Part 1:
Your School Management System

Using the TI 99/4 Microcomputer

Before Using Your School Computer

Part 2 of this *Reference Manual*, beginning on page 32, explains how to get the greatest benefit from a particular Scott, Foresman *School Management Application*. However, if you are not yet familiar with the Texas Instruments equipment on which you will run your *School Management System*, or if you are training staff members in the use of your school computer, you should first work through the following introduction to the microcomputer components necessary for administrative uses: the microcomputer console, the video display monitor, the RS-232 interface, the disk controller, the two disk drives, the diskettes, the printer, and the use of one command module. If you have purchased an optical card reader, its operation is explained in Part 2 of the manuals for those applications that involve its use.

In the carton for each component is a manufacturer's instruction brochure for that specific piece of equipment. Those separate brochures may occasionally provide a useful further reference if this manual does not answer some particular question for you. Also, on unpacking each carton, you should use the information and diagrams in its brochure to check that all parts and electrical cables have arrived intact, and you should then record the component's serial number and purchase date in the space provided in that brochure. You may also record that information for every piece of your *School Management System* in one place on the back of the title page of this *Reference Manual*.

However, the authors of *School Management Applications* realize that busy school administrators and staff would find it unnecessarily time-consuming to sift through a variety of booklets to learn how to install and operate their school computer. We have therefore distilled the essential information into this single, straightforward, nontechnical system introduction that shows you how to connect all the components, how to familiarize yourself with the computer by doing a brief trial run, and how to maintain and use each component with the greatest ease and efficiency. Furthermore, since each topic is clearly labeled by a subheading, and since all procedures are explained step-by-step, this introduction will also serve as a handy reference after you have become skilled in the daily use of your *School Management System*.

Because this microcomputer system is so economical and simple for school personnel to use without any technical training, Scott, Foresman is able to bring your school the time- and labor-saving convenience of streamlined, computerized *School Management Applications*. Our system has been developed by programmer analysts experienced in education, working with the needs of school administrators and staff in mind. You can use the applications without knowing anything about computer programming. The programs stored in your *School Management Modules* clearly indicate what steps a user should follow by sequenced messages and questions presented in plain English on the screen of your video display monitor. At points where you are to select among various *branches* or alternative segments of a program—for instance, a choice between ENTERING STUDENT INFORMATION or EDITING STUDENT INFORMATION or PRINTING REPORTS—the monitor automatically displays a numbered list of the available options, often called a *menu* screen. To choose the option you want, simply press the corresponding number on the keyboard and then press the ENTER key at bottom right of the keyboard for the computer to register your choice.

Indeed, communicating with your *School Management* computer is as simple as using an electric typewriter—only this one remembers what you tell it, can perform a wide range of calculations and analyses from your input, and can automatically print out the results you need at the touch of a few command keys. Your system gives you computer power to expedite important but routine tasks, so that administrators, teachers, and staff members will have more time for the creative, people-oriented aspects of running a school system. Moreover, many paper records that traditionally require banks of file cabinets and lengthy manual searches can now be stored compactly on 5¼-inch-square magnetic diskettes;

and with the appropriate *School Management Module*, you can promptly locate and display the exact record or records you want to look at.

The fourteen *School Management Applications* can assist you with a wide range of administrative tasks. For the complex and vital tasks of communicating with students, staff, and parents, and of organizing your services to students with maximum efficiency, your computerized management system provides five modules: *School Mailer, Student Data Recorder, Personnel Data Recorder, Attendance Recorder,* and *Scheduling Assistant.* Automatic printing of self-adhesive mailing labels, and of lists of students receiving special-education services, updating of personnel records, reporting of daily and periodic attendance summaries, and potential course-conflict analyses are just some examples of the respective uses of each of these modules.

Today's sophisticated educator uses precisely focused teaching methods and closely observes the individual progress of students. For these demanding roles, sensitive human judgment must always be paramount. But to lighten the burden of mechanical computation and record-keeping involved in monitoring students' performance, your *School Management System* offers *Class Data Recorder, Test Scorer, Mark Reporter,* and *Data Analyzer.* Among other functions, these applications enable you conveniently to store, update, and analyze class grades, test scores, and schoolwide grade distributions, and to print current reports of such data as needed.

Modern school administration involves detailed accounting for funds and property, so that key officials need to plan efficiently and flexibly, to monitor resources accurately, and to simplify the task of reporting to a variety of agencies both in and out of district. For these vital financial reporting functions, *School Management Applications* supplies five accounting modules: *Property Manager,* an inventory system for movable equipment and supplies; *Activity Accountant,* an electronic ledger for building-level accounts like food services; *Salary Planner,* which analyzes and compares up to eight proposed salary schedules; *Payroll Assistant,* which processes payrolls and prints paychecks and cumulative reports; and *Accounting Assistant,* an aid in expenditure accounting and budgeting.

With the Scott, Foresman applications modules and diskettes, and with the microcomputer equipment you are about to set up and try out, any of these administrative tools can begin to work for you in seconds.

For Safety's Sake

You cannot damage your school computer or the Scott, Foresman command module applications, no matter what you type on your computer keyboard. However, as with any electrical equipment, certain precautions are essential for the safe, reliable operation of your *School Management System.* Please follow these basic rules for the installation and use of your computer system, as they are intended to protect both you and the equipment.

Providing Power for Your System

The electrical circuit to which your system is connected should not be controlled by a remote switch. Otherwise power could be inadvertently turned on or off, which might cause an erasure of data on a diskette. Unless you have purchased the optional stand with the *Cord-Management System,* place the equipment where there are seven or eight outlets not connected to wall switches, and where you will not have to use extension cords nor overload the available outlets with too many plugs. Your equipment requires a 115-volt power source. Each component draws current as follows: the console, 0.2 amps; the monitor, 1.0 amps; the RS-232 interface, 0.1 amps; the disk controller, 0.2 amps; each disk drive, 0.4 amps; and the printer, 1.3 amps. The *School Management* computer equipment requires seven or eight outlets, depending on whether you use an optical card reader. Consult an electrician if you need to provide greater electrical capacity or new outlets for your computer. Contact your local utility if you are not sure of the voltage of your power supply.

Avoiding Electrical Hazards

The power cords and plugs supplied with each unit are specifically designed to minimize any risk of shock to users or electrical damage to the equipment. Do not try to by-pass these safety features by modifying plugs or by using two-wire extension cords. If a wall socket will not accept a plug, have a qualified electrician inspect that socket and upgrade it if necessary. Replace any frayed or broken plugs or cords immediately, for these present a danger of electrical shock. To avoid damaging the cords, do not place any where they can be covered, stepped on, or rolled over.

Unplug the equipment from the wall socket if it is to be left alone for more than a few days, or during a lightning storm. Lightning can cause surges in the power supply which might damage your equipment.

Do not try to modify your system, nor to add accessories that are not approved by Scott, Foresman or Texas Instruments. Removing the screwed-down cover plates of any equipment items may expose you to the high voltage present in some units, and there are no user-serviceable parts inside.

Be careful not to push or drop objects into the openings or ventilation slots of your equipment. If an object is accidentally lost inside the equipment, turn off all power before you attempt to retrieve it.

Never put liquids, such as a cup of coffee, on top of the equipment, for if liquids are spilled into it, there is a danger of electrical shock or sparking. If you should spill liquid inside your equipment, turn off the power and have the unit inspected.

It is normal for the video monitor to crackle briefly when turned on. But if you notice persistent snaps and pops or any distinct decline in performance, there may be an electrical malfunction, and you should have your monitor inspected by a qualified service technician. Also, if any component is dropped, turn it off and have it checked for electrical safety before using it again.

Avoiding Accidental Data Loss

Your computer system codes and stores information with very small amounts of electricity and stored magnetic signals. For this reason it should not be exposed to static electricity and magnetic sources. If your computer is in a carpeted room where static electricity frequently develops, particularly when the humidity is low, you might need to buy an anti-static spray for your carpet. It is also wise to use a humidifier. In dry rooms, you can touch a metal object such as a table or lamp before touching the computer or any of its accessories. This will release the static charge you may be carrying. Be especially careful not to touch the inside of any of the electrical connectors.

Above all, keep magnetic sources at least three feet away from your computer system and from your file of diskettes. The typical office contains various magnetic sources: telephones, microphones, loudspeakers, magnetic cabinet catches, and magnetic note-holders, for example. With these precautions, the risk of accidental data loss is reduced.

Later in this system guide you will learn how to make backup or reserve copies of data diskettes. To avoid accidental data loss you should make two backup diskettes for each diskette with data that you need to keep. This practice—similar to storing duplicates of important paper records—ensures that you always have a spare copy of the most recent update of a given program and of the last update before that, so that if errors are discovered in the input for the latest update, you need only backtrack one step to the last accurate data. Such backup data procedures are standard in data processing.

Ensuring Good Ventilation

Your equipment needs good ventilation to avoid overheating. Place components where the air will be able to circulate freely on the top, bottom, and sides. Never place the equipment on a soft surface where the ventilation slots on the underside can be blocked. Do not place equipment in built-in enclosures that prevent free air circulation. Do not cover the ventilation slots by stacking anything on the equipment. Be sure that neither your equipment nor your diskettes are close to a heat source such as a radiator, or in direct sunlight.

Supporting the Components

Use of the optional stand specially designed for the system helps ensure good ventilation and solid support for your equipment. If you do not use the optional stand you must avoid sloping shelves unless the components are firmly anchored to the shelves. Use only shelving designed for heavy components, because the monitor and the printer are heavy enough to collapse light-duty shelves and mounts.

To prevent damage to the electrical connectors between components, always disconnect a unit completely before moving it. The connectors are not designed to take the weight of a unit.

Caring for Your System

Choose as dust-free an environment as possible for your computer, away from open windows or frequent traffic. Keep diskettes in their storage sleeves and store them and your command modules in a closed file to avoid dust.

The monitor screen should be cleaned only when the unit is off. For best results use a mild solution of dishwashing detergent and liquid fabric softener in water. Wash the screen with a cloth dampened in this solution but well wrung-out, almost dry. Do not attempt to dry the screen by wiping, but let it air-dry after it has been washed. This procedure reduces static build-up on the screen. The plastic cabinet can be cleaned with a mild detergent solution followed by a clear water rinse. Be careful to use a cloth that is nearly dry, to avoid dripping any water inside the monitor.

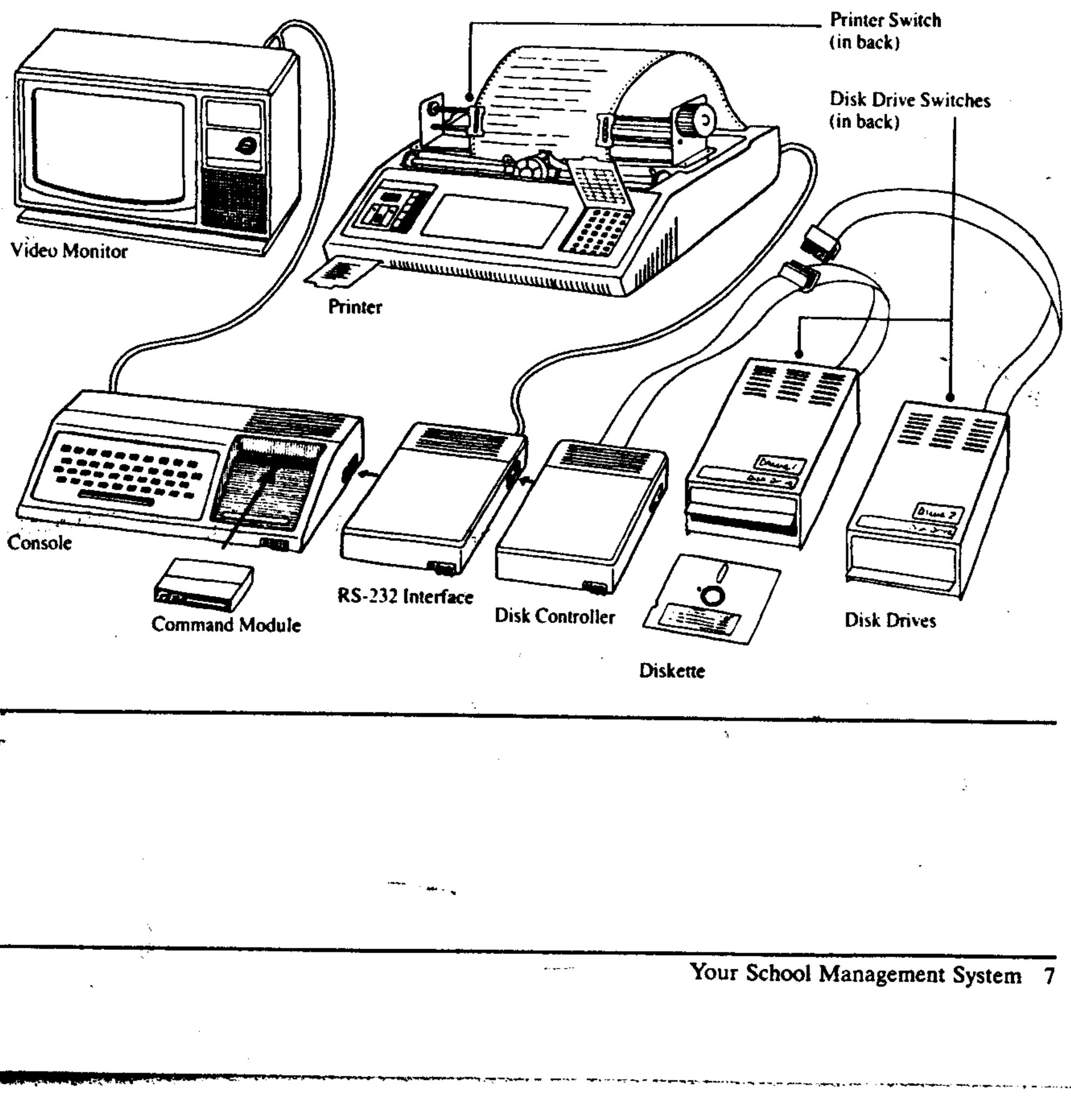
Use a soft, dry cloth to clean the console, the RS-232 interface, the disk controller, and the disk drives. Do not rub vigorously, as this creates static and lint.

Never try to clean the diskettes by wiping them with any material; their sleeves are made of anti-dust, anti-static material.

Monthly vacuuming of the printhead and ribbon path areas of your printer is important to assure trouble-free operation. In dusty areas or if your printer gets exceptionally heavy use, more frequent cleaning is advisable. Switch the printer off and disconnect its power cord. Lift and prop up the printer cover, and carefully vacuum paper chaff from the entire area around the printhead, platen, and ribbon path, as shown in the diagram on page 23. Use a small vacuum nozzle to avoid damaging the mechanism. Reconnect the printer and immediately test it using the barberpole print test described on page 28.

Your *School Management* computer equipment is ruggedly built and very dependable, and most of its components have no moving parts. However, everyone using the system should be made aware that it is sophisticated electronic equipment and deserves the same careful handling given to good audio-visual components. In particular, the disk drives and the printer rely on moving parts that function to precise tolerances.

