This section is only for those who have already opened their Datavue, are experienced using IBM PC or compatible computers and PC or MS-DOS, and hate to read manuals. Follow these few steps to get off to a fast start:

1. Press the keyboard release latch to detach the keyboard.
2. Install batteries in the keyboard. Press any key and make sure the light in the upper right corner comes on. The keyboard is wireless, but needs a clear path between the keyboard and computer.
3. Insert the AC adapter into the computer. Turn the AC adapter switch on.
4. Press the screen release latch and adjust the screen angle.
5. Insert the DOS diskette from the DOS manual, or any bootable diskette, into the Datavue's physical (diskette) drive. MAKE SURE THE LABEL ON THE DISKETTE FACES TOWARD THE REAR OF THE COMPUTER AND THE NOTCH IS UP. Push the diskette into the slot until it clicks. Press in the button labeled ''PUSH'' at the top of the drive until it clicks.
6. Turn ON the Datavue power switch at the back and lower right of the computer. Press in the left side of the switch so the red line on the right side of the switch is showing.
7. Depending on the internal switch settings, the Datavue either:
   • Automatically sets up a RAM drive as Drive B, and installs DOS, or
   • Displays a screen that lets you set up a RAM drive. Follow the instructions on the screen.

You are now up and running!

Using the RAM Drive for a Two Drive System

The RAM drive enables the Datavue to work like a two-drive system. Since the RAM drive is much faster than the physical diskette drive, we recommend that you load your application software program diskette onto the RAM drive and use the physical drive for your data. Since the default drive is A, you can toggle the drive designations of A and B between the physical and RAM drives by pressing the CTRL, Left Shift, and D keys simultaneously and continue to use A as the default drive. Or, you can change the default drive to B. Here are some examples:

