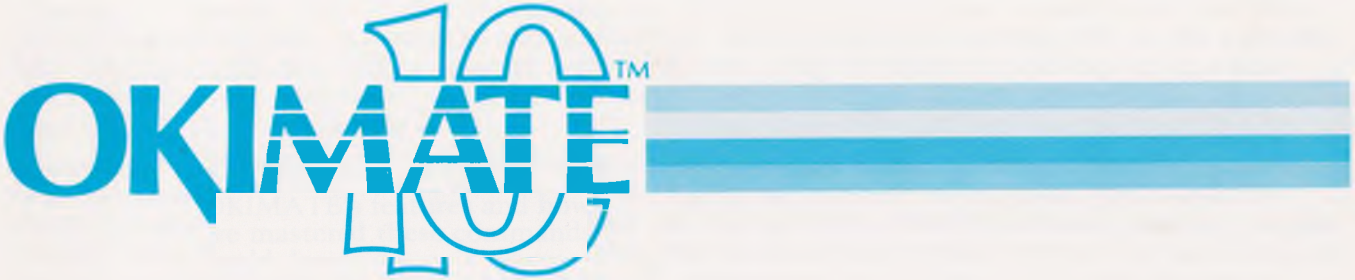
OKIMATE 10™

Printer Handbook

For Commodore® Computers



THE PERSONAL COLOR PRINTER

INTRODUCTION TO YOUR OKIMATE HANDBOOK

To help you find your way around this handbook, here is a brief overview of the four chapters within:

Chapter 1, "Opening Moves" quickly explains just what you need to know to make sure your OKIMATE is working okay and helps to ease some of the initial tension of learning how to use a printer. With the demonstration disk or cassette included in your Plug 'N Print Kit, you can see in a few short minutes what OKIMATE is capable of doing. Then for more details on what you can do with your OKIMATE go to Chapter 2.

Chapter 2, "A Player's Guide" provides much more detailed information on paper loading—printing with and without a ribbon—plus describes all the lights, buttons and levers. Next you'll be introduced to some of OKIMATE's features and how you can use them with the software package you just bought. Once you've mastered these commands, you should be comfortable trying your hand at Chapter 3. But if you should decide to avoid Chapter 3, venture over to Chapter 4 for some important information on keeping your OKIMATE in tip top shape.

Chapter 3, "Advanced Strategies" isn't for everyone. This chapter deals with the more complex capabilities of your printer and requires a level of programming knowledge beyond scoring 1,000,000 at Galaxian. This chapter includes information on how to perform fine line feeding, print black and white and color graphics and various other novelties, like repeating graphics for decorative borders. When you're an official OKIMATE expert be sure you spend a few seconds in Chapter 4 to keep the printer at its optimum.

Chapter 4, "Dealing With Trouble" gives the procedure for cleaning the printhead and fixing the ribbon if it snaps, plus includes a question and answer segment that is designed to help you remedy any difficulties you may experience. Here you'll find information for ordering supplies plus warranty and repair information—in case you ever need it.

We, at OKIDATA, hope you'll find both the OKIMATE and the OKIMATE HANDBOOK easy and fun to use.

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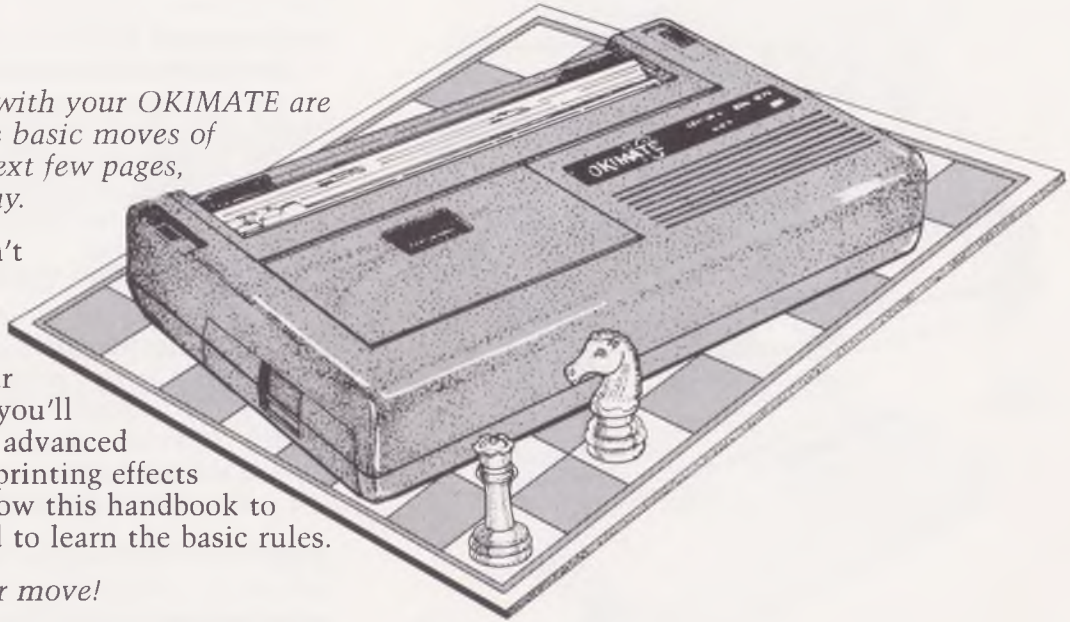
OKIMATE 10

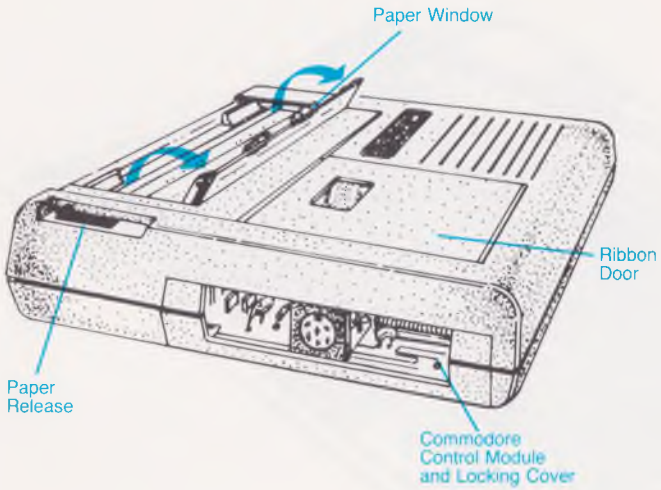
Opening Moves

The rules of printing with your OKIMATE are easy, like learning the basic moves of a game. Within the next few pages, you'll be printing away.



But the OKIMATE isn't all fun and games. It gets down to some serious business. As you progress with your skills and knowledge you'll learn the challenge of advanced strategy from special printing effects to color graphics. Follow this handbook to set up your pieces and to learn the basic rules.

From then on it's your move!



The Playing Pieces

Before you begin, make sure you have the following:

In the printer box...

The OKIMATE 10 printer, of course

In the Plug 'N Print Kit...

The Printer Handbook
Black ribbon (in the clear bag)
Color ribbon (in the color bag)
Computer paper
Commodore data cable
"Learn to Print" demonstration and a color graphics example on cassette tape
"Learn to Print" demonstration and "Color Print" screen dump on disk
Plug 'N Print Control Module for Commodore
Commodore Control Module locking cover

If any of these items is missing or damaged, return the complete package, along with your sales receipt, to the place of purchase.

Inserting the Control Module

Follow the directions on the next seven pages and run the "Learn to Print" demonstration program and in about 15 minutes you can be printing in black or in color. At this point you only need the paper and the equipment supplied with your Commodore Plug 'N Print kit. (More detailed information on operating your OKIMATE is provided in Chapter 2, "A Player's Guide" which begins on page 17.)

Don't plug your printer in just yet—we'll tell you when you can.

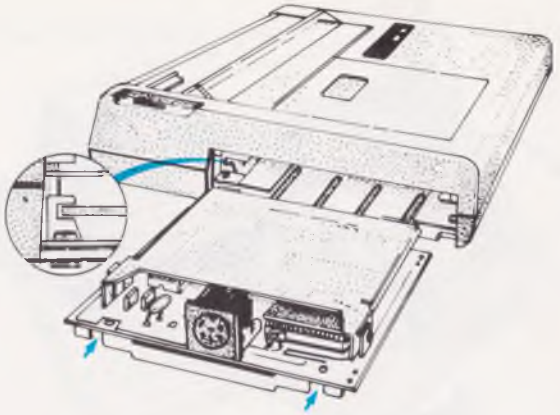
Insert the Plug 'N Print control module:

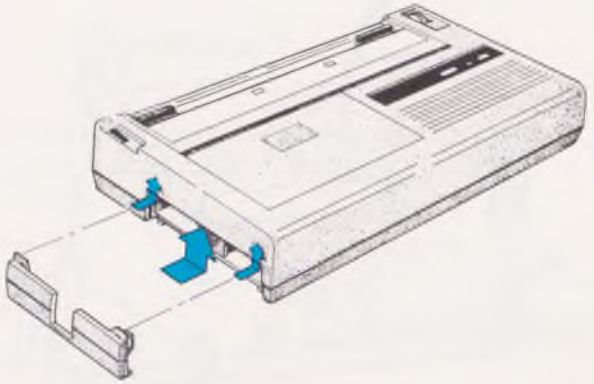
Slide the module into the slot until it is firmly in place.

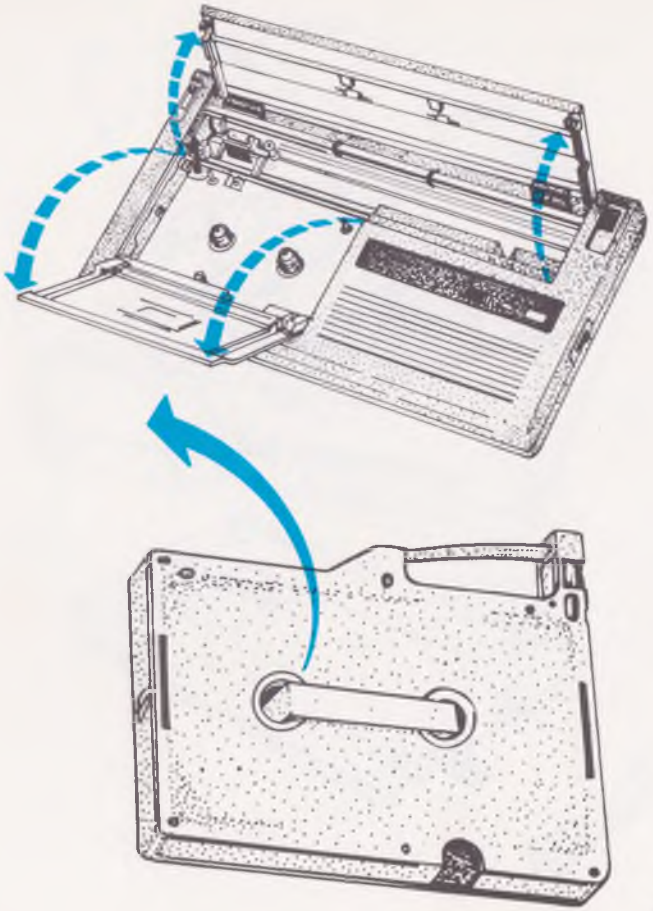
Carefully push the module board with your thumb until it is firmly in place.