Each component of your computer system will be described in detail in later sections of this system guide. In the next section you will learn how to assemble, start, and try out your equipment. Here is a diagram of the layout and electrical connections for the whole system.



Starting Up Your System

When you remove each unit from its carton, immediately record the serial number and date of purchase in the accompanying instruction booklets and also in the spaces provided on the back of the title page of this manual. At the same time you should check whether you have received all cables, power cords, and other accessories listed or illustrated in the booklet for each component. You should also read the warranty and service information at the end of this manual.

Connecting the Components

If you have purchased the optional stand custom-designed for the *School Management System,* you can position the components as explained in the booklet furnished with the stand. If not, you should arrange your equipment roughly as shown in the preceding diagram, allowing space for the printer next to the disk drives, but no more than ten feet from the RS-232 interface. Then follow these set-up procedures:

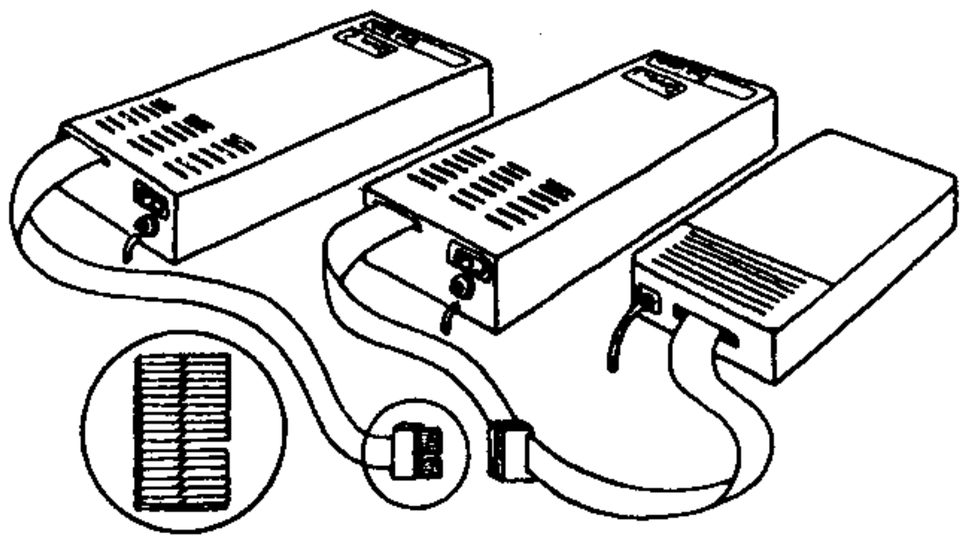
1. The detachable interface cable that connects the console and the video monitor comes in the monitor carton. At one end this cable has a single five-pin plug; connect this to the five-hole round socket at the left rear corner of the console.

2. The other end of the interface cable has two plugs, one for the monitor's video input and the other for its audio input, which are at the top right of the monitor toward the back. Connect the larger jack to the input labeled *video,* and the smaller jack to the input labeled *audio.*

3. The RS-232 interface is connected to the port at the right of the console by a broad, flat plug at the left of the interface. Remove the plastic cover from the plug. Carefully align the edges of both units on a flat surface. Then raise the sliding hatch protecting the console port and, while holding the console with your left hand, smoothly but firmly press the plug of the interface into the console port until you feel a positive contact. If you encounter difficulty, do not force them together, but realign plug and port more carefully and then try again.

4. On the right side of the RS-232 is a similar hatch-protected port, and on the left of the disk controller is the same kind of plug that connects the interface to the console. Once again, remove the plug cover, align both units carefully, raise the cover of the RS-232's port, and slide the disk controller's plug gently but firmly into the port.

5. Your *School Management System* provides two drives, one of which is connected directly to the disk controller by a broad, flat cable, and the other of which will be connected to the first drive by an adapter plug in the middle of the first one's cable, as shown in this diagram:



Adapter Board

Insert the wide connector at the end of the flat cable of either disk drive into the socket low down on the back of the disk controller. This connector can fit only one way and must not be forced. If it does not go in, try reversing it.

6. Insert an adapter board, as illustrated above, into the mid-cable plug of the first drive's cable. This board also will fit only one way, and must not be forced.

7. Connect the plug on the flat cable of the other disk drive into the mid-cable adapter of the first drive. Do not force it, as it is designed to fit only one way.

8. Now label the disk drive that you have directly connected to the disk controller as DRIVE 1, and the drive that is attached to its adapter as DRIVE 2. Alternatively, you may use the self-adhesive labels packed with your drives, which read *Dsk 1* and *Dsk 2.* In two-diskette applications, one diskette is usually reserved specifically for DRIVE 1, and the other specifically for DRIVE 2. This is required by methods used by the computer to sort and locate data. Either disk drive can serve as DRIVE 1, but to the computer that will always be the one directly connected to the controller. The use of two diskettes in most *School Management Applications* enables you to handle a larger volume of data more efficiently and easily than would be possible with a single drive.

9. The interface cable provided with the printer is the thick, round cable with large, wide connectors at either end. As you face the back of the printer, you can see the three-prong power cord receptacle

and the on/off switch at the far right, and at the far left a wide oval receptacle, which is the communications interface connector. Notice that both this port and the cable connector are wider at the top than at bottom, so that they will fit each other only one way. Plug either end of the interface cable into the printer interface port.

10. On the back of the RS-232 interface you will find two receptacles like the printer's interface port. Plug the printer interface cable into the port nearer to the power cord that enters the left rear of the interface (viewed from the back).

11. You need to load a ribbon and paper into the printer before you can try out your school computer. These procedures are explained on pages 23–24.

You are now ready to connect your *School Management System* to a power source. If you have the custom-designed desk and printer stand, you can simply use the *Cord-Management System* to connect all power cords to a single main cable, and then attach that to your electrical supply. Otherwise, you should follow these steps:

12. The video monitor, RS-232 interface, disk controller, and disk drives all have built-in power cords. Plug each of these into a separate 115-volt building outlet, making sure that none of these outlets is controlled by a wall switch.

13. The power cord for the console comes separately in that unit's carton. At one end is a flat plug with four holes that you should attach to the rectangular receptacle with four recessed prongs at the right rear of the console. At the other end of this cord is a transformer which you should plug directly into a 115-volt outlet. To support the weight of the transformer on a wall socket, secure it to the socket with the screw provided, fastening the screw through the small mounting bracket at one side of the transformer.

14. The printer also comes with a separate power cord, which has three-prong plugs at both ends. Attach the female end to the three-prong connector at the right of the printer when viewed from the back. Insert the other end into a three-hole grounded 115-volt outlet.

Powering Up and Powering Down

Once you have connected your system, you should always turn on the components according to the following sequence:

1. First turn on the monitor, since it needs time to warm up.

2. Turn on both disk drives and the disk controller. Always do this before turning on the console and the RS-232, or else the computer may be unable to locate data on diskettes correctly. However, if you ever forget this sequence, the remedy is simply to turn off the console while the disk system components remain on, then switch the console on again in the correct sequence.

The switch for the disk controller is at its right front corner; to turn on the unit, slide the switch to the right, exposing the painted red dot. The switch for each disk drive is at the left rear of the unit, and is turned on by being flipped to the right position.

3. After turning on the disk memory system, you can turn on the console, RS-232, and the printer in any order. When the switch near the right front of the console is pushed to the right, the red light beside it comes on. Like the disk controller, the RS-232 is turned on by sliding its switch to the right to expose a red dot. The printer is turned on by a toggle switch at its rear, next to the power cord receptacle.

4. When the printer is first turned on, be sure to check the lighted numbers in the three small windows at the top of the control panel on the left front of the unit. The display should read 888 as the printer automatically tests its internal functions. After a few seconds, the display should change to 001 or another low number, indicating the printhead has positioned itself at or near the left margin.

5. Below that three-window display, called the Terminal Status Display (TSD), is a three-position switch labeled LINE / • / LCL. For *School Management Applications*, you will not need to use the center (or "stand-by") position, but it is important to remember not to leave the switch in that position, for then the printer cannot receive data from the computer. Since you are about to use your system for a trial run, make sure this switch is pushed completely forward to the LINE position, which puts it in contact ("on-line") with the computer. At this point the LINE RDY light above the LINE/LCL switch should be glowing red.

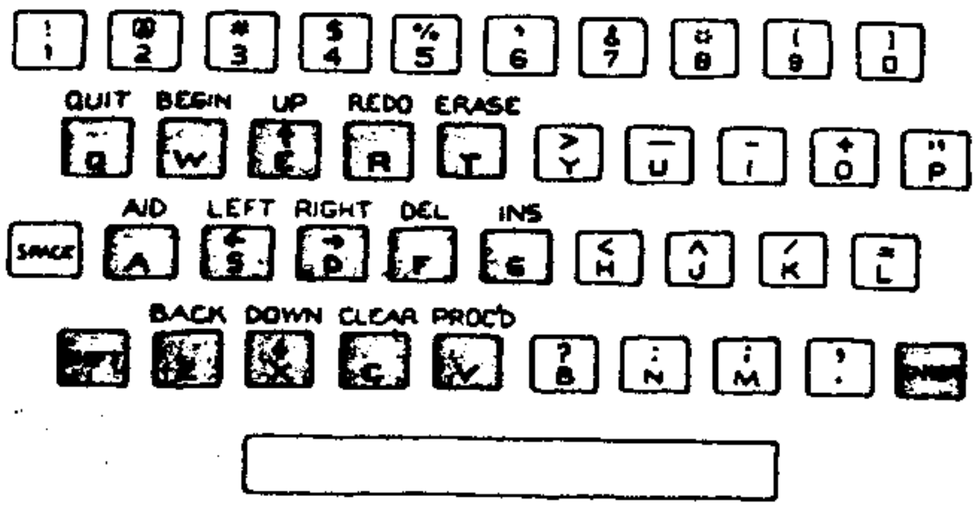
The sequence in which you turn off the units does not matter, but *it is important that no diskettes be in the drives either when you are powering up the system or when you are switching it off.* It is possible for data on a diskette to be altered or erased by the abrupt change of current as the system is switched on or off.

Using Your System with *Disk Manager*

Your *School Management System* is now ready to run, and the only way to learn to use it is by doing so. For the rest of this manual, both Part 1

and Part 2, you should go through each page with your fingers at the keyboard. Remember, you cannot hurt these machines or the programs in the command modules by any "mistakes" you may make in entering data on the keyboard.

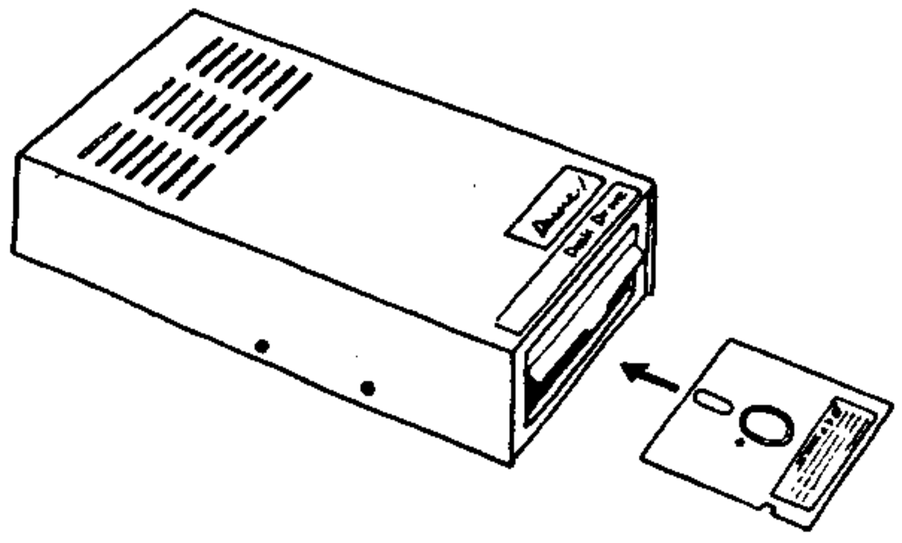
The keys highlighted on the following diagram of the TI 99/4 keyboard provide special functions identified on the overlay packed with the console. If you have a TI 99/4A, see the diagram on page 14 for its function keys.



On the TI 99/4, the labeled functions are activated when you press both SHIFT and the corresponding key simultaneously. On the TI 99/4A, you activate the same functions by pressing FCTN and the appropriate labeled key. For instance, pressing SHIFT with F on the TI 99/4 will delete a character. On the TI 99/4A, FCTN and 1 will do the same. The ENTER key is very important on both keyboards, for it must be pressed *every time* you want the computer to record what you have just typed. With *Disk Manager*, the function keys you will use are BEGIN, REDO, ERASE, the ← arrow (LEFT), the → arrow (RIGHT), DEL(ETE), INS(ERT), BACK, CLEAR, and PROC'D.

Next, get out the *Disk Manager* command module furnished with your disk controller. With the label facing you and right-side-up, slide this module into the wide port on the console to the right of the keyboard. Press it in firmly until it stops and you feel a positive contact. When you do this, the preliminary title screen should flash off and on again, and you should hear a short beep. This is all you need to do to prepare any application module for use.

Doublecheck that your disk controller and disk drives are turned on. Now take out a *blank* diskette and, with its label facing up and the notched corner to the left, insert it gently and without bending it into DRIVE 1, as shown in the diagram below.



Always be sure to close the disk drive doors before starting to use any diskettes.

Since you first turned on your system, the video monitor has been showing the preliminary title screen with the message READY—PRESS ANY KEY TO BEGIN. Do so now, then follow the instructions that you will see on the succeeding displays, as described below.

1. First you will see the preliminary selection list, or *menu*, offering you five options, the third of which is 3 FOR "DISK MANAGER." To begin the program, simply press 3 on your keyboard.

2. Next you will see the title display for *Disk Manager*, followed automatically by the main menu headed DISK MANAGER. To choose Option 2 DISK COMMANDS, press 2 and then the ENTER key to make the computer register your choice.

3. You will see a menu headed DISK COMMANDS and offering four options. Press 4, then ENTER, to select 4 INITIALIZE NEW DISK. This procedure, by which you give a diskette a unique name and automatically erase all data on it to make room for new information, is discussed further on pages 18–19. For now, make sure that you are using a new diskette.

4. The query MASTER DISK (1-3)? now appears. Notice that the *cursor*, the rectangle that flashes over the screen position where the next character you type will be displayed, is blinking over a 1. This number refers to DRIVE 1, and since your diskette is in DRIVE 1, just press ENTER to accept this so-called *default* option. If the diskette were in DRIVE 2, you would replace the default by typing a 2 and then pressing ENTER.

5. Next the computer displays a message that the diskette is not initialized and asks you to name

your diskette. There are a few rules for naming diskettes, but for now type TRIALRUN without a space. You can correct an error with the editing function keys (page 14). When the name is displayed correctly, press ENTER.

