes whose input does not cause any action of this machine) are omitted from the code table.

The ROM inside this machine includes one more code table. This is the code table based on the keyboard arrangement of the terminal. Code table for the “500 Multi-lingual” keyboard is shown on page 34 for illustration. It is automatically selected for printing when the terminal enters the interface mode. When your computer uses ASCII keyboard, you have to select ASCII depressing “7” in the OFF LINE state. (See page 30.)

The code tables of various keyboard arrangements are listed in the separate sheet.

**NOTE**

ASCII type wheel (642) will be available in September 1985. Other ASCII wheels will be available during 1986.
## Code Tables

<table>
<thead>
<tr>
<th>b8</th>
<th>b7</th>
<th>b6</th>
<th>b5</th>
<th>b4</th>
<th>b3</th>
<th>b2</th>
<th>b1</th>
</tr>
</thead>
<tbody>
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<td>0</td>
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<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Code: 642 ASCII**

- **ESC Y** → q
- **ESC Z** → \n
### ASCII Characters

<table>
<thead>
<tr>
<th>b8</th>
<th>b7</th>
<th>b6</th>
<th>b5</th>
<th>b4</th>
<th>b3</th>
<th>b2</th>
<th>b1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
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<td>0</td>
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<td>1</td>
<td>1</td>
<td>1</td>
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<td>1</td>
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<td>0</td>
<td>0</td>
<td>1</td>
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</tr>
<tr>
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<td>0</td>
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</tr>
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<td>0</td>
<td>1</td>
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<td>1</td>
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</tr>
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<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

### Characters

- **SP** (32): Space
- **@** (64): At
- **P** (80): P
- **\** (96): Backslash
- **A** (65): A
- **Q** (81): Q
- **R** (82): R
- **b** (98): b
- **c** (99): c
- **T** (84): T
- **d** (100): d
- **e** (101): e
- **f** (102): f
- **h** (104): h
- **x** (120): x
- **y** (105): y
- **z** (122): z
- **A** (65): A
- **B** (66): B
- **C** (67): C
- **D** (68): D
- **E** (69): E
- **F** (70): F
- **G** (71): G
- **H** (72): H
- **I** (73): I
- **J** (74): J
- **K** (75): K
- **L** (76): L
- **M** (77): M
- **N** (78): N
- **O** (79): O
- **P** (80): P
- **Q** (81): Q
- **R** (82): R
- **S** (83): S
- **T** (84): T
- **U** (85): U
- **V** (86): V
- **W** (87): W
- **X** (88): X
- **Y** (89): Y
- **Z** (90): Z

### Code Conversion

- **Hex**: \n- **Decimal**: \n
---

**Note**: The image contains a table with ASCII characters and their corresponding code values. The table is used to convert codes into characters, which is essential for understanding the structure of the code. The characters are listed in a grid format with hexadecimal values on the left and decimal values on the right. The table also includes escape characters (ESC Y and ESC Z) for specific functions. The conversion from hexadecimal to decimal is demonstrated at the bottom of the page, with the symbols **Hex** and **Decimal** indicating the two columns for conversion.
### Code Table

| b8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| b7 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| b6 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| b5 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |

<table>
<thead>
<tr>
<th>b4</th>
<th>b3</th>
<th>b2</th>
<th>b1</th>
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<th>2</th>
<th>3</th>
<th>4</th>
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<td>33</td>
<td>-1</td>
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<td>49</td>
<td>65</td>
<td>81</td>
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</tr>
<tr>
<td>2</td>
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<td>39</td>
<td>55</td>
<td>71</td>
<td>87</td>
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<tr>
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<td>24</td>
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<td>56</td>
<td>72</td>
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<tr>
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<td>0</td>
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<td>113</td>
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<td>38</td>
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<td>114</td>
<td>130</td>
<td>8</td>
<td>98</td>
<td>114</td>
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<td>1</td>
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<td>31</td>
<td>11</td>
<td>39</td>
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<td>115</td>
<td>131</td>
<td>9</td>
<td>99</td>
<td>115</td>
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<td>1</td>
<td>22</td>
<td>32</td>
<td>12</td>
<td>40</td>
<td>100</td>
<td>116</td>
<td>132</td>
<td>10</td>
<td>100</td>
<td>116</td>
</tr>
</tbody>
</table>

**Code:** 500 Multi-lingual

**ESC Y = q**  **ESC Z = ^**

---

**ESC Y = q**  **ESC Z = ^**

---

**Code -->** 3 33 33

**Hex -->** 33 33

**Decimal -->** 33 33
Control Codes

A control code is a command which the computer uses to make the terminal perform a specific function. The existence of control codes may never occur if you are using word processing packages and, in that case, you can do without the knowledge of control codes or just the information that this terminal belongs to the category of "simple printer with backspace" may be enough. And you can skip this section.