Insert the module locking cover as shown.

IMPORTANT: **Always turn OKIMATE off before inserting or removing the control module. Directions for removing the control module are found on page 51.**







Loading the ribbon:

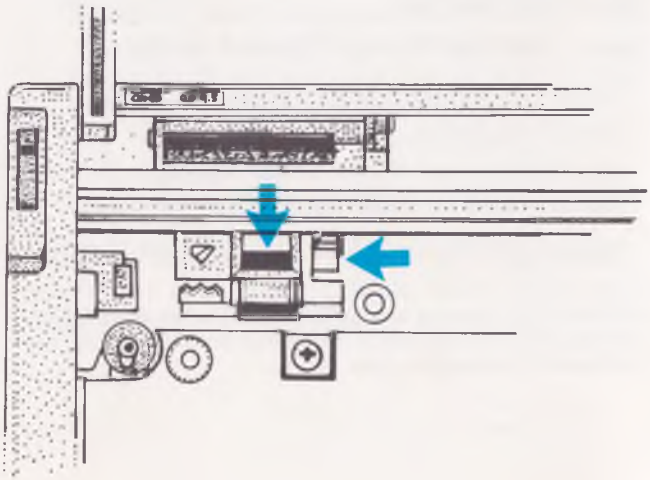
Remove the black ribbon from the clear bag.

Open the paper and ribbon doors.

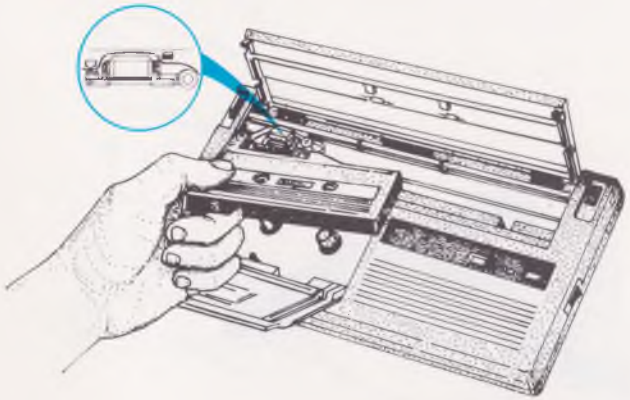
Remove the clip from the underside of the ribbon cartridge.

Slide the printhead to the left side of the printer.

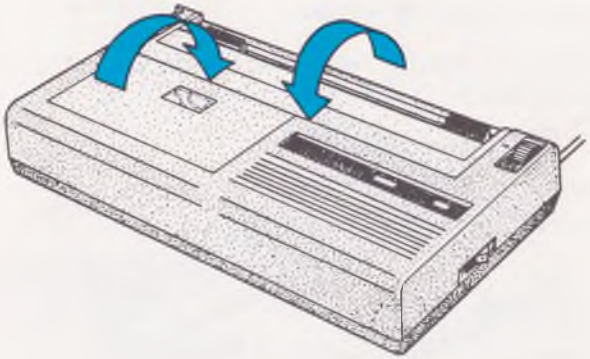
Grasp the printhead carriage with your thumb and index finger then pull it towards you.



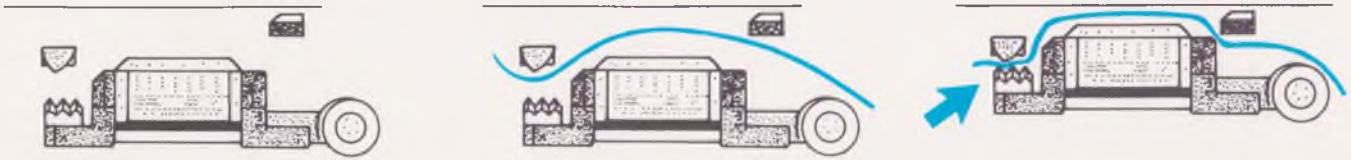
Lower the ribbon cartridge onto the plate, slipping the exposed ribbon in front of the printhead before setting the cartridge onto the plate.



Close the ribbon door.



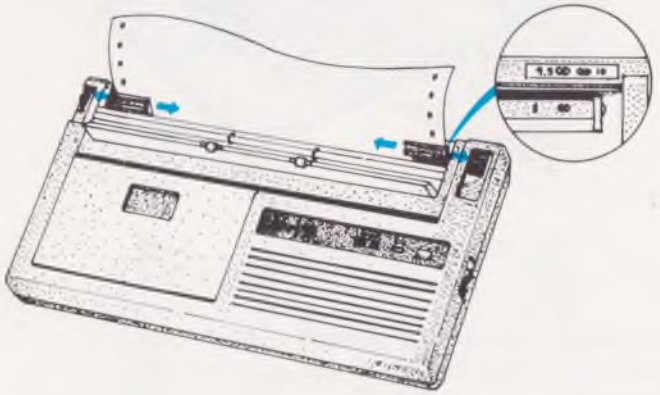
Insert the ribbon between the posts and printhead exactly as shown. Gently push the printhead carriage back to its upright position. The ribbon **must** *be clamped between the left post and the printhead as shown.*



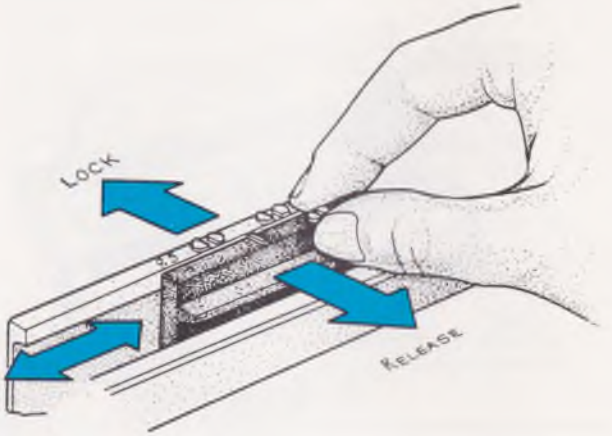
Insert Paper:

Open the paper window.

Align the border (sprocket) holes with the outer marks on the paper guides.

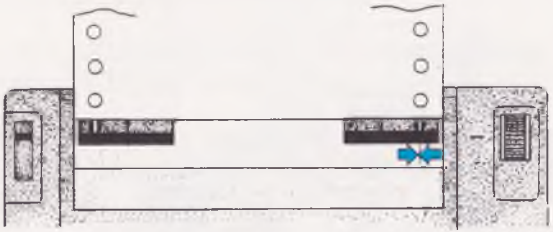


If necessary, slide the right paper guide to fit the size of the paper. Snap it forward to slide it; snap it back to lock it.

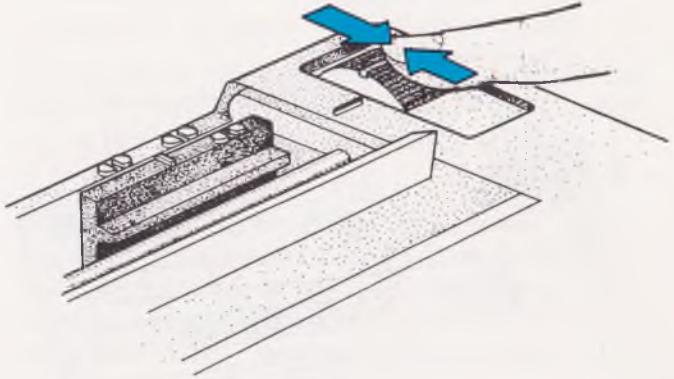


Open the paper release.

Slide the paper behind the paper guides and under the rollers.



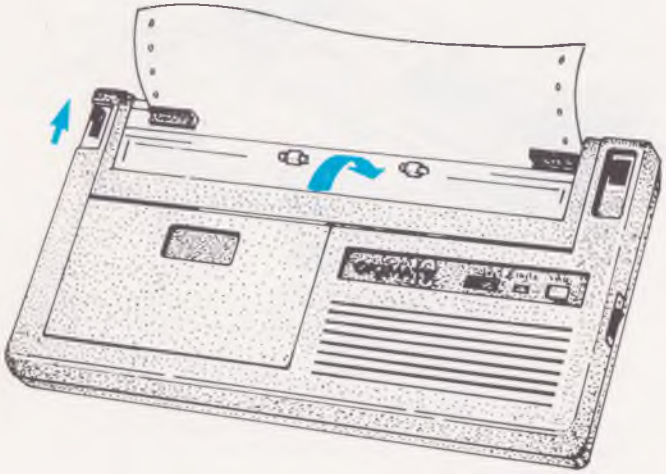
Use the paper advance knob to advance the paper to where you would like printing to begin.



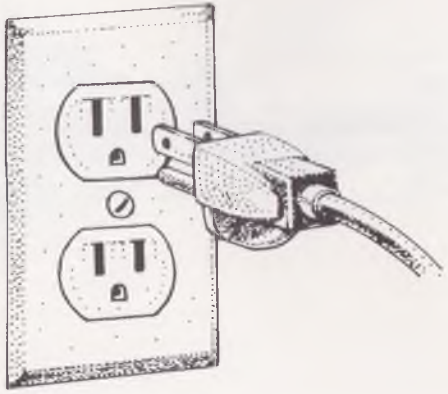
Gently pull the printhead carriage back to make sure the ribbon is still in place.

Close the paper release.

Close the paper window.



Make sure your OKIMATE on/off switch is still OFF (plugging the printer in with it turned on can cause damage.) *Insert the plug into a grounded electrical outlet. DO NOT use a conversion cord, like an extension cord, which ignores the ground—OKIMATE must always be grounded.*



The Players Meet

Let's take a closer look at the control center of your OKIMATE. The picture on page 10 reveals the locations of the levers, lights and buttons you'll be introduced to in this chapter.

DARK: Controls darkness of print. Normally set this switch in the center.

PAPER RELEASE: OPEN for straightening paper; CLOSE for printing.

SELECT: This is the PAUSE/RESTART button. To stop the printer while it is printing, press this button and continue to hold it down until the printhead reaches the end of a line. Once the printhead is at the end of a line, release the SELECT button and the printer will stop printing. At that time, the READY light will blink slowly indicating that printing has been stopped.