6. The next line displayed reads 40 TRACKS (Y/N)? and the cursor is flashing over the most common default response of Y for "yes." Press ENTER to accept this response, because all *School Management Applications* require diskettes with forty tracks for recording data, as is emphasized on the sleeve of your Scott, Foresman Diskettes.

7. At the bottom of the screen you will now see this message:

SCREEN IS COMPLETE
PRESS: PROC'D, REDO,
BEGIN, OR BACK

These options refer to some of the special functions labeled on your keyboard. By pressing PROC'D, you order the *Disk Manager* module to proceed with the current assigned task, which is now to initialize the diskette in DRIVE 1. The REDO function would repeat the entire procedure, letting you rename the diskette or initialize one in another drive. The BEGIN function returns you to the initial menu for *Disk Manager*. If you are in a later stage of the program, the BACK function will take you back to the last menu of options.

8. After you enter PROC'D, the message WORKING. . . . .PLEASE WAIT will appear. A sequence of numbers increasing from zero will then be displayed above that message, indicating how many sectors have been progressively initialized. A *sector* is a specific area on a diskette that can hold a certain amount of data which the computer can retrieve by the unique index number or *address* of each sector; a sector functions rather like a file drawer or an indexed section in a binder.

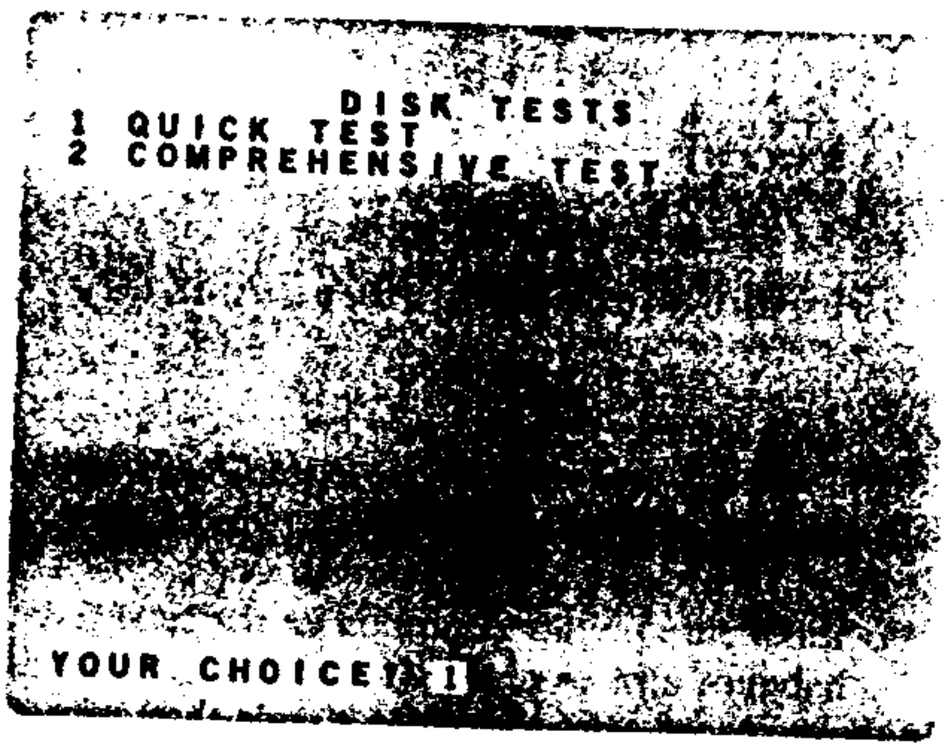
9. Since you are using a brand-new, blank diskette, after the count of sectors reaches 359 (in one or two minutes), you will see this message:

DSK1 . - DISKNAME= TRIALRUN
AVAILABLE= 358 USED= 0

This means that the diskette is now completely erased and that all sectors are ready to accept data.

Testing a New Diskette You are now ready to perform a brief test of the disk memory system, which will also introduce you to the use of the printer. First, make certain that the printer is correctly loaded with a ribbon and paper, that the paper is covering the paper-out sensor (see page 22), that the printer is switched on, and that the LINE/LCL switch is pushed all the way forward past the midway detent to the LINE position.

1. To begin this procedure, use the BEGIN function to return to the main DISK MANAGER menu, then select Option 3 DISK TESTS and press ENTER. The following screen will appear:



2. Press ENTER to accept the default of 1.

3. The next screen begins by asking you DESTRUCTIVE TEST (Y/N)? The appropriate test for a new diskette is the destructive form, so press Y to reject the default response of N, and then press ENTER. (A destructive test does not harm a diskette, but erases whatever data may be on it.)

4. You will next be asked, 40 TRACKS (Y/N)? Accept the default response of Y for "yes."

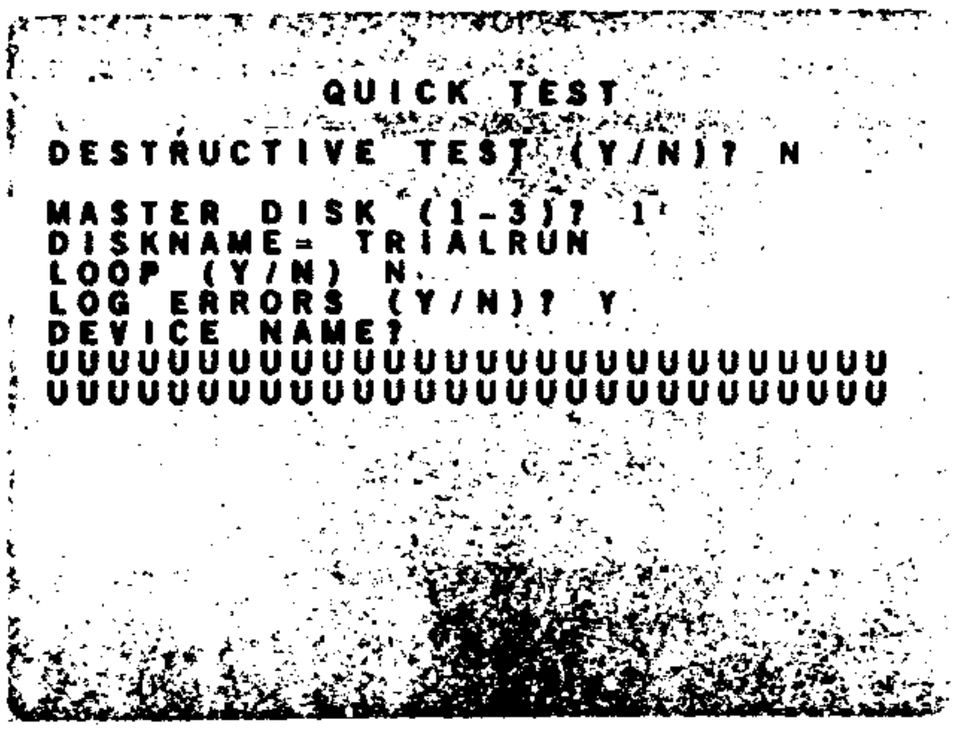
5. The query MASTER DISK (1-3)? will now appear. The diskette you are about to test is in DRIVE 1, so you should accept the displayed default response of 1.

6. When you do this, you will see the line DISKNAME = TRIALRUN (or whatever name you gave to the disk being tested). This lets you doublecheck whether you have the desired diskette in the drive.

7. The next query will be LOOP (Y/N)? Accept the default of N, because you are going to run the test only once. A *loop* instruction would cause the test to repeat until the computer was commanded to stop.

8. The message LOG ERRORS (Y/N)? now appears. You could answer N, in which case if errors were found, they would be listed only on the screen. However, one purpose of this trial run is to show you how the printer works, so you should call for a printout of the test results, using the following procedure.

9. Press Y followed by ENTER to answer the LOG ERRORS? query.
10. The prompt DEVICE NAME? will appear, followed by two rows of space markers. The screen now looks like this:



In those spaces, you now enter a code that instructs the computer to send the results of the disk test through the RS-232 to the printer. The code to type is:

RS232/2.BA=600

Note that there should not be any spaces and you should not type a period at the end. After typing this code, press ENTER.

portant: When using a *School Management Application,* you will never have to use a code to start the printer, because the modules are programmed to start it automatically when you select the report you want printed.
11. After you enter the instruction to log the test results on the printer, you will see at the bottom of the screen this message:

SCREEN IS COMPLETE
PRESS: PROC'D, REDO,
BEGIN, OR BACK

Use the PROC'D function identified on your keyboard or overlay to make the computer begin the disk test.

As the test begins, you will see at the base of the screen a message that the computer is WORKING, but that you can use the CLEAR function to abort the command if you wish to stop the test before it is completed. At the same time, above this message you will see the line TOTAL ERRORS, followed by a zero. Below this message, in the center of the screen is displayed the count of sectors as each is checked. When this count reaches 359, the test ends and above the count you see the message, COMPLETED PASS: 1. At this point the printer will quickly print the results of the test in a format similar to the monitor display, and will stop automatically.

With brand-new diskettes and with used ones that have been properly maintained and not used more than six months, errors should seldom occur. If a disk test reveals a flaw the monitor will sound a tone, and both the screen and the printer will give you the following message for each error found:

BAD ADDRESS/CODE nnn/nn

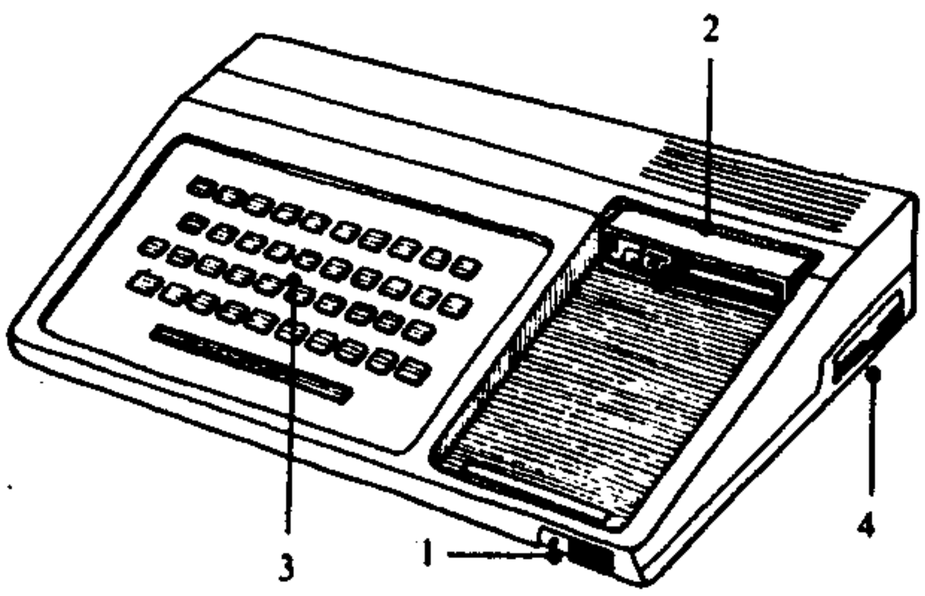
The three-digit number before the slash identifies the defective sector. The two-digit number after the slash is a diagnostic code which you do not need to interpret. If you do find a defective new diskette, keep it and contact the Customer Service Representative for Electronic Publishing at the nearest Scott, Foresman Regional Office, or else call your local authorized Scott, Foresman dealer.

You have now set up your *School Management* computer and made acquaintance briefly with all its components. If you were simply giving yourself a refresher course, you may now decide to begin working with an actual *School Management Application,* as explained in Part 2 of this manual. If you want further information on the hardware, the following pages contain detailed descriptions of every component.

To leave *Disk Manager,* either when changing to another module or when about to shut off the system, *you should always use the following procedure to avoid risking the loss of any data on a diskette:*
1. Press BEGIN to get back to the main menu headed DISK MANAGER.
2. Then press BACK, which closes the diskette files, thus safeguarding any data, and returns you to the initial monitor display.

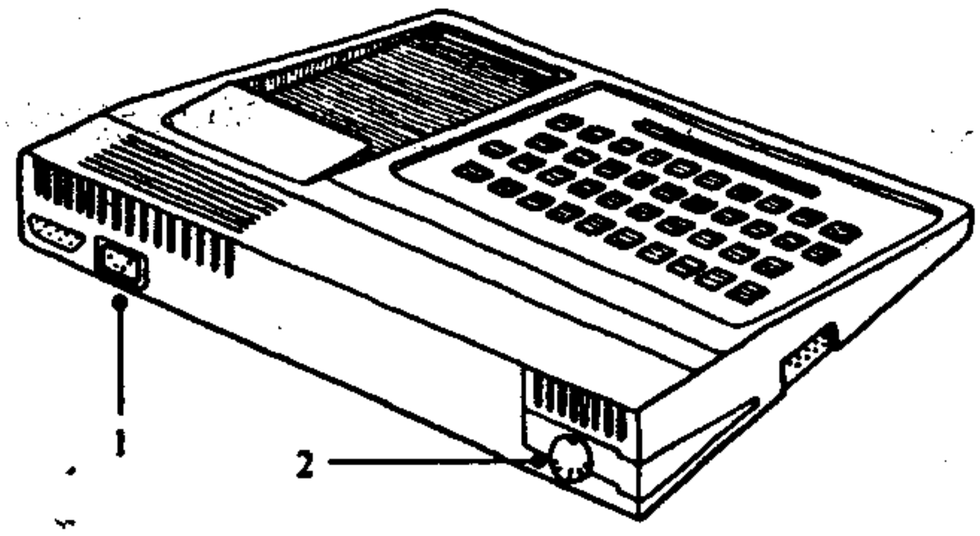
The Console

The console enables you to enter information and commands into the system through the keyboard. It is the central part of your computer system. In this section of the system guide you will learn about the various outlets on the console and about many of the keyboard functions you can perform on it. Here is a front view of your console:



Item 1 is the on/off switch. The small red light at its left glows when the console is on. Item 2 is the port for software modules. Item 3 is the keyboard used to type commands and information into the computer. Item 4 is the hatch-covered port for connecting peripheral components such as the RS-232 interface or a speech synthesizer for instructional applications.

Now look at the back of your console:



Item 1 is a four-pin connector for the power cord. Item 2 is the socket for the interface cable that connects the console to the video monitor. This socket has five holes in a semicircle at the bottom and a square notch at the top, so that the jack can only be inserted into it one way. This cable transmits audio and video signals to the monitor.

The other two sockets visible in the diagram, one beside the power cord socket and the other on the left side of the console, are not used with *School Management Applications*.

Pointers for Typists

The use of the keyboards for both the TI 99/4 and the TI 99/4A is explained on the following page, with a summary chart on the inside front cover. However, in using either machine, it is important always to remember that no computer keyboard functions exactly like a typewriter keyboard:

1. You cannot substitute a lower-case *l* for the number *one*. Computers use numbers for mathematics; they cannot calculate with letters.
2. Similarly, you cannot substitute the letter *O* for a *zero*. Your school computer displays the letter *O* with squared corners and the *zero* with rounded corners.
3. You cannot use the underscore to underline. It erases characters and substitutes dashes.
4. The space bar (and space key on the TI 99/4) erases characters as it creates spaces.
5. Do not use SHIFT to capitalize. These applications use only capital letters.