But for those who are programing this terminal by themselves, brief explanation of the control codes used are given below.

<table>
<thead>
<tr>
<th>Control Code</th>
<th>Function Name/Hex. Value/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEL</td>
<td>Bell — 07H</td>
</tr>
<tr>
<td></td>
<td>This code sounds the bell.</td>
</tr>
<tr>
<td>BS</td>
<td>Backspace — 08H</td>
</tr>
<tr>
<td></td>
<td>This code moves the carrier back one character space. It also functions as a print command code. When this code is received, the terminal prints the preceding data in the one-line print buffer.</td>
</tr>
<tr>
<td>LF</td>
<td>Line Feed — 0AH</td>
</tr>
<tr>
<td></td>
<td>This code advances paper one line and also functions as a print command code.</td>
</tr>
<tr>
<td>CR</td>
<td>Carrier Return — 0DH</td>
</tr>
<tr>
<td></td>
<td>This code moves the carrier to the left margin and also functions as a print command code.</td>
</tr>
<tr>
<td>SP</td>
<td>Space — 20H</td>
</tr>
<tr>
<td></td>
<td>This code moves the carrier one character space.</td>
</tr>
<tr>
<td>ESC 9</td>
<td>Sets Left Margin — 1BH, 39H</td>
</tr>
<tr>
<td></td>
<td>This code sets the left margin at the present carrier position.</td>
</tr>
<tr>
<td>ESC E</td>
<td>Auto Underline ON — 1BH, 45H</td>
</tr>
<tr>
<td></td>
<td>After this code is input, all characters and spaces are underlined.</td>
</tr>
<tr>
<td>ESC R</td>
<td>Auto Underline OFF — 1BH, 52H</td>
</tr>
<tr>
<td></td>
<td>This code cancels the Auto Underline Mode.</td>
</tr>
<tr>
<td>ESC Y</td>
<td>Prints 20H — 1BH, 59H</td>
</tr>
<tr>
<td></td>
<td>This code prints the character of the hex. value 20H. See the code table of your language.</td>
</tr>
<tr>
<td>ESC Z</td>
<td>Prints 7FH — 1BH, 5AH</td>
</tr>
<tr>
<td></td>
<td>This code prints the character of the hex. value 7FH. See the code table of your language.</td>
</tr>
</tbody>
</table>
Parallel Interface

Specifications of the Terminal in the Interface Mode

Interface: Centronics compatible parallel
Printing direction: Bidirectional
Print pitch: 10, 12, 15

Parallel Interface

Connector specifications

Receptacle: 57LE-40360-7700(D80) or its equivalent
Plug (Cable Side): 57F-30360 or equivalent
Cable: A cable of 1m long is available as an option.

Connector pin assignment and signal descriptions

<table>
<thead>
<tr>
<th>Pin NO.</th>
<th>Signal</th>
<th>In/Out</th>
<th>Signal Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>STROBE</td>
<td>IN</td>
<td>Used to read data into the terminal.</td>
</tr>
<tr>
<td>2</td>
<td>Data Bit 1</td>
<td>IN</td>
<td>These signals represent the 1st (LSB) to 8th (MSB) bits of the parallel data.</td>
</tr>
<tr>
<td>3</td>
<td>Data Bit 2</td>
<td>IN</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Data Bit 3</td>
<td>IN</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Data Bit 4</td>
<td>IN</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Data Bit 5</td>
<td>IN</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Data Bit 6</td>
<td>IN</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Data Bit 7</td>
<td>IN</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Data Bit 8</td>
<td>IN</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>ACK</td>
<td>OUT</td>
<td>When LOW, it indicates that the terminal is ready to receive next data.</td>
</tr>
<tr>
<td>11</td>
<td>BUSY</td>
<td>OUT</td>
<td>When HIGH, it indicates that the terminal cannot receive data.</td>
</tr>
<tr>
<td>12</td>
<td>ALERT</td>
<td>OUT</td>
<td>Not used. This signal is always “LOW”.</td>
</tr>
<tr>
<td>13</td>
<td>SELECT</td>
<td>OUT</td>
<td>This signal is HIGH when the terminal is in the Interface Mode.</td>
</tr>
<tr>
<td>14</td>
<td>—</td>
<td>—</td>
<td>Not used.</td>
</tr>
<tr>
<td>15</td>
<td>—</td>
<td>—</td>
<td>Not used.</td>
</tr>
<tr>
<td>16</td>
<td>GND</td>
<td>—</td>
<td>Signal Ground.</td>
</tr>
<tr>
<td>17</td>
<td>—</td>
<td>—</td>
<td>Not used.</td>
</tr>
<tr>
<td>18</td>
<td>—</td>
<td>—</td>
<td>+5V, this pin must not be used.</td>
</tr>
<tr>
<td>19 to 30</td>
<td>GND</td>
<td>—</td>
<td>Twisted-Pair Return Signal Ground</td>
</tr>
<tr>
<td>31</td>
<td>PRIME</td>
<td>IN</td>
<td>Not used. This signal is ignored.</td>
</tr>
<tr>
<td>32</td>
<td>FAULT</td>
<td>OUT</td>
<td>Not used. This signal is always “HIGH”.</td>
</tr>
<tr>
<td>33</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>—</td>
<td>—</td>
<td>Not used. This signal is always “HIGH”.</td>
</tr>
<tr>
<td>36</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>
Input/output circuits