The SELECT button has three other functions:

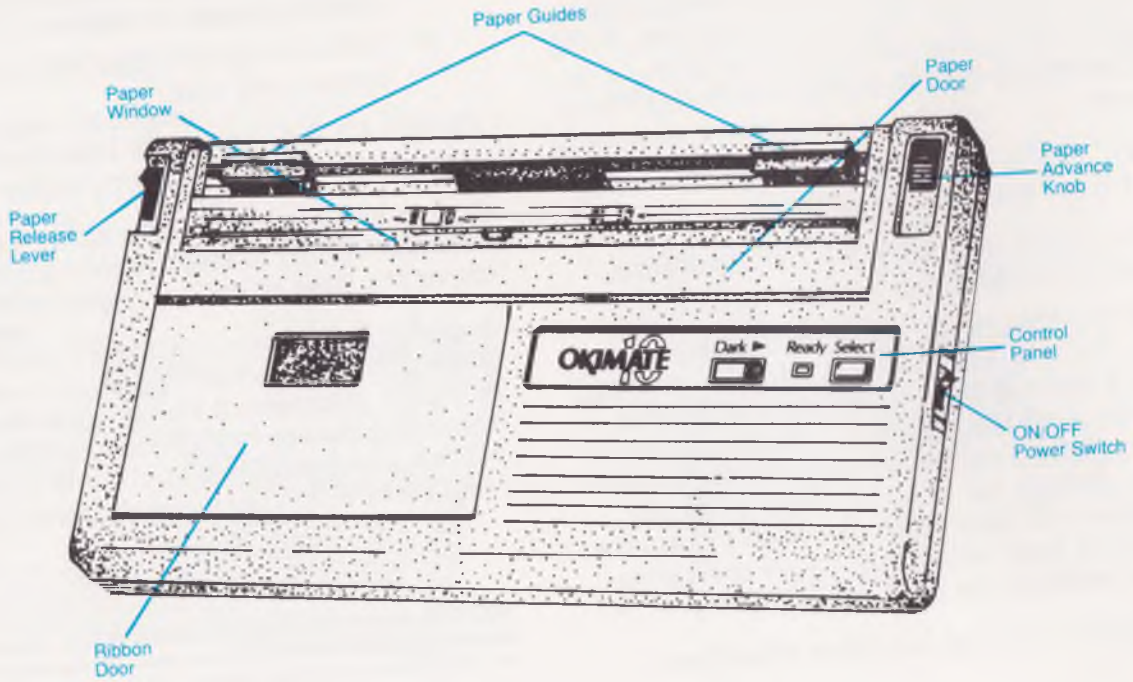
1. Press to restart the printer after stopping it.
2. Press to restart the printer after changing paper or ribbon.
3. Press along with the ON button to begin a self test.

READY LIGHT: A steady light means the printer is ON and ready to receive data.

A slow blink means you've either pressed the SELECT button to stop OKIMATE from printing or it's time to replace paper or ribbon.

A rapid blink means OKIMATE has slowed down printing to cool. The printer will automatically resume full speed when the printhead temperature is lowered. This should happen infrequently, if at all, when OKIMATE has been continuously printing.

NOTE: If you use the SELECT button to stop printing color graphics, the OKIMATE will first print all the colors selected for a line before stopping—blue is the last color to print.

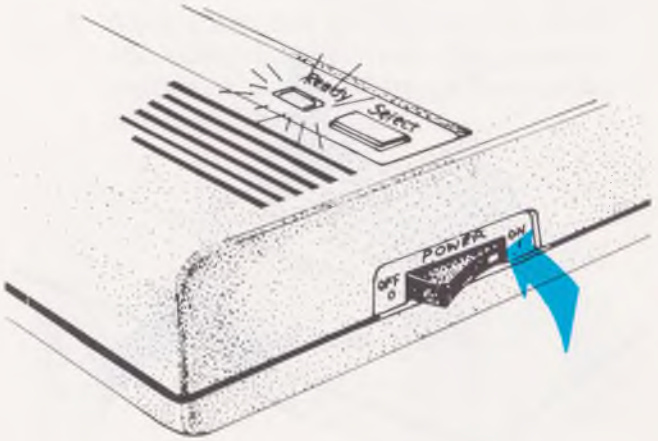

Paper Guides
Paper Window
Paper Door
Paper Advance Knob
Paper Release Lever
OKIMATE
Dark
Ready
Select
Control Panel
ON/OFF Power Switch
Ribbon Door

Where to Begin Printing:

When you first turn OKIMATE on, the top margin will be set at the line where the printhead is located. Therefore, to set the first printing line to 1/2 inch from the top of the page, just turn off your OKIMATE, align the paper with the front edge of the paper window and then turn OKIMATE on. The first line printed will be 1/2 inch from the top of the page and each subsequent page will begin 1/2 inch from the top of the page until the OKIMATE is turned off.

When using standard 11" continuous forms, OKIMATE will automatically skip to the predetermined first printing line whenever it is 1/2" from the bottom of the page. This prevents OKIMATE from printing on the perforation.

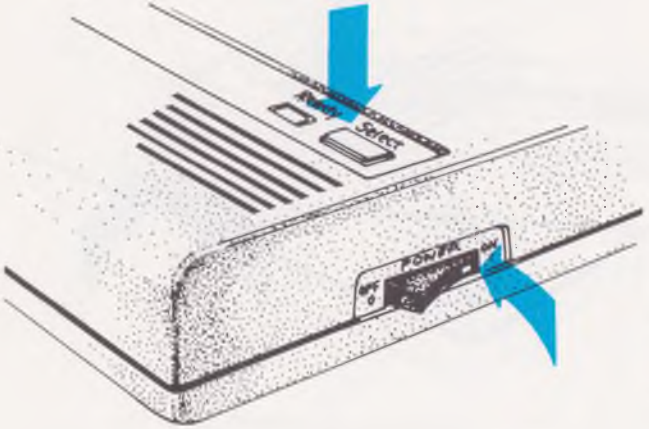
Turn on your OKIMATE.



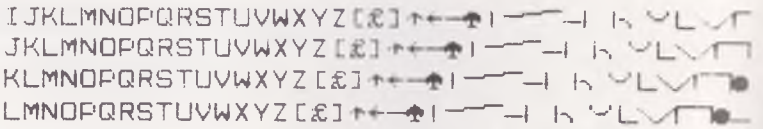
The ready light should come on. If it blinks, refer to page 9 to determine what went wrong. Then press the select button to try again.

Printing A Test Pattern

Turn off your OKIMATE.



To begin the self test, hold the select button down and turn OKIMATE on at the same time. Count to 2 before releasing the select button and OKIMATE will print a test pattern.



To stop the test, turn off your OKIMATE.

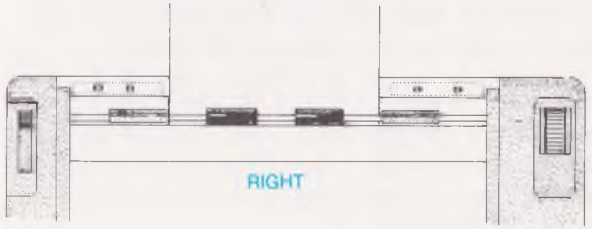
Now you're ready for a complete demonstration of OKIMATE's abilities. A preprogrammed demonstration is included in your Plug 'N Print kit on both a cassette tape and disk. Here's all you need to do:

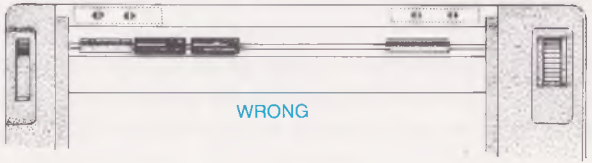
With paper inserted, use the paper advance knob to move the paper to the top of the next page.

Continue to advance the paper so that it is even with the paper window. This will allow printing to begin 1/2 inch below the top of the page—the distance between the perforation and the first printed line on a page. When you turn OKIMATE on, the first printing line is recorded into memory and OKIMATE will automatically leave a bottom and top margin on succeeding pages.

Check the position of the paper rollers, making sure they are evenly spaced between the right and left paper guides. If both rollers are to the left or all the way to the right, you may have difficulty inserting paper. To adjust the rollers:

1. Locate the rollers and brackets in the paper slot at the back of the printer.
2. Slide them out so that they are about the same distance from the printer's sides as the two white rollers on the paper window.





Connect your OKIMATE to your Commodore:

Make sure both the OKIMATE and the Commodore are OFF.

Plug one end of the data cable supplied in your Plug 'N Print kit into the Commodore computer or the Commodore disk drive.

Connect the other end of the cable into the port on OKIMATE's control module.

For a sample printout and an on-screen tutorial, run the program on your "Learn to Print" disk. Directions for using the demonstration disk follow—if you have a cassette tape recorder skip to page 15.

Running the Disk Demonstration

There are two programs on your demonstration disk—one is a combination demonstration of OKIMATE's capabilities and a tutorial; the other one is a color screen print. Both programs give you a chance to see what OKIMATE can do right away. Here's how you use them:

1. Insert the Learn to Print disk into your disk drive.

2. Type: `LOAD "LEARN",8`

3. Press the `RETURN` key.

4. When you see the READY prompt, type: `RUN`

5. Press the `RETURN` key.

After a minute or so to load, the program will begin. First you'll have the opportunity to see black and white and color demonstrations—the disk will tell you when to put the color ribbon in. You'll get a hard-copy sample of everything you can do with your OKIMATE.

NOTE TO VIC 20 OWNERS: When you're ready to run the Learn to Print program on either cassette tape or disk, unplug any expansion memory connected to your computer.

Then the program will go through on-screen discussions of using OKIMATE with software packages, writing your own programs and basic troubleshooting. You can see some sample programs run on your printer (handy for reference), and you can skip over topics that don't interest you. Just sit back and relax and when it's all over, go to Chapter 2 "The Player's Guide" on page 17 to see what you can do with your OKIMATE 10.

NOTE: If the demonstration disk does not run, but your OKIMATE performed the self test properly, try this command:

```
OPEN 15,8,15
PRINT#15,"I"
```

If the disk still cannot be read and you think you need a replacement disk, call 1-800-OKIDATA and ask for assistance.

Running the Cassette Tape Demonstration

Due to the lack of memory on the cassette tape, the tape demonstration is an abbreviated version of the demonstration on disk. Here's how you run the tape program:

1. Insert the cassette tape in the recorder and make sure the tape is rewound.
2. Type: `LOAD "LEARN"`
3. Depress the RETURN key.
4. When "PRESS PLAY ON TAPE" appears, press the PLAY button on your recorder.
5. When you see the READY prompt, type: `RUN`
6. Press the `RETURN` key.