The Video Display Monitor

If you are using a Texas Instruments video monitor, you should consult the picture adjustment instructions in the brochure packaged with that unit. If you are using a television set as a display you can simply follow the directions that came with that set to adjust the picture quality. However, if you use a television as a display you will have to install a video modulator in place of the console-to-monitor interface cable.

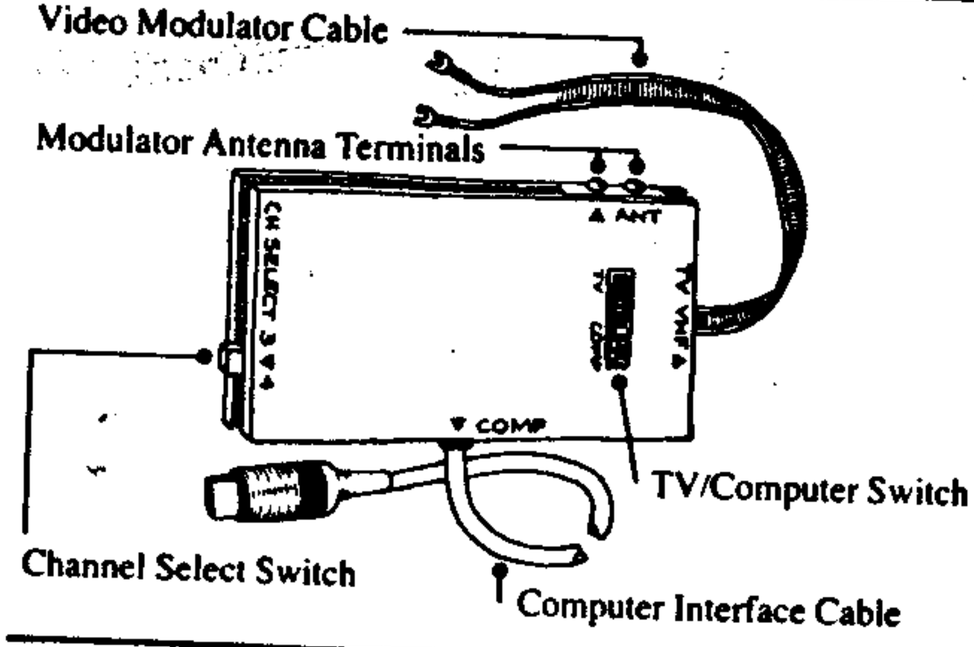
If you leave the monitor or television turned on for ten minutes or more without using the computer, the screen will automatically go blank. To return to the application where you left off, just press the ENTER key on either keyboard, and the last display will reappear.

In case of an unsatisfactory picture, first try adjusting the monitor picture controls. If that does not work, or if you encounter any other difficulty in using the monitor, see "Checking Your System" on page 29.

Using a Video Modulator

The video modulator is designed to be used with a standard television set having 300-ohm, flat, twin-lead antenna connections. If your set has coaxial (round), screw-on antenna connections then you have a low-impedance antenna (typically 75-ohms). You will need to purchase a "Balun matching transformer" from a television or electronics shop to permit the connection and proper function of the video modulator. In case of uncertainty consult your television owner's manual.

The video modulator is pictured below:

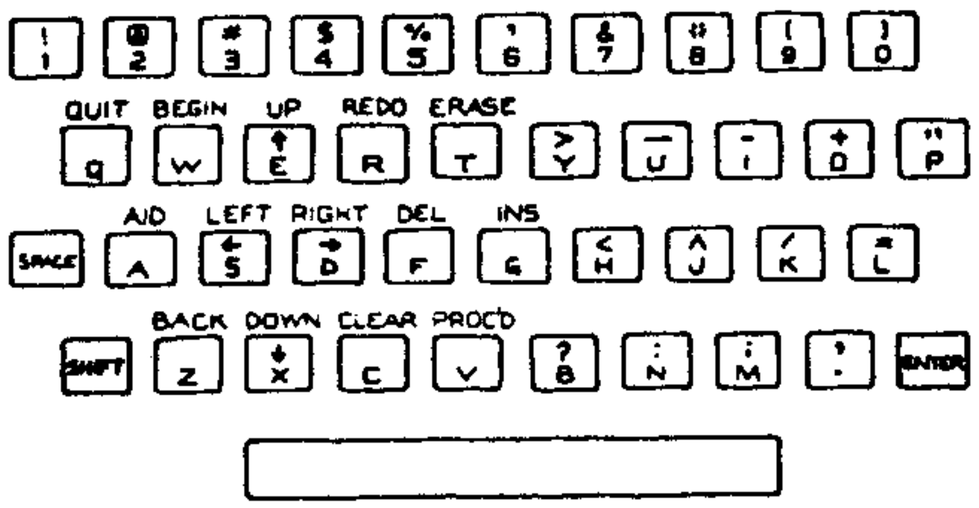


Follow these steps to install the unit:

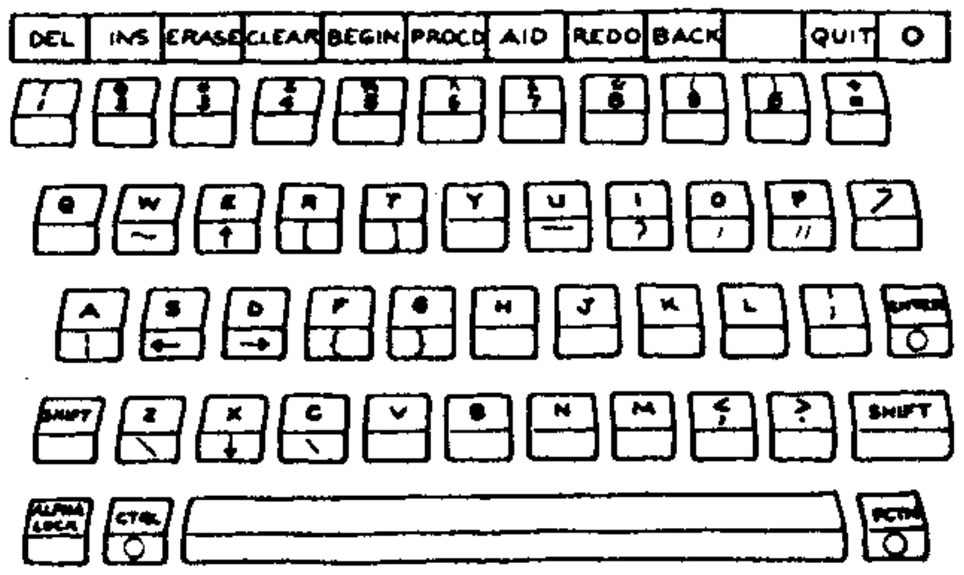
1. *Turn the television off and unplug it.* Loosen the screws on the VHF antenna terminals and remove the antenna cable.
2. Connect the video modulator cable marked TV VHF to the VHF antenna terminals on the television set. Retighten the screws.
3. If you intend to use the television as an ordinary receiver occasionally, connect the television VHF antenna leads to the video modulator antenna terminals marked ANT. and tighten the screws. Otherwise, simply leave the television antenna leads disconnected.
4. Plug the five-pin jack of the modulator's computer interface cable into the round socket for the monitor interface cable on the back of the console. Be sure the pins are properly aligned, and do not force the jack. It will only fit one way.
5. Attach the video modulator to the television set by peeling the paper backing off the adhesive strips on the back of the modulator and pressing the unit against a flat surface on the television. Do not let the modulator dangle or put strain on its connectors.
6. There are two switches on the video modulator. At one end is a channel select switch, marked CH. SELECT 3 4. Set the switch to either channel 3 or channel 4. If there is a station operating on either of these channels in your area, select the other channel on your modulator. Then set the television tuner to the same channel.
7. On the top of the video modulator is a slide switch marked TV at one end and COMP. at the other. Set this switch to COMP. to use your television as a computer monitor. If you completed step 3 above you can turn the switch back to TV and use the set as a television receiver again.

The Keyboards

TI 99/4 Keyboard



TI 99/4A Keyboard



Special Function Keys

To use any of the special functions indicated by the tinted keys and words, you must simultaneously press SHIFT and the corresponding key on the TI 99/4, or FCTN and the corresponding key on the TI 99/4A. Each function is explained below, and there is a summary on the inside front cover.

ENTER tells the computer to accept the information just typed onto the monitor screen.

The ← arrow moves the cursor one space left without erasing any characters passed over. In *School Management Applications* the left arrow cannot move the cursor back beyond the beginning of the *data field* (the white block), where it is currently placed. The *cursor* is the rectangle that flashes at the point where the next character may be typed.

The → arrow moves the cursor one space right without erasing characters passed over. It cannot move past the end of the data field the cursor is in.

DEL or DELETE erases the single character beneath the cursor and closes up the resulting space.

INS or INSERT lets you add characters, beginning from the point where the cursor is flashing when you activate the function. Each new character typed will be inserted until you cancel this function by activating another one, or by pressing ENTER to record the new data.

ERASE or CLEAR erases all data displayed in the data field where the cursor is located.

QUIT terminates an application abruptly and restores the preliminary Texas Instruments display. *Do not use this function when a disk is in either drive, because it can cause loss of data or diskette damage. Use only the E key to end* School Management Applications.

Keys labeled BEGIN, UP (↑), DOWN (↓), REDO, AID, BACK, and PROC'D are not needed in *School Management Applications*. Where applicable, the use of these keys is explained.

Editing Keys LEFT (←), RIGHT (→), DELETE, INSERT, ERASE, CLEAR, and the space bar or key can all be used for editing data. These keys can only be used to alter a field that the cursor is currently in *before* you press ENTER. However, data already stored on a diskette can later be changed using an editing mode of the application that you are working with.

For TI 99/4A Users Only

1. When using *School Management Applications*, always keep the ALPHA LOCK key at bottom left of the keyboard pressed down. This ensures that the modules will receive the codes for capital letters, which they require to function properly.
2. To type any symbol that appears on the upper half of the *top* of a key, use the SHIFT key. The FCTN key is required to type the symbols that appear on the *front faces* of keys, as well as to activate special function keys.

The RS-232 Interface

The RS-232 interface is essential to enable peripheral equipment such as a printer and card reader to function with the console. Like a switchboard, the interface directs the various signals that are sent to and from the console. There are two ports for cables on the back of the interface. The printer cable must be connected to the port next to the power cord at left rear. The card reader cable goes to the port at right rear. The interface has no moving parts and no lights. When the on/off switch is pushed right to turn the unit on, a red dot is exposed.

The RS-232 controls the flow of data between the computer console and the card reader and printer. Therefore if you see on the monitor an input/output error message, the problem may be related to the interface. For instance, it could be off or improperly connected to the other units. An input/output error message will usually be stated in English, but occasionally it may take the form: I/O ERROR nn IN nnnnn. The *n*'s represent code numbers which you do not need to decipher in order to correct most input/output problems. Your first steps should be to make sure that the RS-232 interface is switched on and then to switch off the console and switch it on again; this will correct the most likely cause of such a condition—namely, that you turned on the console *before* turning on the disk controller and drives. If that procedure does not correct the problem, consult "Checking Your System" on page 29.

Important: Before using your printer or card reader, always make sure that the RS-232 is on and that the proper interface cable is firmly connected from the correct port of the RS-232 to the interface port of the other component.

The Disk System and Diskettes

Important: It is essential to use only the proper size and type of diskette for *School Management Applications*. These programs require 5¼-inch, single-side, single-density, soft-sector diskettes with *40 tracks*, such as the Scott, Foresman Diskette. Do not attempt to use 35-track diskettes or diskettes labeled as having 10 or 16 sectors. Single-side diskettes can be easily recognized, because they have a small notch near one corner only, rather than notches near both corners at either end of the label (see diagram, page 18).

The disk memory system is a combination of computer hardware and software that allows you to store and retrieve data quickly and accurately, using 5¼-inch diskettes, sometimes called "mini-floppies." The system consists of the disk controller, two disk drives, the *Disk Manager* module, which you get with the controller, and the diskettes themselves. The disk controller enables the disk drives to read and record information properly. The disk drives actually perform the information recording and retrieval. They are designed to locate rapidly any of up to 358 files that can be stored on a 5¼-inch diskette. They do this by spinning the diskette at a constant rate and controlling the movement of a magnetic read/write head across the disk surface. Like a file folder, a diskette file can hold a number of records, such as the various papers in a student's cume folder; the amount of records that a single file can hold depends on the length and complexity of each record. Therefore, a diskette can either hold a large number of simple records, or a smaller number of more detailed records.

The *Disk Manager* module helps you maintain and manage your diskettes. With this program you can conveniently initialize (identify and clear), duplicate, or test diskettes.

Diskettes are made of a flexible plastic film coated with a thin layer of metallic oxide. This layer can be magnetized in extremely small areas without neighboring areas being affected. Your computer interprets these magnetized spots as coded information. In order to protect these tiny magnetic charges, the diskettes must be handled and stored carefully. Like other recording media, such as high-fidelity records or magnetic tape, a diskette will eventually wear out. However, with proper care (see page 18), a diskette used several times a week may give up to a year of reliable service. It is nonetheless important to maintain backup copies of important diskettes, as explained

on page 20, and to replace used diskettes on some regular rotation schedule.

Operating the Disk System

If you are not already familiar with the procedures for connecting your disk equipment and inserting and using a diskette, see pages 8 and 10. Otherwise, here are some points you should always keep in mind when using the disk system.

First, whenever you turn on your *School Management* computer system, remember to switch on the disk controller and *both* disk drives *before* you switch on the main console. Also, each time you turn on the system, watch the red indicator lights on both drives. As you turn on the console, the disk drive lights should briefly glow and then go off. If either one remains shining, the cable for that unit is probably plugged in upside down. Turn off all units and make sure all disk components are connected properly before switching on again.

It is important to clearly label your disk drives DRIVE 1 and DRIVE 2, according to the order in which they are connected to the disk controller (see page 8). The reason for this is that in applications requiring two diskettes, the instructions and files are organized so that one diskette must always be put in DRIVE 1, while the other always goes in DRIVE 2. It is therefore also necessary to identify which diskette you have assigned to which drive, as will be shown in the sections on filing and initializing data diskettes.

Note also that even in single-diskette applications, where one drive will be empty, you should still turn on both units.

The following precautions are important to protect the data on your diskettes:

1. Never remove or insert a diskette while a disk drive indicator light is shining. The light shows that the drive is actually reading or writing data. If it were reading, no harm would be done by moving the diskette. But if the drive were writing data—and you cannot tell which it is doing—then sliding the disk in or out would scramble data unpredictably on those sectors passed under the read/write head.

2. For a similar reason, you should *never* use the QUIT function suggested by Texas Instruments while either disk drive light is on.