DATA 1 ~ 8

D

Q

74LS244

ACK, BUSY

+5V

3.3kΩ

74LS09

STROBE

3.3kΩ

100pF

74LS09

PRIME

+5V

3.3kΩ

74LS09

SELECT

+5 V

3.3kΩ

2SC536
Timing chart

DATA 1 ~ 8

STROBE

MIN. 100ns  MIN. 150ns

MIN. 300ns

MAX. 400ns

BUSY

MAX. 100ns

ACK

0.5 μs
CARE AND MAINTENANCE

Please carefully follow the instructions below so that your machine will always perform with the optimum efficiency.

1. Do not place the machine in a dusty place. When you do not use the machine for a long time, be sure to cover it with the Platen/Keyboard/Top Covers, provided as accessories.

2. Do not leave the machine exposed to the direct rays of the sun, or next to an air conditioner. The following room temperatures are most desirable for optimum machine performance.
   Temperature ........... 10°C—35°C
   (50°F—95°F)
   Humidity............... (RH)
   20%—80%

3. Do not use the machine in an environment where electro-static or electro-magnetic fields exist.

4. Be sure to set the machine on a flat desk and do not cover the vent at the rear of the machine.

5. Do not use an eraser or correction fluid. They may create internal problems.

6. Be extremely careful not to bend the petal or scratch the type face when handling the typewheel.

7. The operator should clean the outside of the machine with a soft cloth using a mild cleaning solution. Do not use any solvents or thinners.

It is recommended that the machine be periodically checked by an authorized service technician.
If your machine will not operate as expected, consult the table below to see if the problem can be corrected. If the problem persists, then consult your nearest dealer or service center.

<table>
<thead>
<tr>
<th>PROBLEMS</th>
<th>POSSIBLE CAUSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>The machine will not operate at all.</td>
<td>• The power cord is not plugged in.</td>
</tr>
<tr>
<td></td>
<td>• The machine is not switched ON. (Turn it “OFF” and “ON” after waiting 2 seconds).</td>
</tr>
<tr>
<td>The machine will not print when the keys are depressed.</td>
<td>• The Cassette Type Wheel and/or Cassette Ribbon are not properly fitted.</td>
</tr>
<tr>
<td></td>
<td>• The signal indicators of PITCH are blinking. (p. 4)</td>
</tr>
<tr>
<td>The machine does not correct properly.</td>
<td>• The Correcting Tape is not properly fitted.</td>
</tr>
<tr>
<td></td>
<td>• The Correcting Tape has run out.</td>
</tr>
<tr>
<td></td>
<td>• Combination of the Cassette Ribbon with the Correcting Tape is not correct.</td>
</tr>
<tr>
<td></td>
<td>• The Typing Pitch Selector is not properly set.</td>
</tr>
<tr>
<td>Printing is not performed in the Interface mode.</td>
<td>• The Interface Cable is not properly connected to the machine/computer.</td>
</tr>
<tr>
<td></td>
<td>• The machine is still in the typing mode. (p. 29)</td>
</tr>
</tbody>
</table>
This equipment generates and uses radio frequency energy if not installed and used in strict accordance with the manufacturer’s instructions, it may cause interference to radio and television reception. It has been print tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Sub-part J of Part 15 of FCC Rules, which are designed 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 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 equipment with respect to the receiver
—move the equipment away from the receiver
—plug the equipment into a different outlet so that the equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician additional suggestions. The user may find the following booklet prepared by Federal Communications Commission helpful:

“How to Identify and Resolve Radio-TV Interference Problems”

This booklet is available from the US Government Printing Office, Washington, DC, 20402, Stock No. 004-00000345-4.