The program takes a while to load, so please be patient. It will tell you to set up your printer, then it will print out several sample pages in black and white and in color (the tape will instruct you when you need to load a color ribbon). The program produces a

handy programming reference guide in addition to giving you a brief sample of what OKIMATE can do. The program will pause while it loads more data and then ask you to press the RETURN key, so again, be patient.

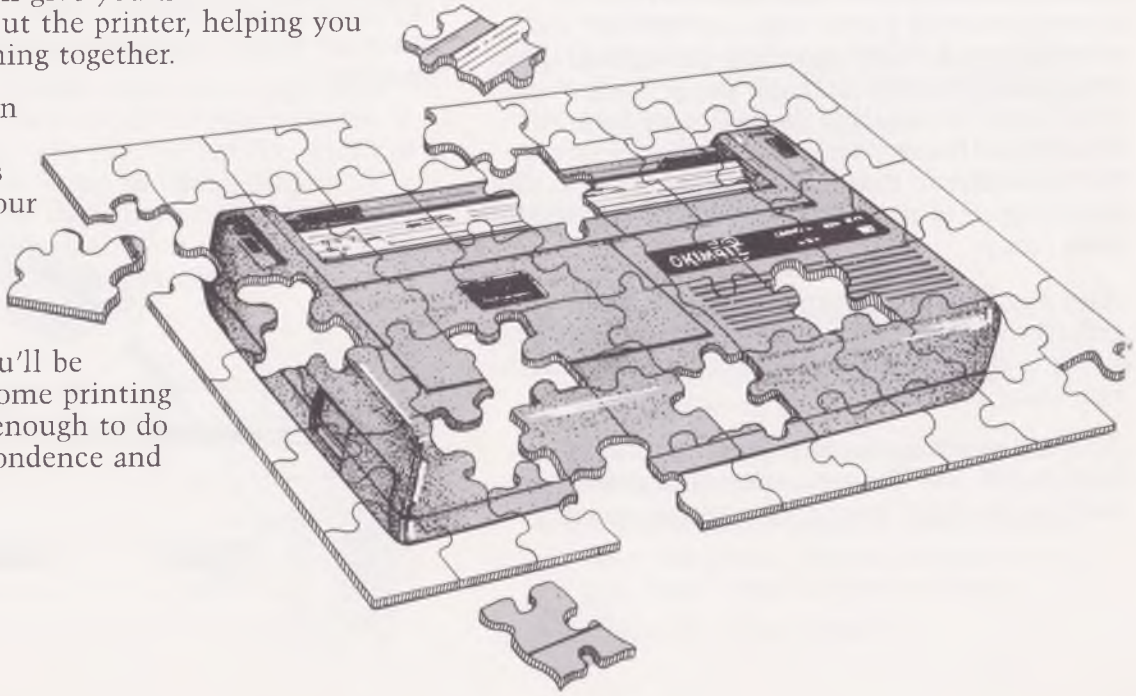
Once the demonstration is completed, you should feel comfortable enough with OKIMATE to learn more about what you can do on your own, so proceed to Chapter 2, "The Player's Guide" for some fancy maneuvering.

A Player's Guide

Puzzled about your next move?

This section will give you time to understand much more about the printer, helping you to piece everything together.

Here you'll learn about the switches, levers and lights on your OKIMATE plus you'll discover what kind of paper can be used. You'll be introduced to some printing fundamentals, enough to do normal correspondence and basic reports.



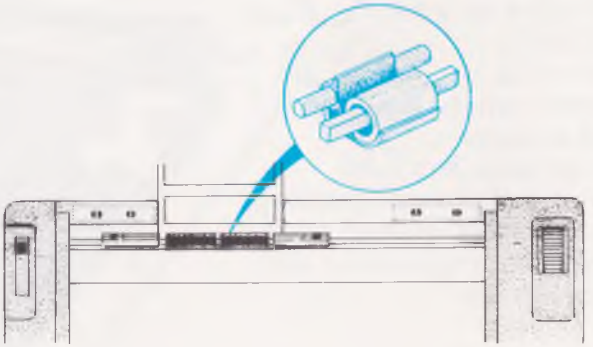
Picking the Proper Paper

When used like a typewriter to print letters and reports, OKIMATE prints well on most smooth paper, with the exception of certain envelopes and paper with rag content, like typewriter bond paper with cotton fiber and erasable bond. When printing artwork, graphs, and charts, thermal transfer paper works best. This paper is available on our order form or through stationery and office supplies stores. We recommend that you experiment with different types of paper and see which one suits your fancy.

Also available is thermal paper for black printing only. Thermal paper is heat-sensitive paper that imprints characters on a page without using a ribbon.

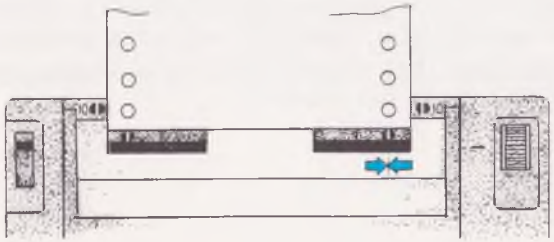
You can print on acetate sheets up to .005″—Scotch/3M 544 Transparency Notepad works well, as do other very thin transparencies.

You can also print on mailing labels by adjusting the left and right margins to the narrow width of the labels. Keep in mind, though, that when you return to typing on standard paper you must reposition the rollers by hand—sliding them to the right so that they are evenly spaced between the paper guides.



Inserting Computer Paper

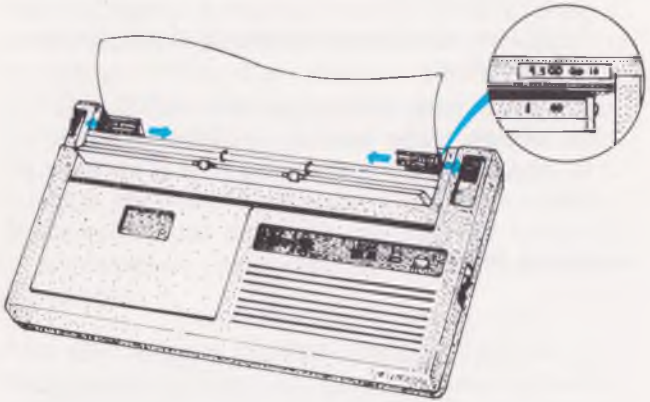
1. Set a small stack of computer paper on the table or place a carton of paper on the floor behind the OKIMATE.
2. Open the paper window.
3. Open the paper release.
4. Align the edges of the first page with the outer marks on the paper guides. If necessary, you may adjust the width of the guides—snap to open; snap to close. Slide the left guide so that it sets the position of the left margin and the right guide so that it adjusts to the width of the paper.



5. Insert the paper behind the paper guides.
6. Advance the paper with the paper advance knob.
7. Close the paper release and the paper window.
8. Make sure the paper is even. If not, check to be sure the border holes are lined up on each margin.

Inserting Single Sheets

1. Lift up the paper window.
2. With a sheet of standard paper (8 1/2" × 11"), align the edges with the inner marks on the paper guides—snap to open; snap to close.
3. Advance the paper using the paper advance knob.
4. Make sure the paper is even. If not, open the paper release, adjust the paper, then close the paper release.
5. Close the paper window.



The Rules of the Game

Chances are that you want to use your OKIMATE to print information from a software package, whether it's a record of your budget from a financial program or a letter to Aunt Mary on your word processor. It's easy to do because these packages almost always have a feature that controls printing, so that all you have to do is follow the instructions provided with your software. Keep in mind that from the computer's point of view, OKIMATE works the same way as the Commodore 1525 printer does, so follow any instructions given for that printer.

There are so many software packages available for Commodore computers that we simply can't provide you with specific details on how each one works with OKIMATE. What we can tell you, however, are some general guidelines that should help make things easier for you to get started.

Most computers and printers use a standard numerical coding system called ASCII. Commodore products, however, operate with a different code, usually referred to as Pet ASCII, and this is the same code that your OKIMATE with the Commodore Plug 'N Print module uses. So be sure to follow printing procedures for Pet ASCII if your software packages use different procedures for each coding system.

Some programs ask you to select which printer you have from a list called a "menu." If the menu doesn't include OKIMATE 10, use Commodore 1525.

Your software may give provisions for using OKIMATE's special features, like different sizes and styles of type, although the flexibility of these packages often varies. You'll need to know the special codes that control the features you want—check the handy reference chart on the back cover foldout of this handbook—and how your software handles those codes—check your software instructions.

The way printer control codes are handled differs from package to package. Some have special codes that go before OKIMATE's codes. Others have ways you can assign OKIMATE's codes to characters you're not likely to use, such as the @ symbol, so that you can change printing styles with a single keystroke. The instructions which came with your software packages should explain how it deals with printers.

Remember that your software package may not let OKIMATE do all the things it's capable of—an accounting package, for example, will probably let you pick a style of type for the entire document but will not allow you to change features within the document.

Color Graphics

The Color Screen Print program available with your OKIMATE works only with the Commodore 64 or SX64 model computers and a compatible graphics software program, like Doodle, Edumate Light Pen, Koala Pad and Super Sketch. Other software packages and programs are being added weekly to the list. Simply check the box asking to be placed on our mailing list that appears on your warranty registration card, and we'll keep you up-to-date plus you'll receive information on how to keep your disk library current.

Once you have the right equipment (If you don't yet, try some color samples on the OKIMATE 10 disk), here's how you run OKIMATE's Color Screen Print program:

1. Insert the Learn to Print disk in the disk drive.
2. Type: `LOAD "COLOR",8`
3. Press the `RETURN` key.
4. When the READY prompt appears, type: `RUN`
5. Press the `RETURN` key.

After about a minute, you'll see the main title frame. The program will then ask you if you want instructions. Answer "Y" for "yes" the first time around. You'll be asked to prepare the OKIMATE with paper and a black ribbon. The program will then print an instruction sheet explaining how to print a picture—it's a good idea to save this to use as a reference later.

The Color program is completely self-documenting, so all you have to do is follow the directions on the screen at each step to choose the format you're using and the picture you want to print. The program will even tell you if OKIMATE isn't ready to print and will give you a list of things to check.

Once you've made your selections and the printer is ready—don't forget to insert the color ribbon—just press the `RETURN` key and watch OKIMATE print your picture in full color. It will take a while because each line must print three times, but the results should be worth the wait.

NOTE: Just remember that you can't print a copy of your triumph with Zaxxon. OKIMATE's color screen print program will only print pictures you've previously created and saved using a compatible software package.

BASIC PRINTING

OPEN
PRINT#
CLOSE

To print a program you need:

. . . an OPEN statement
. . . a PRINT# statement
. . . a CLOSE statement

Start the program with an OPEN statement, like this:

```
10 OPEN 3,4
```

This opens up a channel to the printer. The first number after OPEN identifies the channel—it can be any number from 0 to 255.