3. Remember to make sure that no diskettes are in the disk drives when you turn power on or off, and when you disconnect or reconnect a drive's cable.

4. To minimize the dust that gets into a disk drive, always keep the drive door shut unless actually inserting or removing a diskette. Dust on the read/write head can scratch diskettes, thus disarranging data and causing the diskettes to wear out sooner.

Although most Texas Instruments disk drives will operate on your two-drive system without any modification, some of them require the removal of an internal integrated circuit, the *resistor pack*, before they will function as DRIVE 1 and reliably pass data to and from DRIVE 2. If your DRIVE 1 needs this minor modification, you will notice one or both of the following signs:

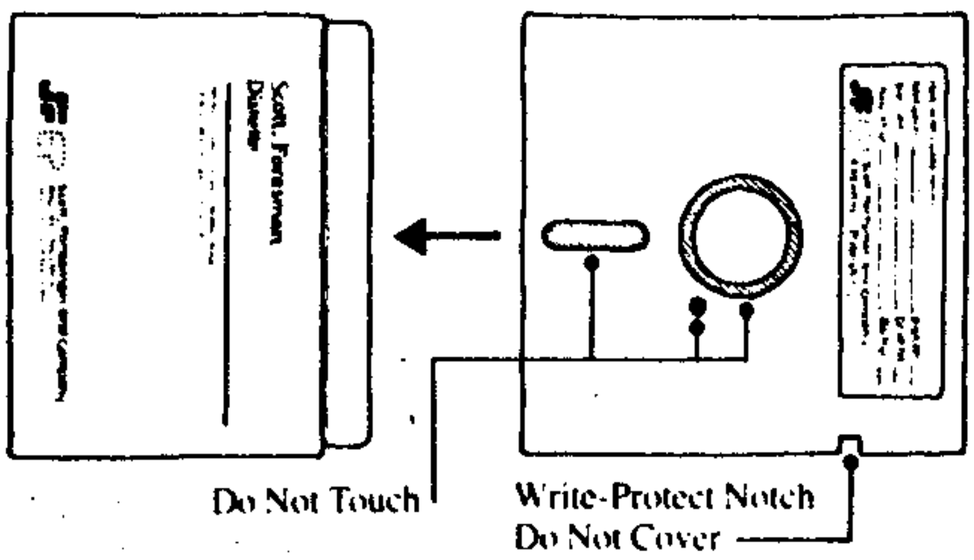
1. Diskettes already initialized for a given application will not accept data and you will get a screen message that you should check your diskettes. When you test one of these diskettes, using *Disk Manager*, you will notice that if you select the INITIALIZE NEW DISK option the DISKNAME will come up blank, and if you choose the DISK TESTS routine, you will get a message that says DISK NOT INITIALIZED.

2. Data that you have entered fails to appear either on a report from the printer or on the screen when you try to call it up for display or editing.

These signs indicate that DRIVE 1 is not recording data correctly and must be modified. To remove the resistor pack, *first disconnect all power cords for your components from the outlets*, and then follow the six-step procedure explained in the Texas Instruments *Disk Memory System* manual on pages 7 and 8. If you do not wish to make this modification yourself, or if your disk system performs erratically after the change is made, you should seek assistance. Either contact the Customer Service Representative for Electronic Publishing at the nearest Scott, Foresman Regional Office, or call your local authorized Scott, Foresman dealer.

Caring for Diskettes

As shown in the illustration below, diskettes come in a protective jacket that is never removed and that has a label for you to identify the data on each diskette. Each diskette also has a removable storage sleeve; *observe carefully the cautions printed on the back of each sleeve.*



Since diskettes can be permanently damaged by dust or fingerprints, do not touch the surfaces exposed by the holes in the jacket. When not being used, diskettes should *always* be stored in their slip-on sleeves, which are made of an anti-dust, anti-static material. Your diskette file should be a closed box or drawer in an area that is as free of dust as possible and that is not near any sources of heat or magnetism. And remember to keep the disk drive doors closed whether in use or not, so that dust does not accumulate in the units.

The large and small circular holes and the large oval in the diskette jacket shown above must never be covered, as a disk drive uses these openings to read and write or to locate data on a diskette. The small square notch near the top right corner of the jacket is called the *write-protect notch*. If it is covered, data can be read from that diskette, but not recorded on it. Therefore this notch should remain open as long as you intend to keep updating a diskette. If you decide to store some data permanently, you may cover the notch with the piece of tape supplied in the diskette package; as long as the tape stays on, that data cannot be written over.

Since small surface irregularities can reduce the dependability of a diskette, it is important not to bend, crease, or scratch them. When writing on the label, use only a soft-tip pen and press as lightly as possible. *Never write on the jacket label with a pencil or ballpoint pen.*

A diskette can accurately and compactly store a volume of data equivalent to several paper files, but as previously noted this information can be affected by magnetism or static electricity. Remember therefore to guard against static build-up around your computer and disk files, especially when humidity is low. Store diskettes at least three feet away from any electromagnetic source, such as a telephone, switchboard, loudspeaker, or magnetic bulletin board. Do not rest diskettes on top of your monitor or other components while in use. And remember to check that no diskettes are in a drive when you are about to turn power on or off.

Initializing Diskettes

Before you use a new diskette, it must be initialized. This operation, performed with the *Disk Manager* module, gives the diskette a name, which you choose and by which the computer can subsequently "recognize" that diskette; at the same time initialization erases any data and prepares all available sectors to receive data.

A diskette previously used for one task can be re-initialized to accept data for another application. But there are two points to remember before doing this: First, be certain that you no longer need the data that will be erased by initialization, or that you have already copied it onto a backup diskette. Second, if you relabel a diskette, be aware that the added thickness of the new label on top of the old one may jam the read/write head in the disk drive.

The procedure for initializing is detailed on pages 10–11. Here is a brief review:

1. After inserting *Disk Manager* and putting a diskette into either drive, get to the DISK MANAGER menu and enter 2 for the DISK COMMANDS option.
2. Next, enter 4 for INITIALIZE NEW DISK.
3. The next display will ask you several questions, one by one. To the first query, MASTER DISK (1-3)?, answer the number of the disk drive which contains the diskette to be initialized. (Notice that you could initialize two diskettes in quick succession by placing one in each drive; *but you could only do one at a time.)*
4. Next you are asked to name the diskette. Choose a name that will remind you and other users of its function, and that conforms to the naming rules stated below. After checking the name for typing errors, press ENTER.
5. Accept the default response (Y) to the next query, which confirms that you are using a 40-track diskette.

6. The screen is now complete, and you will quickly get a message saying so at the bottom of the display. Press PROC'D so that the computer will proceed to initialize the diskette.
Important: On a brand-new diskette, 358 sectors should always be available for use. If after initialization, you see a smaller number available and any number given as used, some sectors may be defective. *First, make sure you are using a 40-track diskette.* If so, contact the Customer Service Representative for Electronic Publishing at the nearest Scott, Foresman Regional Office, or call your local Scott, Foresman dealer.

Naming Diskettes

A diskette name may contain up to *ten* characters, which can be both letters and numbers. The name must begin with a letter and must not include either a period or a space.

Although these names do not appear when you are using a *School Management Applications* module, you can always call them up with the *Disk Manager* module, so if any diskettes ever get mixed up or mislabeled, their names will be the only way to sort them out. Therefore, the name should not be arbitrary, but should help identify what data is on that diskette, For applications that use two diskettes, the names should distinguish between the DRIVE 1 and DRIVE 2 diskette. Here are examples:

A DRIVE 1 (the number after the slash) diskette for *School Mailer,* storing the tenth grade data:

M A I L 1 0 / 1 _ _

The DRIVE 2 inventory data for *Property Manager* for Adams Junior High:

I N V A D M S / 2 _

(Note that abbreviation problems could be avoided by assigning a two- or three-digit code to each school in your district.)

The DRIVE 1 diskette for *Personnel Data Recorder,* containing all staff in District 207:

S T A F F 2 0 7 / 1

In *Class Data Recorder,* the class records for fifth-grade Social Studies, period 4, DRIVE 2:

S O C 5 . 4 / 2 _ _

The proposed salary schedules for a district, calculated with *Salary Planner* as of February 15, 1982 (*Salary Planner* uses only one diskette):

S A L P 2 - 1 5 - 2

As you can see, ten characters do not provide the complete identification allowed by the labels affixed to Scott, Foresman Diskettes. But if you are ever uncertain whether you are using the correct diskette, a clear disk name is your most reliable check.

Testing Diskettes

You have already learned to do the QUICK TEST DESTRUCTIVE, which should be used to check random samples of new diskettes. *Remember that this test erases a diskette, including its name;* therefore it should never be used on a diskette whose data you need unless you have a good backup copy of that data.

You can also test diskettes without losing the data on them by using the QUICK TEST NONDESTRUCTIVE. Begin with the same procedure as QUICK TEST DESTRUCTIVE (page 11), but when you come to the query DESTRUCTIVE TEST (Y/N)?, press N followed by ENTER. Follow the remaining steps as before. The nondestructive test is useful in case of apparent trouble with the disk memory system. If you repeatedly get input/output error messages with a certain module, and you have already checked all switches and connections *and made sure that you have correctly inserted the appropriate diskette in each drive and neither is upside down,* then you should use QUICK TEST NONDESTRUCTIVE to test both the disk memory system and the diskettes without losing data.

In *School Management Applications,* such an input/output problem will usually be indicated by a screen message that you should check your disks and disk system. Sometimes, however, an input/output error message will take this form: I/O ERROR nn IN nnnnn. The first two *n*'s represent an error code that you may interpret using "Appendix A" of the Texas Instruments *Disk Memory System* manual, pages 44-45. The second group of five *n*'s stands for a line number of the computer program you are using. You need not interpret any of these numbers; merely check your disk system as explained on page 31, and if that does not reveal the cause of the problem, run QUICK TEST NONDESTRUCTIVE. To get a record of any bad sectors, remember to instruct the computer to log errors to the printer, using the code RS232/2.BA=600 to identify the printer. The record of any errors found will look like this:

```
BAD ADDRESS/CODE   nnn/nn
TOTAL ERRORS:      nn
COMPLETED PASS:    1
```

The number before the slash in the top line indicates the faulty sector. The code is one of the error codes mentioned previously.

If the nondestructive test does not reveal the reason for the problem and you continue to get an input/output error message, you should try QUICK TEST DESTRUCTIVE, which is more thorough. *But first make sure you have a backup copy of the diskette about to be erased.*

Following this, if you wish to make a still more thorough test, you can select the option of COMPREHENSIVE TEST that you will have noticed in the DISK TESTS menu. This destructive test consists of six subtests that write to and read from every diskette sector. It takes about sixteen minutes to perform *and erases all data.* To start this process, simply select Option 2 COMPREHENSIVE TEST on the DISK TESTS menu and then answer all queries on the screen as with the other types of test. *But first be sure you have a good copy of your diskette.* You will probably never need this exhaustive test, which should uncover any faults in the disk memory if you have not been able to diagnose the problem by any simpler method.

If properly used and stored, diskettes are reliable. However, if you do find bad sectors on a brand-new Scott, Foresman Diskette, keep the printer error log and contact your Customer Service Representative for Electronic Publishing at the nearest Scott, Foresman Regional Office, or your local authorized Scott, Foresman dealer. If the errors are found on an older diskette, it may be wearing out and should be replaced. This is one reason why it is *essential* to keep backup copies of all important data diskettes, as explained in the next section.

Backing Up Diskettes

Creating backup storage files on disk or tape is standard practice in business data processing; it is the equivalent of making carbons or photocopies of important documents. Whenever you enter or update a large amount of data on a diskette, you should duplicate that new data onto a backup diskette in case the original is mislaid or damaged. If you are updating only a little data each day, it is more convenient to update your backup diskette once a week. Few tasks are more wasteful of time and resources than having to manually re-enter data that was lost because the only diskette containing it was erased by mistake.

On the other hand, your *Disk Manager* module makes the task of duplication quick and easy:

1. Place the diskette you want to make a copy of in DRIVE 1 and the backup diskette in DRIVE 2. Close both drive doors.
2. Place *Disk Manager* in the console.
3. Press any key, then press 3 followed by ENTER.
4. From the DISK COMMANDS menu select Option 2 BACKUP DISK and press ENTER.
5. The next screen is headed BACKUP DISK. The first query on it is SELECTIVE (Y/N)? Press ENTER to accept the default response of N that is displayed behind the flashing cursor. This means that the entire diskette is to be copied, and not just selected files.
6. On the next line the prompt MASTER DISK (1-3)? is displayed, asking you for the number of the disk drive into which you put the diskette to be duplicated. Press ENTER to accept the default of 1. The name of the diskette in DRIVE 1 is now displayed. Make certain that this is the diskette you want to duplicate. If it is not, replace it and use the REDO function to start over.
7. Still on the same screen, you will see the query COPY DISK (1-3)? followed by the default response of 2 behind the cursor. Press ENTER to accept the default since you are copying data onto the diskette in DRIVE 2.
8. If that diskette has been initialized, its name is now displayed; if so, make sure that it is the correct backup disk for the original in DRIVE 1. If not, replace it and use REDO to start over.
9. If you are using an uninitialized diskette, the message DISK NOT INITIALIZED appears, followed by the prompt INITIALIZE NEW DISK (Y/N)? Accept the default response of Y.
10. If you are initializing a backup diskette the next steps are just as in the initializing routine: You are first asked to name the backup. You can simply type in the name of the original, making some change to indicate this is a duplicate; for instance, if space permits, you might add B or BU to the name of the original. Then you are asked 40 TRACKS (Y/N)?, and as usual you accept the Y default.
11. If you are initializing the backup, you will now see the message INITIALIZE NEW DISK WORKING. . . . .PLEASE WAIT; the light on DRIVE 2 will go on, and the increasing sector numbers will be displayed as usual.

Important: As well as initializing new backup diskettes, you should also re-initialize any backup diskette that has previously been used for some purpose other than duplicating the original being copied onto it. Otherwise, the old data will remain on the backup, and there may not be enough space for all data from the master.

As soon as the new diskette is initialized, or if the copy disk was already initialized, the copying process begins automatically, with a screen

message to that effect. Information about the files on the master diskette is displayed as they are copied, and finally you receive a message that the backup command is completed. Note that in case of error you can stop the process midway by pressing the CLEAR function key for a few seconds.

When copying is completed, press BEGIN to return to the initial DISK MANAGER menu and immediately remove your backup diskette. If it is not already labeled appropriately, do so and then place it in its storage sleeve and file it promptly. Remember also to store your master diskette safely unless you are going to use it further.

Labeling and Filing Diskettes

Like paper files, diskettes are much easier to use if they are clearly identified, so Scott, Foresman Diskettes come with a label that allows you to summarize the contents of each diskette. Careful labeling, as illustrated below, can save considerable waste of time caused by inserting the wrong diskettes for a certain application or by mixing up the DRIVE 1 and DRIVE 2 diskettes.

The disk number space on each label is intended to help you keep track of the several dozen diskettes you will need for effective use of *School Management Applications*. If you assign each diskette a unique disk number, you can keep in your disk file a simple catalog of all your diskettes. A catalog like the table partly shown beneath the labels would serve as a cross-check on your diskette labels, and would also tell you when each diskette was approaching replacement age, when it was last updated, and when discarded.

When a diskette is discarded for age or a bad test, the date could be noted in the right column and your record of its replacement should be cross-referenced to the number for the discard. Try to stagger the dates of buying replacements for a particular application.

You may want to use wide ledger sheets for your disk catalog to provide more columns for updates.

One final important point about managing diskette files is the desirability of keeping not one, but *two* backup diskettes for any important data that is frequently updated. This would protect you against the unlikely accident that both the original and copy diskettes might be partly erased during backup. This should not occur unless something like a power surge ran through the read/write head. Nonetheless, in such a case, having an additional backup would protect all but your most recent update of that program. In using this three-diskette backup you should alternately copy new data onto Backup A and Backup B, so that the backup containing the latest data is never the one used for the next backup routine.

Mark gently with a soft-tip pen.
Application: Property Manager — Disk No.: 37
Dist./Schl.: Dist. 217 — Drive No.: 1
Class/Group: Barnes Upper Grd Center — Backup? orig.
Scott, Foresman and Company
Electronic Publishing
30514

Mark gently with a soft-tip pen.
Application: Class Data Recorder — Disk No.: 62
Dist./Schl.: Westside Elem. — Drive No.: 2
Class/Group: Soc. Studies Grd 5, Mr. White — Backup? B-U #2
Scott, Foresman and Company
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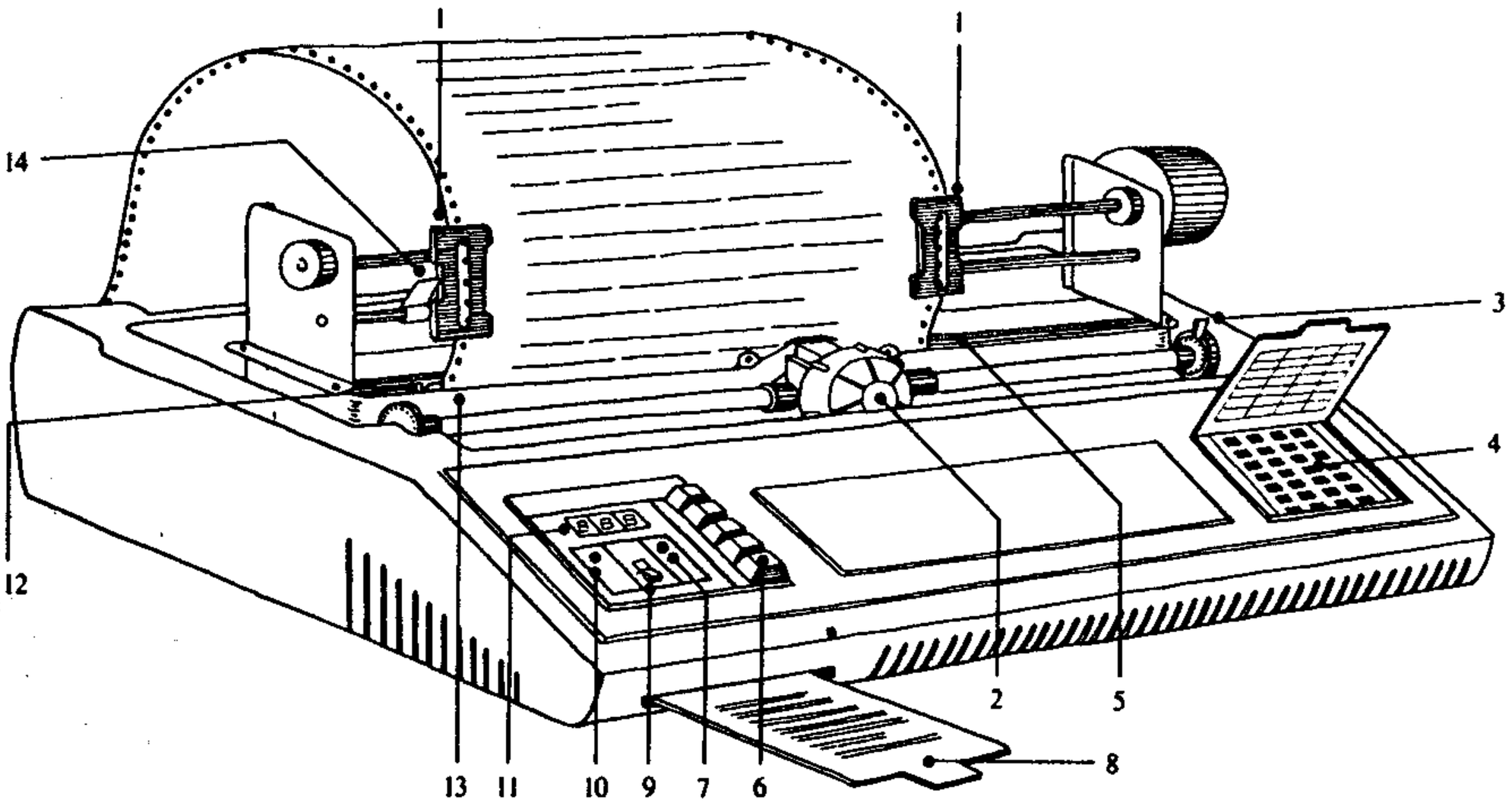
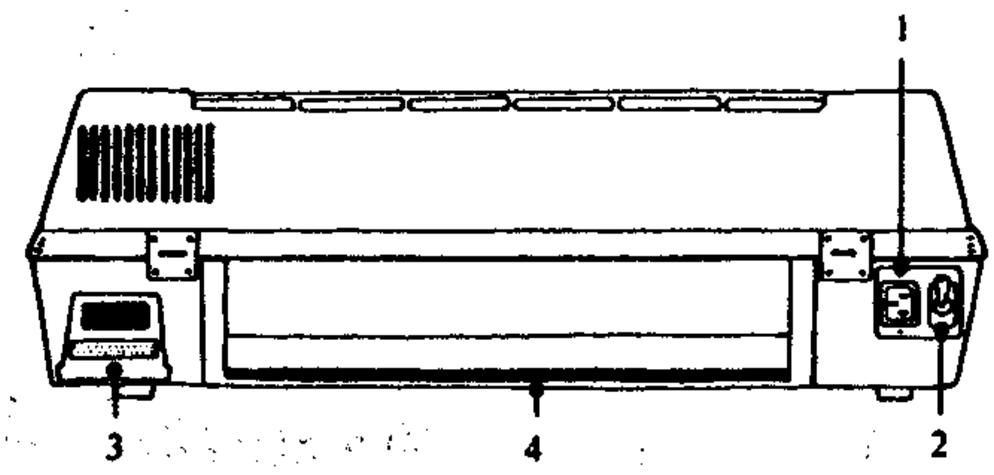
Disk No.	Date of Purch.	Disk Name Description	Drive	Last Updated							Discard
37	5/21/81	PM BARNES/1 (ORIG.) PROP. MGR. BARNES UPPER GRD. CTR.	1	5/26	8/18	9/9	9/17	11/10			
38	5/21/81	PM BARN/1 BU BACKUP FOR DISK 37	1	5/26	8/21	9/11	9/18	11/13			
39	5/21/81	PM BARNES/2 (ORIG.) PROP. MGR. BARNES UPPER GRD. CTR.	2	5/26	8/18	9/9	9/17	11/10			

The Printer

Before studying this section on the printer you should familiarize yourself with its main features, using the following diagrams of its front and back.





Front View: **1.** Paper tractors (adjustable width). **2.** Printhead. **3.** Paper thickness adjustment. **4.** Control keypad. **5.** Platen. **6.** Function keys. **7.** CARR RCV light. **8.** Operator reference cards (pull-out). **9.** LINE/LCL switch. **10.** LINE RDY light. **11.** Terminal Status Display. **12.** Paper-out sensor (see notch below platen). **13.** Ribbon. **14.** Paper tractor locking lever.

Rear View: **1.** Power cord socket. **2.** On/off switch. **3.** Port for RS-232 interface cable. **4.** Rear paper chute.

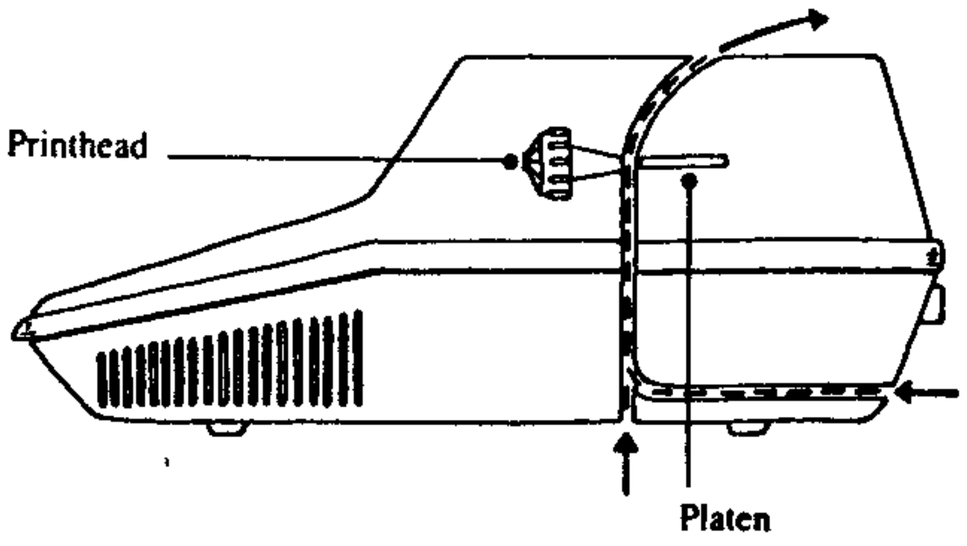
Choosing a Good Work Space

The printer requires a work area that gives good support and ventilation and allows the paper to feed smoothly. The optional printer stand (sold separately) meets these conditions, but if you choose another kind of support, be sure to observe the following guidelines.

The printer weighs forty-one pounds; the work area must be able to support this unit *without putting any weight on the paper chute underneath the machine.* Allow at least two inches on each side of the printer for ventilation. Be particularly careful that the cooling fan and the exhaust louvers on both sides are not blocked. An unobstructed

paper-feed path must be provided either behind or below the machine. Feed from below produces the best paper flow and minimizes binding. If the optional paper basket is not purchased, you must provide a receptacle for the printed reports.

Note this side view, which shows the two available paper paths in blue with arrows:



Caring for Your Printer

Important: Never print without having both a ribbon and paper properly installed. ***Printing without either one will damage the printhead.***

In the case of either a carriage jam or the end of the paper supply, the printer will sound a single, high-pitched tone for one second. If the carriage is jammed, the three-window red LED display at the top of the left-hand control panel will flash error code ⊐ 11 repeatedly. When the paper runs out, this display will flash code ⊐ 12 off and on. To clear a carriage jam, consult "Printer Checks" on page 30. Reloading paper is explained in "Reloading During a Print Run" (page 24).

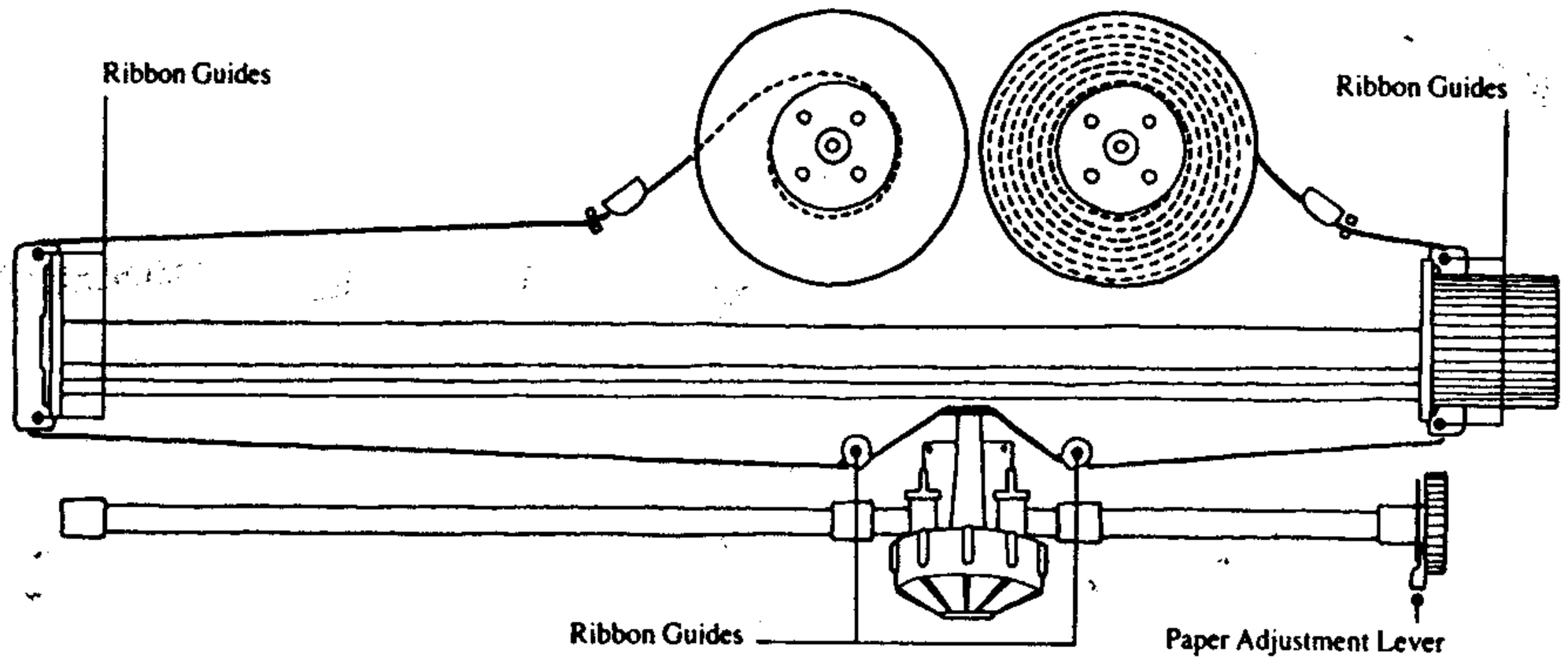
After installing a new ribbon, always make sure there are no twists or snarls in it, and see that it tracks smoothly around the ribbon guides.

You should establish a regular monthly date for vacuuming the printhead and ribbon path area, as described on page 7, column 1. The need for this maintenance may not be obvious until the printer breaks down, after dirt and paper chaff have built up inside the printer cover.

No other operator maintenance is advisable. You should not attempt to repair or replace parts and assemblies such as the printhead or paper tractors. With monthly cleaning and proper installation of paper and ribbon, your printer is designed to provide reliable service with no other operator maintenance. If you encounter any printing difficulty, see "Printer Checks."