The second number identifies the device the channel is being opened to—OKIMATE is currently selected as 4. Other devices, such as a disk drive or cassette tape must be given other numbers. (See page 51 for further details.)

Next comes the PRINT# statement which looks like this:

```
20 PRINT#3, "PRINT TEXT HERE"
```

The number after PRINT# must be the same as the first number in your OPEN statement. (We used PRINT#3 because we used 3 in our OPEN statement.) This must be followed by a command and then OKIMATE will print everything between the quotation marks.

You can also print the results of a calculation—like this:

```
25 PRINT#3,5*3
```

or the value of a variable—like this:

```
28 LET A$ = "THE MAGIC NUMBER
   IS "
29 LET A = 42
30 PRINT#3,A$,A
```

A comma (,) between two parts of a print statement will tab at 10 column intervals. A semicolon (;) will print the two parts without spaces between them.

Finally, after your last print statement, add a CLOSE statement:

```
40 CLOSE 3
```

This closes the channel to OKIMATE. The number after CLOSE must be the same as the first number in your OPEN statement.

HOW TO PRINT A LISTING

```
OPEN 3,4
CMD3
LIST
PRINT#3
CLOSE 3
```

It is often handy to have a printed listing of a program for debugging or reference. After you've entered your program, follow the steps below. **Don't give the statements a line number.** Each command will be executed as soon as you type it in and press the RETURN key.

First, OPEN a channel to OKIMATE:

```
OPEN 3,4
```

Now type:

```
CMD3
```

The number after CMD must be the same as the first number after OPEN.

When you press the RETURN key, READY will print on the paper instead of the screen. Now PRINT and LIST will send information to the printer rather than displaying it on the screen.

Now type:

```
LIST
```

OKIMATE will print your program listing.

To close the channel and return to normal operation, type these two lines:

```
PRINT#3
CLOSE 3
```

Don't forget to press the RETURN key after each line.

When you CLOSE the channel, you'll see READY on the screen again. If you have any problem closing the channel, press the RUN/STOP and RESTORE keys at the same time.

You can use CMD within a program—for example, to print a listing at the end of the program. Just remember to close the channel with the two lines above.

Your Commodore Owner's Guide and Programmer's Reference Guide will give you more details on using the commands we've explained here.

Special Effects

When you turn OKIMATE on it will print 10 characters per inch and 6 lines per inch. But OKIMATE features a variety of printing styles you can use to put extra flair into your documents just by adding a few simple commands.

OPEN "WIDE"

```
10 OPEN 3,4
20 PRINT#3,CHR$(14);"WIDE"
30 PRINT#3,"STILL WIDE"
40 CLOSE 3
```

Will give you this:

```
WIDE
STILL WIDE
```

CHARACTER SIZE

CHR$(15)	Normal
CHR$(15);CHR$(14)	Wide
CHR$(29);CHR$(14)	Bold
CHR$(29)	Fine

Wide Print

Standard printing measures 10 characters per inch—like a pica typewriter. To print wide letters—5 characters per inch—add CHR$(14) to your PRINT# statement like this:

Notice that once you've told OKIMATE to print wide, it keeps going. To turn wide printing off, add this command, CHR$(15).

BACK TO NORMAL

```
10 OPEN 3,4
20 PRINT#3,"NORMAL ";CHR$(14);"WIDE ";CHR$(15);"NORMAL "
40 CLOSE 3
```

Will give you this:

```
NORMAL WIDE  NORMAL
```

```
10 OPEN 3,4
20 PRINT#3,CHR$(29);"FINE PRINT "
30 PRINT#3,CHR$(15);"NORMAL PRINT"
40 CLOSE 3
```

Will give you this:

```
FINE PRINT
NORMAL PRINT
```

Fine Print

This printing style measures 17.1 characters per inch. You can fit up to 136 characters on a line using fine print, as opposed to 80 characters per line for normal print.

To print fine characters, add CHR$(29) to your print statement. Use CHR$(15) to switch back to normal size print.

Bold Print

Bold printing measures 8.5 characters per inch—double the width of fine print. To get this printing style, just add the wide print command, CHR$(14), after you've changed to fine print using the CHR$(29) command.

To switch back to normal print, use the CHR$(15) command. To return to fine print, use CHR$(29).

GETTING BOLD

```
10 OPEN 3,4
20 PRINT#3,CHR$(29);"FINE ";CHR$(14);"BOLD ";CHR$(29);"FINE"
30 CLOSE 3
```

Will give you this:

FINE **BOLD**FINE

CHARACTER CONTROL

CHR$(145)	Cursor Up
CHR$(17)	Cursor Down
CHR$(18)	Reverse On
CHR$(146)	Reverse Off

Cursor Up and Cursor Down Characters

OKIMATE can print both "cursor up" (upper case letters and graphic symbols) and "cursor down" (upper and lower case letters) characters like the ones the Commodore displays on the screen.

Normally when you OPEN a channel to OKIMATE, it is set for the cursor up mode. By adding the number "7" to the OPEN statement, you can set OKIMATE for cursor down printing *for one line only.*

The statement looks like this:

```
OPEN 3,4,7
```

You can switch between cursor up and cursor down by using a method like the one for wide and fine printing. Just add CHR$(17) to print in cursor down mode and CHR$(145) to switch to cursor up mode.

GOING DOWN?

```
10 OPEN 3,4
20 PRINT#3,"CURSOR UP ";CHR$(17);"CURSOR DOWN ";CHR$(145);
   "CURSOR UP"
30 CLOSE 3
```

Will give you this:

```
CURSOR UP cursor down CURSOR UP
```

Keep in mind, these modes are controlled differently for the printer than for the display screen which uses the Commodore and SHIFT keys. *This can be a little confusing—what you see is not necessarily what you get.*

Reverse Field Printing

This feature creates white letters on a black background. CHR$(18) starts reverse field printing; CHR$(146) returns OKIMATE to normal black on white printing.

PUTTING IT IN REVERSE

```
10 OPEN 3,4
20 PRINT#3,"NORMAL ";CHR$(18);"REVERSED ";CHR$(146);"NORMAL"
30 PRINT#3,CHR$(18);" REVERSED PRINTING"
40 PRINT#3," STOPS AT THE END OF THE LINE"
50 CLOSE 3
```

Will give you this:

Reverse field printing is automatically cancelled at the end of a line. If you want more than one line, keep adding CHR$(18) at the beginning of each new line.

FORMATTING PAGES

CHR$(13)	One line feed
CHR$(12)	New page

New Page

When you turn OKIMATE on it records the top of form (first line for printing) at the position of the printhead on the page. If you are using standard 11" paper, you can skip directly to the top of the next page by putting the command CHR$(12) into a print statement.

Then, when OKIMATE is 1/2" from the bottom of a page, it will automatically skip to the top printing line of the next page. This prevents printing on the perforation.

```
10 OPEN 3,4
20 PRINT#3,CHR$(16);"05TEXT";CHR$(16);"20TEXT"
30 PRINT#3,CHR$(29);CHR$(16);"09FINE TEXT";CHR$(16);"35 TEXT FINE"
40 CLOSE 3
```

Will give you this:

```
TEXT              TEXT
FINE TEXT          TEXT FINE
```

TABBING	
CHR$(16);"05"	Indent five spaces

Tabbing

With this feature you can specify where printing starts on a line. Add this two-part command to your print statement:

1. Type: CHR$(16);
   (Don't forget the semicolon!)
2. Type: "
   (Just a quotation mark.)
3. Type the two-digit column number where you want printing to begin—if the number is less than 10 use a 0 as the first digit.
4. Type: "
   (A close quotation mark.)
5. Enter the data you want to print.

The columns are as wide as a character—1/10" in normal print, 1/17" in fine print.

```
10 OPEN 3,4
20 PRINT#3, "PRINTING. NEXT LINE WILL BE"CHR$(13)
30 PRINT#3,"DOUBLE SPACED"
40 CLOSE 3
```

Will give you this:

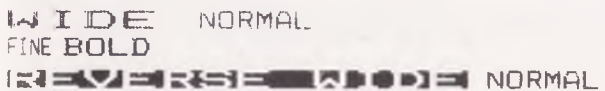
```
PRINTING. NEXT LINE WILL BE

DOUBLE SPACED.
```

Line Feed

OKIMATE automatically moves the paper up after printing each line. However, there may be times you'll require extra line feeds within your program. To do this, put one CHR$(13) command for each extra line you want to skip within a print statement.

```
10 OPEN 3,4
20 NP$ = CHR$(15):REM NORMAL PRINT
30 WP$ = CHR$(15)+CHR$(14):REM WIDE PRINT
40 BP$ = CHR$(29)+CHR$(14):REM BOLD PRINT
50 FP$ = CHR$(29):REM FINE PRINT
60 RP$ = CHR$(18):REM REVERSE PRINT ON
70 RO$ = CHR$(146):REM REVERSE PRINT OFF
80 PRINT#3,WP$;"WIDE";NP$;"NORMAL"
90 PRINT#3,FP$;"FINE";BP$;"BOLD"
100 PRINT#3,NP$;RP$WP$;"REVERSE WIDE";NP$;RO$;"NORMAL"
110 CLOSE 3
```

Will give you this:



Programming Hints

If you use different printing features frequently, there's a way to save yourself typing time. Define "string variables" as the codes you want to use and add the variables to your print statements. (See your Commodore User's Guide for details on defining variables.)

String variable names should have two letters plus a dollar sign. Try to pick names that will remind you of their function and try to be consistent with the names in all your programs.

```
10 OPEN 3,4
20 LET T1$ = CHR$(16)+"05":REM TAB AT COL.5
30 LET T2$ = CHR$(16)+"10":REM TAB AT COL.10
40 LET T3$ = CHR$(16)+"15":REM TAB AT COL.15
50 PRINT#3,T1$;"TEXT";T3$;"TEXT COL 15"
60 PRINT#3,T2$;"TEXT COL.10"
70 CLOSE 3
```

Will give you this:

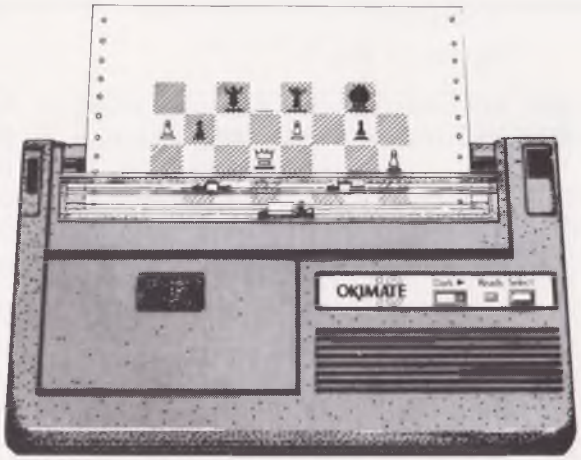
```
TEXT       TEXT COL 15
     TEXT AT COL 10
```

You can also use this shortcut to set tab stops. Here's a sample program that sets three stops at five column intervals.