Installing a Ribbon

Your printer uses a nylon ribbon on two spools, which runs along the path highlighted in the diagram below:



1. To put in a ribbon, first check that the printer is *off*.
2. Lift and prop up the cover and move the printhead away from the platen by turning the paper thickness adjustment lever all the way back (toward the front of the printer).
3. Place a full ribbon spool on either of the hubs, with the ribbon exiting from the outward side of the hub, as shown above.
4. Feed the ribbon along the path shown in the diagram and install the empty spool on the other hub. Wind up any slack.
5. Make sure that the ribbon passes through the vertical guides near each spool and on both sides of the printhead. On the side with the empty spool, the eyelet on the end of the ribbon should be between the shift arm and the spool. Check that the ribbon is not twisted or snagged at any point.
6. Readjust the printhead by pushing the paper thickness lever forward to its usual operating position.

Loading and Adjusting Paper

For *School Management Applications* you will use either 9½-by-11-inch perforated continuous sheet paper or mailing labels. Both of these forms come with standard sprocket holes on each side to fit the printer's paper tractors. With the sprocket-hole strips removed, the continuous sheets separate to standard 8½-by-11-inch pages.

Loading Before Printing As you begin to load your printer following the steps below, you can use the diagram on page 22 if you need help in locating parts.
1. First make sure the printer is *off*.
2. Lift and prop up the printer cover and open the hinged flaps over both paper tractors.
3. Move the printhead away from the platen by turning the paper thickness lever toward the front of the printer.
4. Flip the black locking levers beside both tractors down toward you. Slide the left tractor to the left of the paper-out sensor. This automatic switch is behind the notch near the left end of the metal plate below the platen. Push up the left locking lever to hold the left tractor.
5. The paper for your printer has a smooth, reflective side and a comparatively rough, dull side. The smooth side must face the printhead and the dull side must face the platen for the best quality print. With this in mind, feed the paper into the paper chute at the rear or underneath the printer until its top edge comes above the tractors. Insert the paper to the left of the paper-out sensor *so that the notch is completely covered and the sprocket holes do not pass over the notch.* Whenever the notch is uncovered, the sensor switch stops the printer and signals that there is no paper.
6. Level the top edge of the sheet and fit *corresponding* sprocket holes along each edge over the five plastic pegs in each tractor. You must use matching holes so that the paper will feed straight.
7. Close both tractor flaps.
8. Move the right tractor back and forth until the paper is stretched smooth between the tractors, but with only a slight tension. There should be no wrinkles or slack.
9. When the tension is correct, tighten the locking lever for the right tractor.
10. Check that the paper supply is aligned straight and does not rub on either side of the paper chute.
11. Readjust the printhead lever to its normal operating position, then close the printer cover and switch on the unit when ready.

Although different sizes of paper can be used in your printer, *School Management Applications* are set for an eleven-inch form length. If you wish to alter the paper feed for some other form length, refer to the Texas Instruments printer manual, page 3-8. In any case you will need to adjust the paper so that the top line of each page will be printed where you want it.
1. With the machine *on*, push the LINE/LCL switch all the way down to LCL.
2. Depress the FORM ADV key, found at the left of the console, for a full second, so that the paper advances the length of one sheet.
3. Hold down the up or the down arrow key just above the FORM ADV key to gradually move the paper up or down until one of the perforations across your sheet is just above the printhead. Each new page will now begin at that level. If you prefer a larger top margin, simply move the paper up further.

Reloading During a Print Run If you must replace paper during a printout, the procedure is slightly different. When paper runs out, the paper-out sensor sets off a high beep, flashes error code ↄ 12 in the TSD windows, and stops the printer. The printer then sends a busy signal to the computer, which halts the flow of data. However, one or two lines of data may already be waiting in the printer's memory to be printed on the current page. To be sure that any such information is printed, follow this procedure:
1. Set the LINE/LCL switch to LCL.

2. Press the RESET key (above the FORM ADV) once for each line of data remaining to be printed. If nothing prints, the printer has set all the information it has received.

However, if the three display windows on the left control panel contain the status code ⅁ 23, then some data was lost in transit when the printer signaled busy. In this case, after reloading paper you should start the interrupted report over again.
3. When you have checked for unprinted data, you can load new paper as described previously.
4. After reloading, set the LINE/LCL switch back to LINE and press RESET again to resume operation.

Starting Your Printer

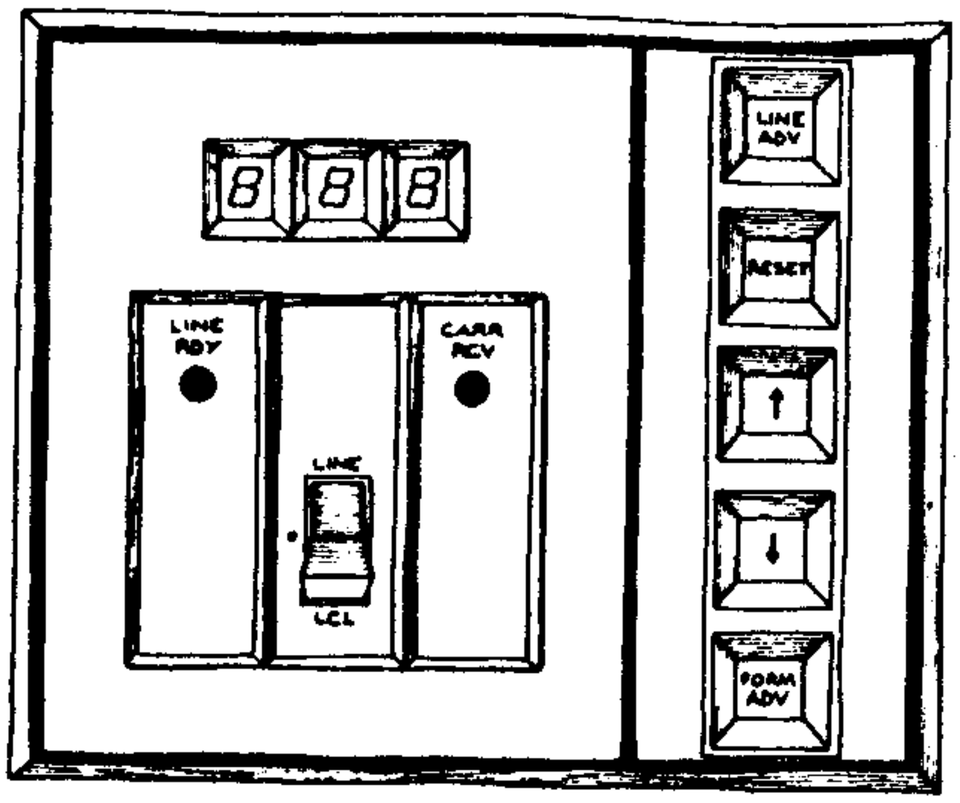
It is best to put the printer in local mode before starting it, so make sure that the LINE/LCL switch is pushed all the way back to the LCL position, then turn the power switch on. The three small windows of the Terminal Status Display (TSD) on the left control panel should light up with the numbers 888, and the printhead should move across the platen and back to the left margin if it is not there already. There will now be a brief delay while the printer automatically tests its internal memory circuits. As long as the TSD reads 888 this self-test is going on. When this routine is over you will hear a short beep. Now the TSD should change from 888 to a number indicating that the printhead is at the left margin. In *School Management Applications*, the left margin number is 001. When this number appears you can switch the printer to LINE and print from the computer, or leave the switch on LCL and test the printer. If you receive a long, high tone and see a flashing error code in the TSD there has been some failure in start-up. Remedies for this condition are covered below in the section on "Interpreting TSD Codes and Signal Tones" on page 26.

Adjusting the Printhead

The paper thickness lever is used to adjust the darkness of printing as well as to compensate for different thicknesses of forms. For thicker paper just move the lever down toward the front of the printer, and for thinner paper move the lever up toward the rear. If characters are printed incompletely or too light, move the lever towards the rear of the printer to increase the printhead pressure. If characters are extremely dark or smudged, move the lever towards the front of the printer.

The Left-Hand Control Panel

The panel on the left front of the printer enables you to adjust paper, monitor the printer's operation, and disconnect it from the computer without unplugging the cable. This last operation is essential when you are loading paper or adjusting the printer in any way. Here is a diagram of these controls:



The Function Keys Four of these keys—FORM ADV, LINE ADV, and the two keys marked with arrows—are used to move the paper. FORM ADV has two functions: by pressing it for less than a quarter second, you can advance the paper one line; by holding down the key, you will make the paper advance to the top left margin of the next sheet, and this rapid advance will be repeated until you release FORM ADV. If pressed briefly, LINE ADV will also move the paper ahead one line. The up and down arrow keys cause the paper to advance continuously in the direction indicated at the rate of ⅙ inch per second until the key is released. As you have seen, these two keys are used to set the top margin of your form, or for any fine adjustment.

The main use of the RESET key is to return the printer to normal operation after you have run a test or corrected an abnormal condition. Abnormal conditions are indicated by error codes in the Terminal Status Display, which are tabulated on page 26. RESET also enables you to print data one line at a time after the printer is stopped by a paper-out signal, so that you can print any data caught in transit.

The LINE LCL Switch This three-position switch controls whether the printer is connected with the communications line to the RS-232 interface (LINE position), or is temporarily disconnected and operating on its own in the local mode (LCL position). In order to use the printer as part of your system, you must put this switch in the LINE position. When changing paper or ribbon, or when cleaning the printer, be sure to move the switch to LCL. *After finishing such tasks, always remember to return the switch to LINE so that the printer can receive data from the computer.* Be sure the switch is never left in the middle position, which causes the LINE RDY light to flash.

The LINE RDY and CARR RCV Lights The two small red lights above the LINE/LCL switch are the communications indicators. CARR RCV stands for "carrier signal received" and LINE RDY stands for "line ready." These indicators enable you to monitor the status of the terminal. They function only when the LINE/LCL switch is in the LINE position; that is, when the printer is ready to receive data from the computer and is physically connected to the computer via the interface cable and the RS-232 interface.

The CARR RCV indicator shines when conditions for receiving data are satisfied. It does not mean that data is actually being received. The LINE RDY light has three states: on, flashing, and off. When lighted, LINE RDY usually indicates that the communications link to the RS-232 is ready to transmit data. Flashing of the LINE RDY light indicates that the printer is on standby, or that a control signal for communicating with the computer is not present. When the LINE RDY light is off, the line from the RS-232 is not ready to transmit data.

The Terminal Status Display The Terminal Status Display (TSD) is a three-digit indicator at the top of the left control panel. In normal operation these windows display the column number of the next print position, from 001 to 218. Other functions include displaying special condition codes, giving configure code information, and indicating—by the digits 888—when the printer is testing itself right after being switched on. You can always tell which type of information is displayed in the TSD by the leftmost character. For the print column indicator the first digit is always a 0, 1, or 2. Codes for errors and special operating modes are two digits preceded by the symbol ⊐ in the left TSD window. When you put the printer in configure mode (as explained later), the symbol ⊏ appears at the left. With the start-up test the first digit is an 8, a numeral that never begins a print column number.

Interpreting TSD Codes and Signal Tones

When the TSD is flashing, either an error has occurred or the printer is in a special operating mode, such as a test. The specific condition is indicated by the displayed code. The codes are ordered so that 00 represents the most serious problem with the highest priority and 39 stands for the lowest. When several errors occur at once, the code with the highest priority is displayed first. The next lower priority code will be displayed after the first condition is corrected. The TSD display is cleared by pressing the RESET key on the left control panel.

Code	Definition	Action Required
	Power-up Faults	
00 01 02 03	Problems detected in a printer memory circuit.	Turn power off, then on again. If error code repeats, call for service. To clear error code and use printer, press RESET *(machine may not perform reliably).*
	Operator Maintenance	
11	Carriage paper jam.	Clear jam and press RESET.
12	Paper out.	Reload paper and press RESET.
	Communication Faults	
21 22 23 24 25 26	A temporary error or overflow of data has been detected in transmission from the computer.	For all these codes, press RESET, then restart the report from the beginning. Some transmitted data may not have been received by the printer.
	Special Function	
39	Test in progress.	Press RESET to end test.
	Operator Errors	
⊐⊐	Invalid sequence of commands from keypad due to error in setting configuration or format.	Press RESET and type correct command sequence.

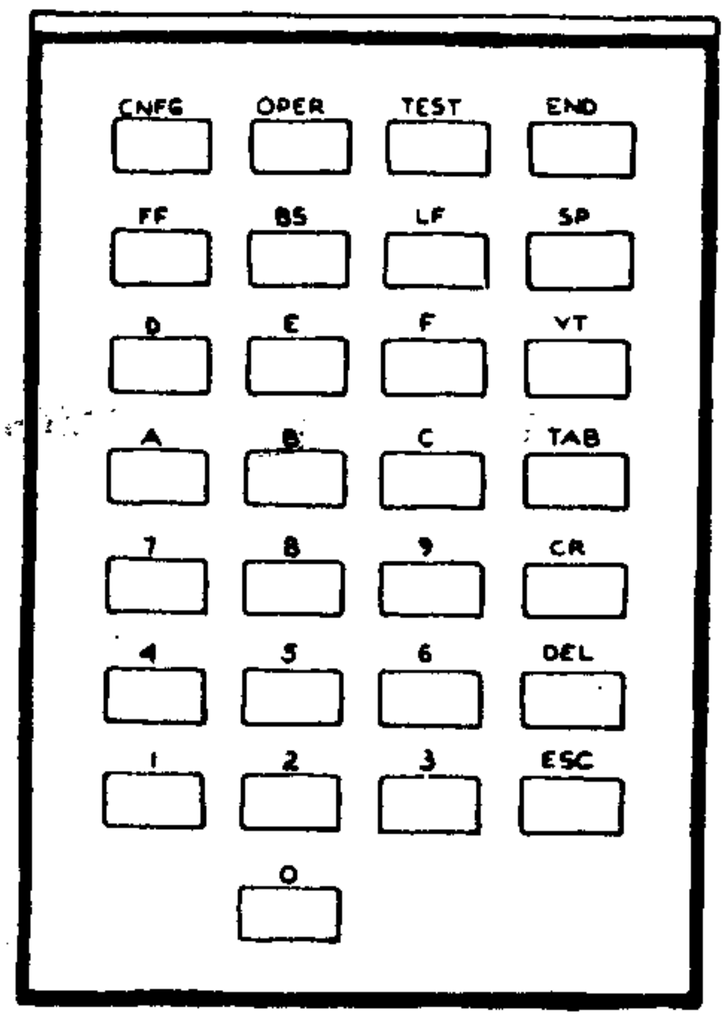
It is essential to recognize that power-up faults (codes 00, 01, 02, and 03) are not *corrected* by pressing RESET. This action will clear the error display and may allow you to use the printer while waiting for service. However, the actual memory defect may persist, so you cannot be certain of

fully accurate reports until your machine has been checked by a technician.

In addition to the TSD codes, your printer produces various tones to signal operating conditions. Specific *School Management Applications* will generate tones of their own, but the printer itself produces three basic types. A single short tone indicates the completion of a normal operation, such as the start-up test. A rapidly repeated, short, high-pitched tone indicates that the operator attempted to enter the configure mode while the printer was still on LINE; *to enter the configure mode the LINE/LCL switch must be set to LCL.* A single, longer, high tone indicates an error. When you hear such a tone, you should look at the TSD code and consult the table of error codes.

The Right-Hand Control Panel

Beneath the hinged lid on the right front of your printer you will find a pad of twenty-nine keys, illustrated below. These keys enable you to control two important functions: First, you can configure your printer to accept data as transmitted from *School Management Applications* modules and diskettes. Second, you can initiate automatic diagnostic tests of the printing functions. Here is a diagram of the keypad:



Setting Printer Configuration

The various configuration settings control such functions as the rate of data transmission and electronically controlled checks for accuracy of data. Your printer can accept a variety of configurations, but for *School Management Applications* the correct settings are *13, 24, 32, 81, and 93.* As a reminder to all operators, it would be wise to attach a card with these configuration codes to the printer, and to note on it that the settings should always be checked first in case of any printing problems. The procedure for setting and checking configuration follows.

1. With the power on, place the printer in the LCL mode and open the control keypad.
2. Press the configure key (CNFG) in the top row of control keys. The TSD will display a C symbol in the leftmost window, indicating that the machine is in configure mode.
3. Set the appropriate configuration codes by pressing the following keys in the exact sequence given:

1; 3; CR; 2; 4; CR; 3; 2; CR; 8; 1; CR; 9; 3; CR

As you see, after typing the digits for each code, you must enter that code by pressing the CR key ("carriage return") at the right of the keypad. Each time you do this the two-digit setting you have just entered will appear in the TSD and the printer will sound a very short beep.

4. You should now doublecheck the settings you have input by pressing the TAB key repeatedly. As you do so, the series of settings will appear one by one in the same order on the TSD. If any are wrong, you can easily reset them by the following methods.
5. First, note which position in the series needs to be amended and check which is the proper code for that position; for instance, the correct setting for the third position is 32 (3; 2; CR). If the incorrect code is a number 39 or less, simply press the TAB key until the wrong code comes up in the TSD windows, and then type in the correct digits and press the CR key. This will automatically replace the wrong code with the correct one.
6. However, if the inaccurate setting is a number higher than 39, you must first delete the wrong code before you can enter the right one. Again, simply use TAB to bring up the invalid code. But then, instead of typing in the correct digits, first press the DEL key to delete the unwanted setting. The TSD will immediately change to the next configuration code in sequence. However, you can ignore those numbers (unless they also need correction), and now you can type in the correct

configuration and press CR to have it registered. It would then be wise to recheck all your configuration settings using the TAB key as in step 6 above.

7. When you have finished configuring the printer, press the operate mode key (OPER) next to the CNFG key to leave the configure mode.

8. Push the LINE/LCL switch all the way forward to LINE to prepare for printing.

If you hear a sustained, high-pitched beep while entering configuration codes, or see in the TSD the symbols ↄ ↄ ↄ, this means that the code you tried to enter is not valid. Each time a valid (though not necessarily correct) setting is entered, the printer sounds a very short beep.

Using the Diagnostic Tests

Your printer can perform various diagnostic tests on its functions, and can provide you with reports showing whether its controls are set correctly. There are five of these tests, but only Tests 1, 3, and 5 are necessary for *School Management Applications. Before starting any test be sure to switch the printer to the LCL mode.* Then press the TEST button at the top of the right-hand keypad. The TSD will begin to flash the code ↄ 39.

Test 1: The Barberpole Print Test This checks for correct printing. After pressing TEST, press the number 1 on the keypad. The result is the spiral of all ninety-five characters, printed at maximum speed, which is shown at the bottom of this page. Printing defects show up plainly as gaps in this pattern. You can also quickly judge whether printhead pressure should be adjusted or whether the ribbon needs changing. When ready to stop Test 1, simply press RESET.

Test 3: The Configuration Report This one-line list of the configuration settings that are currently stored in the printer is produced by pressing TEST and the number 3. If the unit is configured correctly for *School Management Applications*, the test report will read *13; 24; 32; 81; 93.* If you do not get this exact series of numbers, you need to correct the wrong configuration codes using the procedure explained in the previous section on "Setting Printer Configuration."

Test 3 stops automatically, without RESET.

Test 5: The Format Report This one-line report is produced by pressing TEST followed by the number 5, which should produce the following series of numbers when the printer is set for *School Management Applications:*

066; 001; 080; 001; 066; 6; 10

The first group of digits (066) indicates a form or page length of 66 lines. The second set of digits (001) tells you that the left margin is at the first column. The third group (080) means that the width of the printout will be 80 columns or characters (unless the printer automatically switches to compressed printing for extra-column reports). The fourth set means that the top margin of each page is set at line 001. The next set of digits indicates the bottom margin, line 66, which should match the page length. Next, the number 6 gives the amount of lines printed per vertical inch. The final number, 10, signifies the number of characters printed per horizontal inch.

This test also stops automatically after the format report line is printed.

```
+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz
,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{
-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
/0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
1234567890:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !
234567890:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"
34567890:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#
4567890:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$
567890:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%
67890:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&
7890:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'
890:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'(
90:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()
0:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*
:<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+
:=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,
=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,-
```

Setting Printer Format

When you use a *School Management Application* the printer will in most cases be set automatically to the required format codes. However, if you ever change format for other programs, or if you experience a printing error such as lines being set on form perforations, you should run Test 5. If the format report does not come out exactly as shown in the last section, you should reset format using the exact sequence of steps described below.

1. Set the printer to the LCL mode.
2. Using the control keypad, begin by setting a vertical spacing of 6 lines per inch. To do so, press the ESC key and then the FF key. The ESC or "escape" key clears a previous format command and identifies the next group of keystrokes as a new format command.
3. Enter a form length of 66 lines per page using this series of keystrokes: *ESC; 5; 66; CR.*
4. Using the up and down arrow keys in the group of function keys opposite the keypad, move a form perforation to the level above the printhead that you wish to be your top margin. Then hold down the FORM ADV function key for a second until the paper advances to the top margin position on the next sheet.
5. Next, to set a horizontal character spacing of 10 characters per inch, press ESC and then the C key.
6. To set your margins, both sides and top and bottom, simply press ESC and then the zero key.
7. Now check your format settings by running Test 5. The format report should read *066; 001; 080; 001; 066; 6; 10.*

Checking Your System

If your school computer does not seem to be working properly, the cause is likely to be a temporary malfunction of some component or a minor error by a user. Often, the *School Management Application* in use will display a screen message indicating what components to check. If not, you can usually remedy minor operating problems quite simply. When you can immediately identify the component causing the trouble, read the section about checking that unit below. Otherwise, start with the following general procedures.

General Checks

1. Switch the console off, then on again. This resets the computer and so can correct most minor technical malfunctions.
2. If that does not work, first make certain all devices are plugged into *working* electrical outlets, and that all are switched on. Turn everything off and then switch on the system in correct sequence, *being sure to start with the disk drives and controller.* Also make certain that the RS-232 interface is on before resuming work.
3. Check that the module in use is firmly inserted in the console port. Then make certain that you are using the right diskette or diskettes for that application, and that you have inserted each completely into its proper disk drive with its label facing up and toward the drive door.
4. Check for damaged cables: With all units on, wiggle each wire and cable near both ends. If this produces static noise or causes the attached units to function intermittently, that cable should be replaced.
5. Check for tight connections between units: Be sure that the console, the RS-232 interface, and the disk controller are aligned parallel and pressed together snugly. Make sure that you are using the types of cables specified in the manufacturer's equipment manuals. Although the connectors in your system are designed to fit only one way, some may be forced on the wrong way; this is particularly true of the disk drive cables. If a cable connection appears badly aligned or jammed, disconnect it, inspect it for damage, and if there is none, reconnect it the opposite way. Then retest your system.
6. If the system still does not work, and you are not yet certain where the trouble lies, switch off and disconnect all components. Then reconnect units to the computer console one at a time, starting with the monitor; then the disk controller

and *one* drive as a pair; then the controller and the other drive, also just as a pair; then the RS-232 interface (the disk controller can be connected to the console first, with the RS-232 next in line); and finally the printer. As you reconnect each item separately, switch it on and test it with the console until you identify the malfunctioning unit. Then see the appropriate section below.

Printer Checks

Some of the commonest minor problems involve errors in setting up the printer.

Paper-Out or Carriage Jam If you hear a one-second beep, immediately check the Terminal Status Display. If paper is out you will see code ⊐ 12; consult "Reloading During a Print Run" on page 24.

Code ⊐ 11 indicates a carriage jam. To clear it, switch off the machine, set the paper thickness lever all the way back from the platen, and open both paper tractors. Carefully pull the crumpled paper up out of the platen area and set the next undamaged sheet onto the tractor pegs. Reclose the tractors and readjust the paper thickness lever. Finally, switch on the machine, make sure the LINE/LCL switch is set to LINE, and press RESET to resume operation.

Failure to Print When you select a *School Management* report, if all data have already been sorted by the system, printing should begin within a minute or two at the most. If the pause lasts longer, your printer is not accepting data from the computer. Begin the following checks; normally your printer will begin to work as soon as you correct the cause of the delay:

1. Flip the LINE/LCL switch to LCL, and then back to LINE. Check that the LINE RDY light is shining steadily.

2. See if an error code is displayed in the TSD. If so, consult the condition code table on page 26 and take appropriate steps.

3. Be certain that the printer is switched on, and that its power cord and its interface cable are firmly connected at both ends. Doublecheck that the interface cable goes to the port of the RS-232 interface that is *next to* the power cord of that unit.

4. If the printer has still not started, switch it off and then on again. This sometimes corrects a temporarily mistaken communications signal. (After doing this, you should run Test 5 to check format settings, which may have to be reset.)

5. If none of these steps has started the printer, set the LINE/LCL switch to LCL and run Test 3 to get a configuration report. Unless the report reads *13; 24; 32; 81; 93* in that order, you need to reset the incorrect codes as explained in "Setting Printer Configuration" on page 27. Then press the OPER key and return the printer to LINE. To avoid the risk of an incomplete report, it would be wise to repeat the printing of the report that is set when the printer first starts working.

In case of continued printing difficulty, call the nearest Scott, Foresman Regional Office, or your local authorized Scott, Foresman dealer.

Light or Smudged Printing In such cases, first try adjusting printhead pressure. If the type is too light, move the paper thickness lever toward the platen. If the type is too dark or smudges, move the paper thickness lever a notch or two back from the platen. If neither adjustment helps, change the ribbon.

Broken or Unclear Type Set the printer to LCL and run Test 1, the "barberpole" print. If the pattern is imperfect, call the nearest Scott, Foresman Regional Office, or contact your local authorized Scott, Foresman dealer. Keep a copy of the defective pattern to aid in diagnosing the problem.

Abnormal Printing Such problems as characters being printed on form perforations, lines being broken in the middle of a word, or paper being rapidly fed through the machine without printing could occur if certain format or configuration codes have been set wrong. In case of any such erratic performance, run Test 3 to get the configuration report, which should read exactly *13; 24; 32; 81; 93*. Then run Test 5 to get the format report, which should read exactly *066; 001; 080; 001; 066; 6; 10*. If there are any discrepancies in these reports, reset the erroneous codes. To correct configuration codes, see page 27. For resetting format controls, see page 29.

If the printer still performs abnormally, call Scott, Foresman or your Scott, Foresman dealer. ***Important:*** The printing of narrow instead of regular characters is *not* abnormal printing. This is *compressed print*, an automatic adjustment in *School Management Applications* to allow for reports with more than 80 characters of data in a line. The printer will automatically return to regular character width after a compressed report is finished.

Disk System Checks

If the video display indicates that the disk hardware or diskettes should be checked, or if you see an input-output error message ("I/O ERROR nn IN nnnnn"), your first steps should be to switch off the console, check that the disk controller, both drives, and the RS-232 are all on, and only then switch on the console again. This would correct the situation if you had turned on units in the wrong order.

However, if the problem persists, perform the "General Checks," and if that does not suffice examine the following:

1. Make sure both disk drive doors are fully closed.
2. Doublecheck that you have inserted the appropriate diskette(s) for the application you are using, and that each one is label-side-up in the drive it was assigned to—DRIVE 1 or DRIVE 2.
3. *Remember that an uninitialized diskette will not work.* If uncertain whether a diskette is initialized, switch off the console and remove the module. Then switch on the console and use the *Disk Manager* to check whether each diskette is initialized.
4. If the system still does not work, even with initialized diskettes, recheck all power cords, interface cables, and connections. Disconnect and reconnect the components. Then switch the console off and on before testing the system again.
5. In case of further difficulty, follow the suggestions in "Testing Diskettes" (page 19). If a diskette or a unit in the disk system is faulty, these tests should indicate that. You can then call your Scott, Foresman Regional Office or your local authorized dealer for assistance.

Important: When you start with the disk drives empty, each drive light should blink on and then go off. If either keeps on shining, that unit's flat cable is plugged in upside down. Simply switch off and reverse the cable before proceeding.

Checking Other Units

The RS-232 Interface There is no way for you directly to detect operating errors in this unit, although it may be involved in printer stoppages or input/output errors. In such cases, when you check switches and connections, always make certain that the RS-232 is plugged in, switched on, and firmly connected and parallel with both the console and the disk controller. Also check that the printer interface cable leads from the correct port of the RS-232 to the printer's interface port and is not connected upside-down.

Important: If someone ever neglects to switch on the RS-232 *before* beginning an application, printing will be impossible until that unit is switched on, and the program will then halt with an erratic monitor display. It would then be necessary to switch off the console, switch it on again, and restart the application. *Data entered just before the interruption might be lost.*

The Video Monitor Remember that if you leave the keyboard unused for ten minutes, the display will go blank. This is not a problem. Simply press the ENTER key on either keyboard to resume your application where you left off.

If there is trouble with the sound or picture on the monitor, and you have already checked the power cord and tried adjusting the picture controls, try the following:

1. Make sure that the interface cable to the monitor is properly connected at both ends. Wiggle it near both ends; if that produces intermittent performance, replace the cable.
2. If you are using a television with a video modulator, make certain that the channel select switch is set correctly, that your television is set to the same channel (3 or 4), and that the TV/COMP. switch is at the computer end.
3. If there is no sound, disconnect the cable to the console and turn the volume control clockwise all the way. A loud buzzing indicates that the monitor's audio is all right; the trouble may lie in the console.

The Console As with the RS-232 interface, there is no way for you to detect a fault in the computer. However, if you have exhausted all previous checks, disconnect everything except the monitor from the console. Then test the monitor as described above. If it appears to be working well, the console may be at fault. Call the Electronic Publishing Customer Service Representative at the nearest Scott, Foresman Regional Office, or contact your local authorized Scott, Foresman dealer.