Advanced Strategies

Don't read this chapter unless you've already mastered the skills required in "The Player's Guide."

As you know by now, OKIMATE isn't difficult to use, but it isn't a toy either. OKIMATE is a precision printer that is designed to grow with you.



You've probably mastered the tricks to some pretty fancy printing and as you get more familiar with OKIMATE, you'll find it has many more sophisticated features. This chapter contains much more technical information and features that not everybody will need to use, so we wanted to caution you before continuing on.

If you do decide to skip this part or wait for a rainy day to try it out, take a look at "Dealing with Trouble" beginning on page 45 before putting this handbook in a drawer somewhere. That way you won't miss out on the information about cleaning the printhead and a few suggestions for keeping OKIMATE at its best.

But we're serious about this section, don't read it unless you really want to!

CROSSING A FINE LINE

```
10 OPEN 3,4
20 PRINT#3,CHR$(27);CHR$(10);CHR$(72)
```

ADVANCED FORMATTING

CHR$(27);CHR$(10);n	Fine line spacing
CHR$(27);CHR$(16);n_1n_2	Fine positioning
CHR$(27);"A"	Skip over perforation (ON)
CHR$(27);"B"	Skip over perforation (OFF)

Fine Line Spacing

A normal line space is 1/6" from the bottom of one line to the top of the next. This fine line spacing commands lets you change the spacing in multiples of 1/144" up to 256/144". You just add the command, CHR$(27);CHR$(10);, followed by the multiple you want within the CHR$ format. The fine line spacing command works for one line only—if you want to continue on several lines, you must enter the command at the beginning of each line.

The sample program above changes the line spacing from 1/2", which is 72/144", to 1/8", which is 18/144". By the way, for 256/144" line spacing use 0 in your CHR$ command.

Fine Positioning

This feature lets you start printing at a specific distance from the left margin. This distance is measured in dot columns, which is 1/60" wide for normal print. (There are 480 dot columns on a line.)

NOTE: If you're using fine print or bold print, the distance from the left margin will be measured in columns that are 1/103" wide. The procedure is the same, but keep in mind that there are 824 dot columns on a line of fine print.

Suppose you wanted to start printing at the 180th column, which would be three inches from the margin. Add these commands at the 180th dot column:

```
PRINT#3,CHR$(27);CHR$(16);
```

Follow the command with two codes which represent the number of dot columns. Take the number of dot columns (180 in our example) and divide it by 256. The quotient is the first code; the remainder is the second. First divide 180 by 256, like this:

```
    0 quotient
256)180
  - 0 subtract
  180 remainder
```

Now, take the quotient and the remainder and add them to your print statement, followed by your text:

```
PRINT#3,CHR$(27);CHR$(16);
CHR$(0);CHR$(180);"TEXT..."
```

Continuous Printing

You probably already know that OKIMATE automatically skips over the perforations separating the pages of computer paper. This makes your documents easier to read and saves wear and tear of the printhead.

If you're using paper that's more that 11" long, you'll probably want to stop the printer from automatically skipping. To cancel skipping add this statement to the beginning of your program:

```
PRINT#1,CHR$(27);"B"
```

OKIMATE will print without skipping until you either turn it off or until you send this command:

```
PRINT#1,CHR$(27);"A"
```

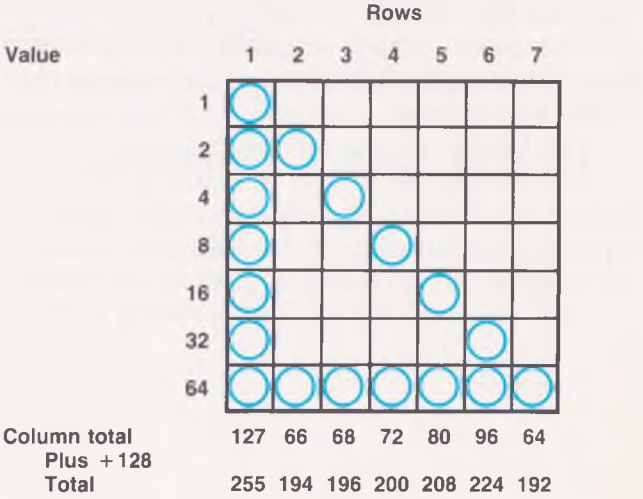
GRAPHICS

`CHR$(8)`	Print graphics
`CHR$(15)`	Return to text mode
`CHR$(8);CHR$(26)`	Repeat graphics

Black and White Graphics

You can use OKIMATE with any graphics program that can produce a printout—just by following the directions for the Commodore 1525. You can also program graphics directly, but it takes a little bit of paperwork.

The first step is to map out your image on a piece of graph paper. OKIMATE prints graphics in columns of seven dots, so divide your picture, like ours', into seven-row strips:



```
10 OPEN 3,4
20 PRINT#3,CHR$(8);CHR$(255);CHR$(194);CHR$(196);
   CHR$(200);CHR$(208);CHR$(224);
30 PRINT#3,CHR$(192);CHR$(15)
```

Will give you this:

The numbers on the left show the value of each dot position in a column. Starting at the left column add the values for each position that contains a dot. Then add the next column to the right and so on until you have a total value for each of the seven columns.

Now take each column and add 128 to the totals. Then you're ready to put everything together in a print statement.

First comes CHR$(8), which tells OKIMATE to print graphics; follow this with the data we calculated above. If you want to combine graphics with text, enter CHR$(15) to return to normal text printing.

Be sure to add CHR$(15) when you're finished printing graphics—otherwise OKIMATE will stay in graphics mode until you turn it off. You'll end up with static if you try to print text.

MAKING A DATA STATEMENT

```
10 DATA 255,194,196,200,208,224,192
20 FOR I=1 TO 7
30 READ G
40 G$=G$ + CHR$(G)
50 NEXT I
60 OPEN 3,4
70 PRINT#3,CHR$(8);G$;CHR$(15)
80 CLOSE 3
```

Will give you this:

Data Statements

Writing graphic data the way we just did can be a little tedious. You can make things alot easier for yourself by reading the information from a data statement. Keep in mind that the OKIMATE can print a maximum of 480 graphic columns in one line. If you send more than that, printing will continue at the left margin of the next line.

```
10 OPEN 3,4
20 L$=CHR$(8)+CHR$(26)+CHR$(30)+CHR$(221)+CHR$(15)
30 PRINT#3,L$;"GRAPHICS";L$
40 CLOSE 3
```

Will give you this:

Repeating Graphics

If you're creating a decorative border, bar chart or similar graphics, you'll find the repeat graphics command, CHR$(8);CHR$(26), very useful. The repeat command repeats one column of dots up to 255 times.

Just follow the CHR$(8);CHR$(26) command with the number of repetitions in CHR$ form, then the graphic information. Putting CHR$(0) after the repeat command will create 256 repetitions.

Color Printing

The easiest way to get a color printout with OKIMATE is to use the screen print program on your Learn to Print disk. You can write your own programs to print characters or graphics in color, but it's a rather complicated process. Here we'll explain how the color printing system works and how to use it in BASIC programs.

The color ribbon consists of three color strips—yellow, magenta, and cyan—plus a black and clear marker strip. OKIMATE uses the non-printing marker strip to align the ribbon. The color strips are for printing.

```
10 EM$=CHR$(27):EM$=EM$+CHR$(25):REM ALIGN COLOR RIBBON
20 OPEN 3,4
30 PRINT#3,EM$;"  4  TEXT COLORS:  5  ORANGE YELLOW GREEN  8  BLACK"
40 PRINT#3,"  4  TEXT COLORS: RED ORANGE      14      PURPLE BLACK"
50 PRINT#3,"  4  TEXT COLORS:      19      GREEN PURPLE BLACK BLUE"
60 CLOSE 3
```

The printhead passes over each line three times, once for each color strip. After the third pass, OKIMATE looks for the alignment command to reset the ribbon to the first color. *Like an artist mixing colors on a palette, OKIMATE can print in a variety of colors just by mixing the three primary colors on the paper.*

NOTE: In the color program above the blue numbers indicate the number of spaces to insert. For example, line 50 uses 4 spaces followed by text then 19 spaces.

Every color printing program must include these codes at the beginning of the first print statement:

```
CHR$(27);CHR$(25)
```

This tells OKIMATE to look for the alignment marker and to set the ribbon at the beginning of the first color, yellow. Therefore, anything printed in the next print statement appears in yellow. The following print statement data appears in magenta and the third appears in cyan.

At the end of the third print statement, add CHR$(13) to return the printhead to the left and to advance the paper one line. The next print statement must again begin with the alignment command, CHR$(27);CHR$(25).

Don't forget to insert the color ribbon before trying this print sample!

Color Shading (For Experts Only)

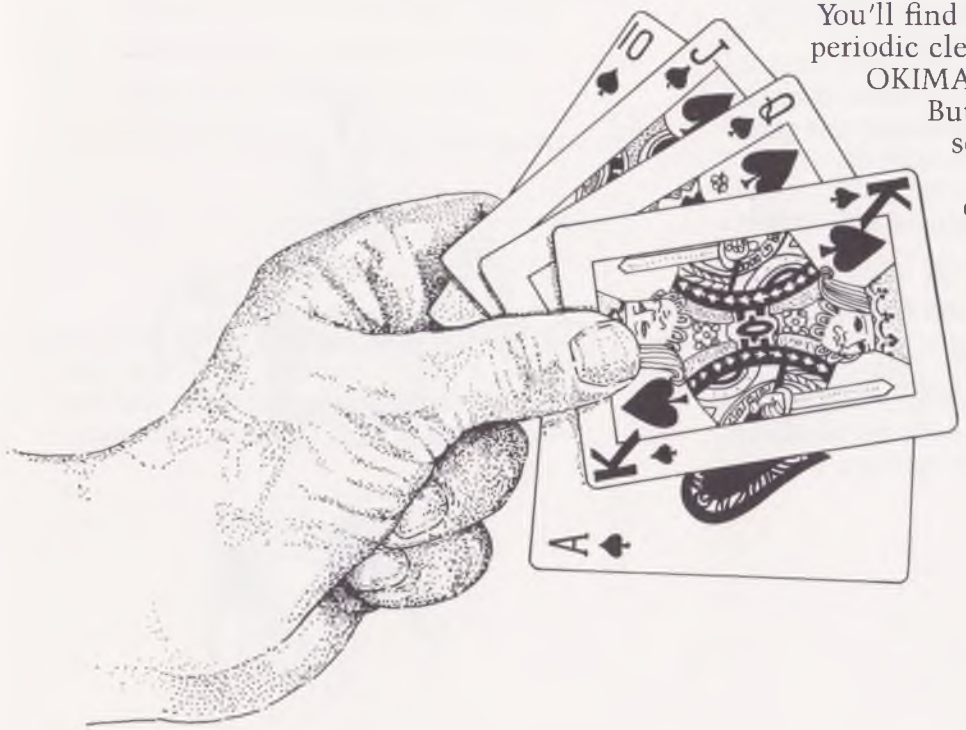
The program you just did printed seven colors, but OKIMATE isn't limited to that. By combining dot graphics and color printing, you can create a variety of resolutions and hues. The secret to reproducing the colors in our program on page 44 is a checkered graphic pattern that combines color dots with white spaces.

When you print this pattern in color, you get a light shade of that particular color, since the color you choose is mixed with white. For example, a checkered red gives you a pink shade. By combining light colors with other light colors, you can create dozens of colors.

The program we've provided will give you a printout of 26 colors. It uses three subroutines to create solid blocks of color, checkered patterns and white spaces. The data statements in lines 4000, 4010 and 4020 list the possible combinations of yellow, magenta and cyan using these subroutines:

```
5     REM:COMMODORE COLOR DEMO
10    OPEN 3,4
20    READ Y,M,C
30    PRINT#3,CHR$(27);CHR$(25);
35    PRINT#3,CHR$(8);
40    ON Y GOSUB 1000,2000,3000
50    ON M GOSUB 1000,2000,3000
60    ON C GOSUB 1000,2000,3000
70    PRINT#3,CHR$(27);CHR$(10);CHR$(14);
80    IF Y=0 THEN PRINT#3,CHR$(15):CLOSE 3:END
90    GOTO 20
1000  PRINT#3,CHR$(26);CHR$(250);CHR$(255);
1005  PRINT#3,CHR$(13);
1010  RETURN
2000  FOR X=1 TO 125
2010  PRINT#3,CHR$(213);CHR$(170);
2020  NEXT X
2025  PRINT#3,CHR$(13);
2030  RETURN
3000  PRINT#3,CHR$(13);
3010  RETURN
4000  DATA 1,1,1,2,1,1,3,1,1,2,2,1,3,1,2,2,3,1,3,2,1,3,3,1,3,2,2,3,3,2,1,2,1
4010  DATA 2,1,2,2,2,2,1,1,3,2,1,3,3,1,3,2,3,2,2,2,3,3,2,3,1,2,2,1,2,3,1,3,3
4020  DATA 2,3,3,1,1,2,1,3,1,1,3,2,0,0,0
4030  REM:1=SOLID COLOR
4040  REM:2=HALF-TONE
4050  REM:3=WHITE (SKIP COLOR)
```

Dealing with Trouble



You'll find that with the recommended periodic cleaning of the printhead, your OKIMATE is the best deal in town. But if it's in the cards that you someday have problems with your printer, this section is designed to give you a hand.

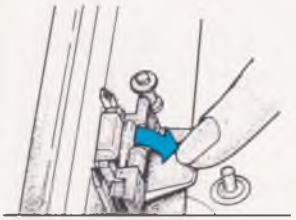
You don't have to be a computer ace to handle the minor problems listed here. However for problems you can't deal with, don't gamble on fixing them yourself, use the repair and warranty information on page 53.

Cleaning Up

Wipe the OKIMATE paper window with a clean, damp, lint-free cloth whenever ribbon ink or dust begins to accumulate.

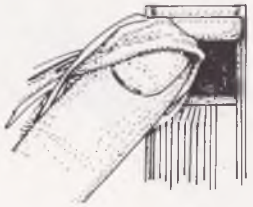
Clean your OKIMATE printhead after four ribbon changes or whenever you notice the print fading or missing dots.

1. Turn off your OKIMATE.
2. Unplug your OKIMATE.
3. Open both the paper and ribbon doors.
4. Remove the ribbon cartridge, returning the printhead to its upright position.
5. Unsnap the printhead lock lever, leaving the printhead in its upright position.



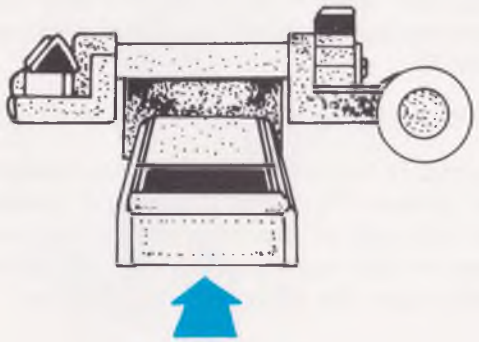
6. Grasp the tab attached to the printhead and lift the printhead out of the assembly.

7. Wipe the dark surface of the printhead with a clean, lint-free cloth that has been dipped in alcohol or an alcohol-based typewriter cleaning solution.



8. Wipe off all ink and paper lint.

9. Replace the printhead—make absolutely certain that the black thermal surface faces towards the paper.
10. Close the printhead lock lever.
11. Replace the ribbon cartridge.
12. Close the paper and ribbon doors.



Replacing the Printhead

If you notice the characters or graphics printed by your OKIMATE are not fully formed, with one or more dots consistently missing, your printhead may need replacing. Clean the printhead first, according to the directions on page 46 and then if the problem still persists, replace the printhead. (Ordering information available on page 53.)

To replace the printhead, remove it following the steps described in "Cleaning Up" on page 46. Insert a new printhead in its place—making absolutely certain that the dark thermal side of the printhead faces the paper and the printhead carriage is in its upright position.

Check'Mate

Use this handy troubleshooting guide if you have any problems with your printer:

What happens if. . .
. . . the printer doesn't work and the READY light is not on?

Check the data cable and the Plug 'N Print control module connections. Make sure both your printer and computer are switched on.

. . . the READY light blinks slowly?

Your printer is out of paper or ribbon. Replenish the supply and press the SELECT switch when ready to continue.

. . . the READY light blinks rapidly and the printer slows down?

The printhead has overheated. Do not shut off power—the printer will automatically resume full speed when it cools.

. . . printing becomes faded or blurred?

The printhead needs cleaning. Follow the steps in "Cleaning Up" on page 46.

. . . one or more printing dots is consistently missing from characters or graphics even after cleaning the printhead?

The printhead needs to be replaced. Use the enclosed order form to order a new printhead, then replace it following the directions on page 47.

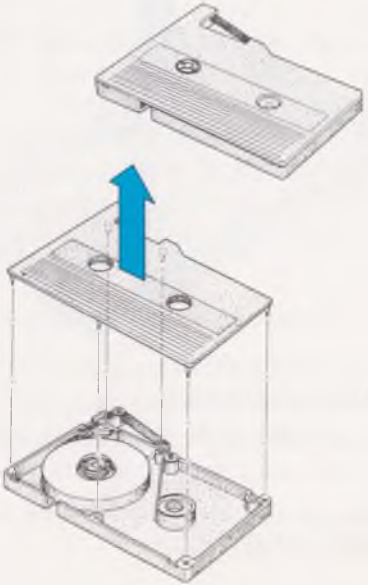
. . . the ribbon becomes loose or tangled?

Carefully remove the ribbon cartridge from the printer. Turn the thumbdial (located on the left side of the cartridge) counter-clockwise to take up the slack. Before reinserting, make sure the ribbon is not twisted.

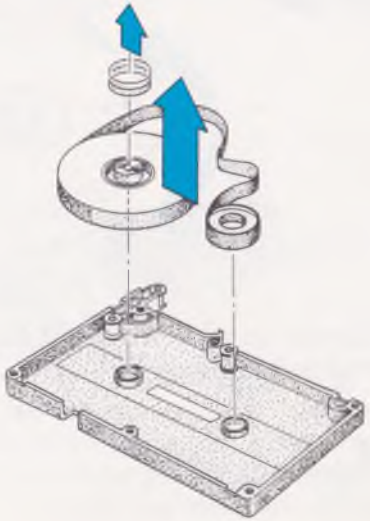
. . . one of the ribbons snapped?

You can repair a damaged ribbon by following these steps:

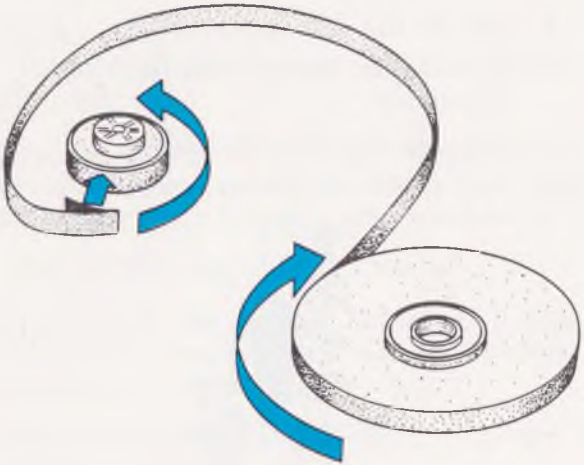
1. You'll need tape, scissors and a flat-headed screwdriver.
2. Pry open the ribbon cartridge by inserting the screwdriver into the slots on the sides of the casing.



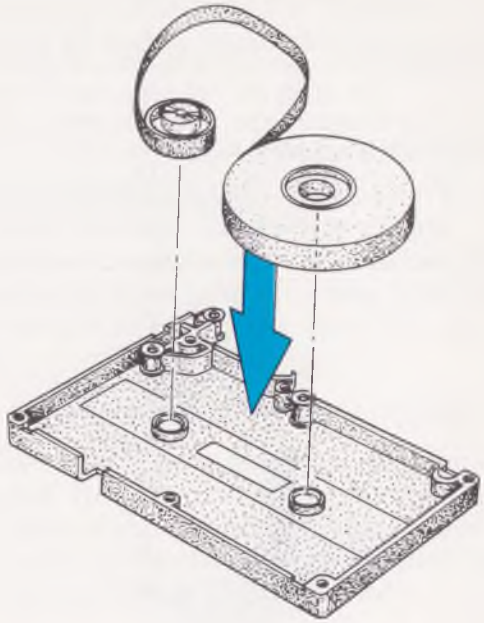
3. Once the cartridge is open, pull the ribbon clockwise so that you have a few inches of undamaged ribbon to work with.
4. Cut off the damaged ribbon.
5. Remove the spring from the blue thumbdial.
6. Remove the blue thumbdial.



7. Tape the new ribbon end to the blue thumbdial.



8. Thread the ribbon around the left side of the three black rollers.
9. Reinsert the blue thumbdial and wrap the ribbon around it about 10 times counter-clockwise until the ribbon is secure and moving freely.



10. Replace the spring.
11. Line up the top and bottom of the casing and snap them together.
12. Take up any loose ribbon by turning the thumbdial.

. . . I forget to take the color ribbon out when printing text?

Your document will be printed in a random variety of colors. If you want to print text in color, it can be done, but follow the directions on page 41.

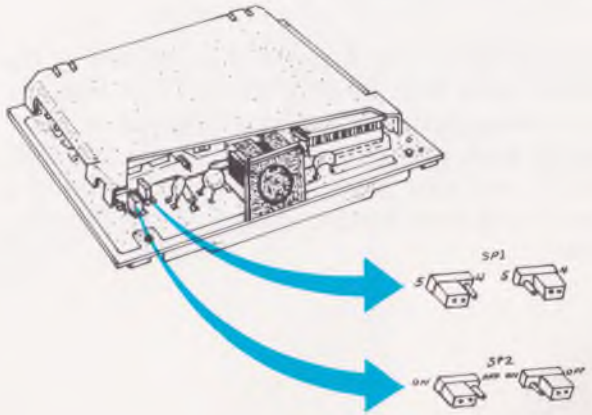
. . . I want to remove the control module from the printer?

Turn both the OKIMATE and the COMMODORE off. Disconnect the power cord and the data cable. Remove the locking cover and insert the tabs in the cover into the slots on the module. Holding on to the cover, gently slide the module out of the printer. Don't use the ports to pull the module out, they may snap off.

. . . I have more than one printer?

You can make your OKIMATE device 5 by changing jumper plug SP1 on your Plug 'N Print control module. Here's how:

1. Turn off your OKIMATE and your COMMODORE.
2. Disconnect the data cable.
3. Remove the module locking cover.
4. Insert the tabs in the locking cover into the slots in the module and gently slide the module out.
5. Unsnap the plastic cover on the control module and find the jumper plug labeled SP1.



6. Grasp the white plug and pull it up.
7. Insert the white plug on the side labeled "5."
8. Snap the plastic cover back into place.
9. Slide the control module back into OKIMATE.
10. Reconnect the data cable.
11. Make sure you address OKIMATE as device 5 in your programs.

. . . my documents are doubled spaced and I want single spacing!

Some software packages add a linefeed at the end of each line. Since OKIMATE is also set up to automatically insert a linefeed at the end of each line, you get double spacing OKIMATE will not put a linefeed at the end of a line if you turn jumper plug SP2 off. Here's how:

1. Turn off your OKIMATE and your COMMODORE.
2. Disconnect the data cable.
3. Remove the module locking cover.
4. Insert the tabs in the locking cover into the slots in the module and gently slide the module out.
5. Unsnap the plastic cover on the control module and find the jumper plug labeled SP2.
6. Grasp the white plug and pull it up.
7. Insert the white plug on the side labeled "OFF."
8. Snap the plastic cover back into place.
9. Slide the control module back into OKIMATE.
10. Reconnect the data cable.
11. Make sure you address OKIMATE as device 5 in your programs.

. . . I have questions or problems not answered here!

Who you call depends on the nature of your problem. If you are missing an item in your Plug 'N Print Kit, take the entire kit back to the place of purchase. If you need additional supplies, complete the OKIMATE 10 order form and mail it to:

OKIDATA Supplies
CN-8492
Trenton, NJ 08650

If you require service on your OKIMATE, contact one of the three service centers listed on page 57. All service on OKIMATE 10 printers must be performed by an Okidata Repair Center. Repairs needed within the 90-day warranty period will be performed at no charge. Repairs after the expiration of the warranty will be performed at a flat rate of $55.00. Here's what you'll need to do:

How to Pack

Use the original carton and styrofoam if possible. Otherwise pack your printer in a strong, corrugated cardboard box and surround it with at least three inches of crumpled newspaper.

What to Ship

Send the printer, the operating module (plugged into the side of the printer), and a print sample identifying your problem—if possible. Please include a written description of your problem, what software you're using and your phone number. DO NOT SEND YOUR RIBBON CARTRIDGE, DATA CABLE, DISKS OR TAPES.

A DATED SALES RECEIPT MUST BE INCLUDED FOR WARRANTY REPAIRS.

How to Ship

Prepaid

Where to Ship	Send to the Okidata Repair Center nearest you. There's a listing on page 57.
Repair Cost	Fifty-five dollars ($55.00) flat rate for all repairs after the warranty period. Payment must be made by check or a money order payable to Okidata, must accompany the printer. Do not send cash.
Repair Warranty	All repairs performed by an Okidata Repair Center are warranted for 30 days.

If you have questions concerning operating the OKIMATE that are not addressed in this handbook, call 1-800-OKIDATA between 8 a.m and 7 p.m EST and a Customer Service Representative will be happy to assist you.

Specifications—OKIMATE 10

Print Method

Method:	Thermal Transfer Dot Matrix
Format:	Unidirectional printing

Characters

Character size:	9H × 9V dots
Lower case:	True, below-the-line descenders
Character pitches: (CPI = characters per inch; CPL = characters per line)	Wide print: 5 CPI/40 CPL Bold print: 8 CPI/66 CPL Text print: 10 CPI/80 CPL Fine print: 17 CPI/136 CPL
Line spacing:	6 or 8 Lines per inch
Reverse printing:	Yes
Special characters:	Graphic characters

Graphics

Density:	60H × 72V dots per inch
Printline:	480H × 7V dots
Line spacing:	14/144″ or variable n/144″

Speed

Text:	Speed—60 characters per second Throughput—240 words per minute
Graphics:	Speed—18 characters per second

Paper

Type:	Plain or thermal
Paper feed:	Pin feed for computer paper and friction feed for single sheets or roll paper
Width:	5″ to 10″
Special features:	Paper out detector Top of page setting (skip over perforation) with automatic top and bottom margins on computer paper

Printhead

Print elements:	9
Dot type:	Square dots for full coverage
Replacement:	Snap in—No tools required.

Ribbon

Type:	Black or color Single-strike
Ribbon:	Easy load, "clean hands" cartridge
Ribbon life:	120K characters or about 75 average pages in black. About 35K characters or 10 screen prints in color.
Special features:	Ribbon near-end detector Ribbon-saving (ribbon does not advance when multiple spaces are printed).

Controls

Power:	ON/OFF switch
Select:	PAUSE/RESTART push button
Ready lamp:	Indicates READY/NOT READY to print
Print darkness:	Slide switch
Paper handling:	Typewriter-like paper release lever and paper advance knob

Color

Ribbon:	3 colors
Text:	7 colors
Screen print:	16 screen colors
Color graphics:	40-50 or more

Physical

Size:	13″L × 7.5″W × 2.25″H
Weight:	7 lbs.
Power:	115 volts AC, 40 watts

Features

Includes everything you need to print.	Commodore control module Data cable Black ribbon Color ribbon Learn-to-Print software package on disk and tape Color Screen Print software package on disk Printer Handbook Computer paper

Specifications subject to change without notice.
*Commodore is a registered trademark of Commodore Business Machines, Inc.
Doodle is a registered trademark of City Software
Koala Pad is a registered trademark of Koala Technologies Corp.

LIMITED WARRANTY

Okidata, Division of OKI AMERICA, Inc. ("Okidata") warrants this OKIMATE Printer to be free from defect in material and workmanship and will remedy any such defect according to the terms of the Limited Warranty. This limited warranty does not extend to printer ribbon, a consumable item.

Okidata will repair (or at its option, replace) at no charge any defective component(s) of the OKIMATE Printer for ninety (90) days from the date of purchase. This Limited Warranty extends to the original purchaser only.

To make request or claim for service under this Limited Warranty, the original purchaser must return the Okidata product, shipping prepaid, in the original shipping container or equivalent, to Okidata or an Okidata authorized service or repair center and assume the risk of loss or damage in transit to Okidata. Proof of purchase for the product showing the date of purchase, dealer's name, (serial number) and item purchased must accompany any request for work to be performed under this Limited Warranty.

This Limited Warranty shall not apply if the product has been damaged due to abuse, misuse, misapplication, accident, or as a result of service or modification by any other than an authorized Okidata repair center.

THERE ARE NO EXPRESS WARRANTIES OTHER THAN THOSE ON THE FACE HEREOF AND DESCRIBED ABOVE. NO WARRANTIES WHETHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL EXTEND BEYOND THE WARRANTY PERIOD DESCRIBED ABOVE OF NINETY DAYS. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

OKIDATA SHALL NOT BE RESPONSIBLE OR LIABLE FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OR LOSS ARISING FROM THE USE OF THIS PRODUCT. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

This Limited Warranty applies to this product when sold in the continental United States. Additional information on obtaining service under this Limited Warranty is available by contacting Okidata at any of the repair centers listed below.

OKIDATA SERVICE CENTERS

WEST	MIDWEST	EAST
3300 Keller Street Suite 101 Santa Clara, CA 95050 (408) 496-0811	1155A W. Dundee Road Arlington Heights, IL 60004 (312) 253-8055	111 Gaither Drive Mt. Laurel, NJ 08054 (609) 235-2600

This warranty for this product when purchased outside of the continental United States may vary. Contact your Okidata Dealer for warranty service information.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Federal Communications Commission
Radio Frequency Interference Statement

WARNING: This equipment complies with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules. These specifications are designed to minimize radio frequency interference in a residential installation; however, there is no guarantee that radio or television interference will not occur in any particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on when the radio or television is on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the radio or television receiving antenna.
- Relocate the printer with respect to the receiver.
- Move the printer away from the receiver.
- Plug the printer into a different outlet so that the printer and the receiver are on different branch circuits.

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

"How to Identify and Resolve Radio-TV Interference Problems".

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

COMMODORE/OKIMATE 10
COMMAND REFERENCE CHART

This chart provides you with a quick reference to the programming commands described in this handbook. For most programming uses you'll need only the decimal code commands listed below. Ignore the hexadecimal codes unless you have special programming needs. Check the programming section of this handbook for further explanations of each of the commands.

Function	Decimal	Hexadecimal
Character sizes:		
Normal	15	0F
Wide	15 14	0F 0E
Fine	29	1D
Bold	29 14	1D 0E
Commodore cursor mode:		
Cursor up	145	91
Cursor down	17	11
Color printing:		
Align ribbon	27 25	1B 19
End of line	13	0D
Fine line advances:		
n/144" line advance	27 10 n	1B 0A n
Formatting:		
Carriage return (CR)	13	0D
CR and advance one line	10	0A
Advance to next page	12	0C
Perforation skip (OFF)	27 66	1B 42
Perforation skip (ON)	27 65	1B 41
Tabbing	16 n	10 n
Graphics:		
Start	8	08
Stop	15	0F
Repeat graphics	26 n	1A n
Reverse field printing:		
Reverse image	18	12
Return to normal	146	92
Starting position:		
Dot column	27 16 n1 n2	1B 10 n1 n2
Character column	16 x1 x2	10 x1 x2

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