1. Your word processor programs are on one diskette and your data is on another. Insert your word processor program diskette in the physical drive and copy the files to the RAM drive like this:
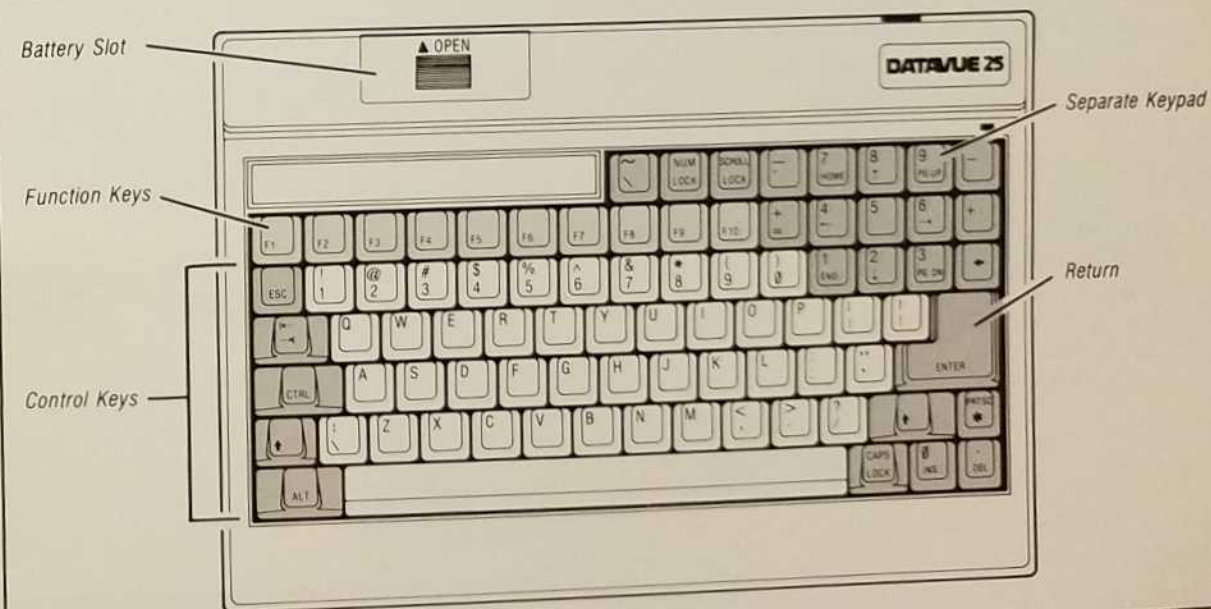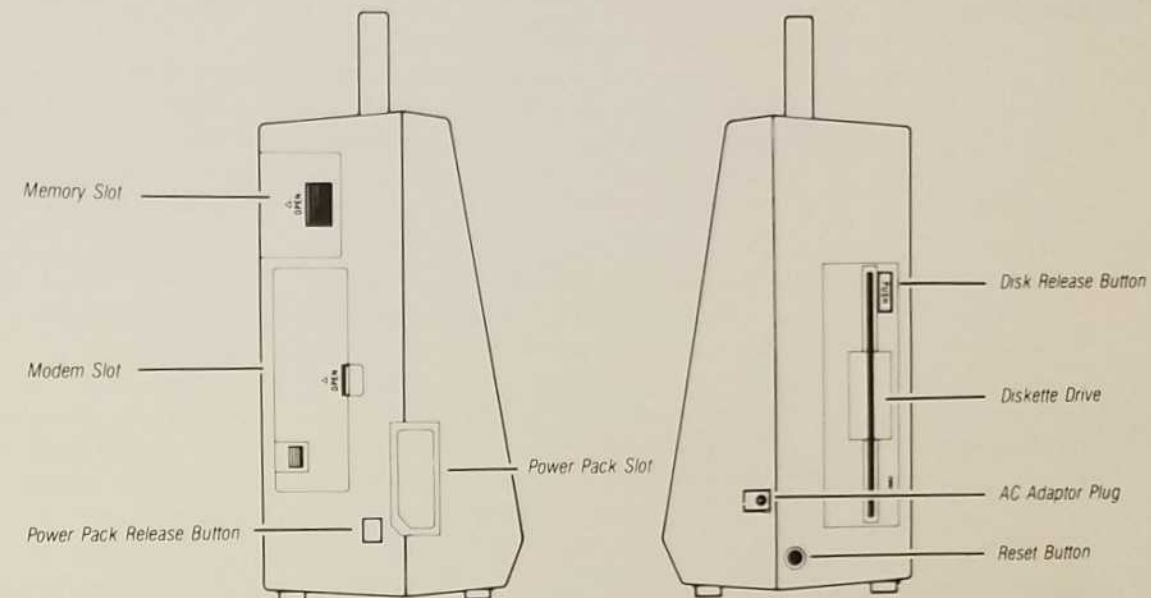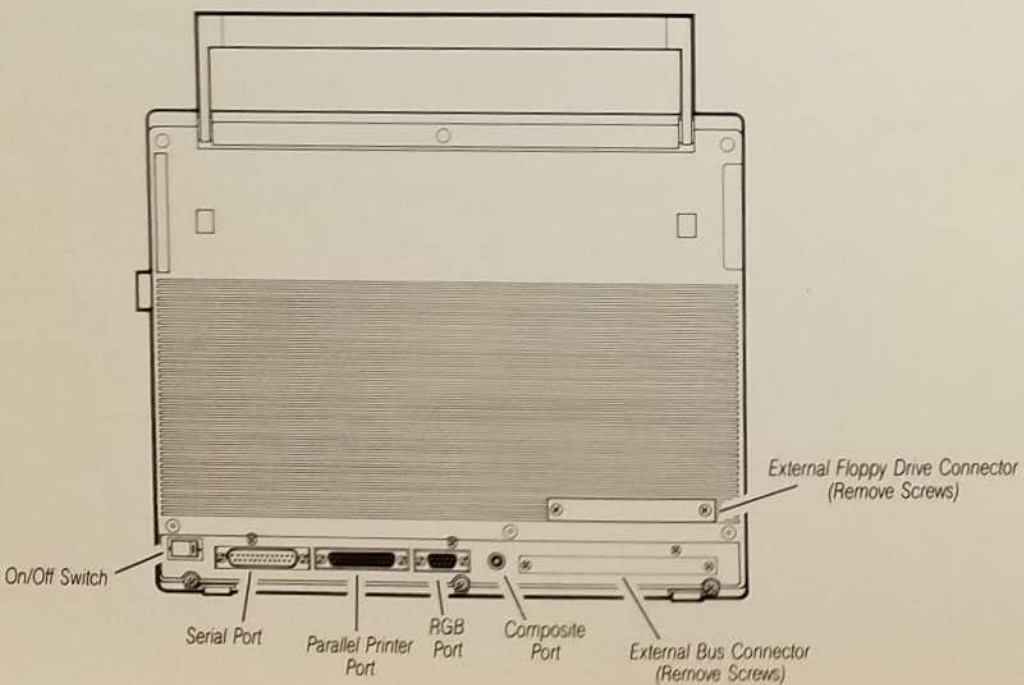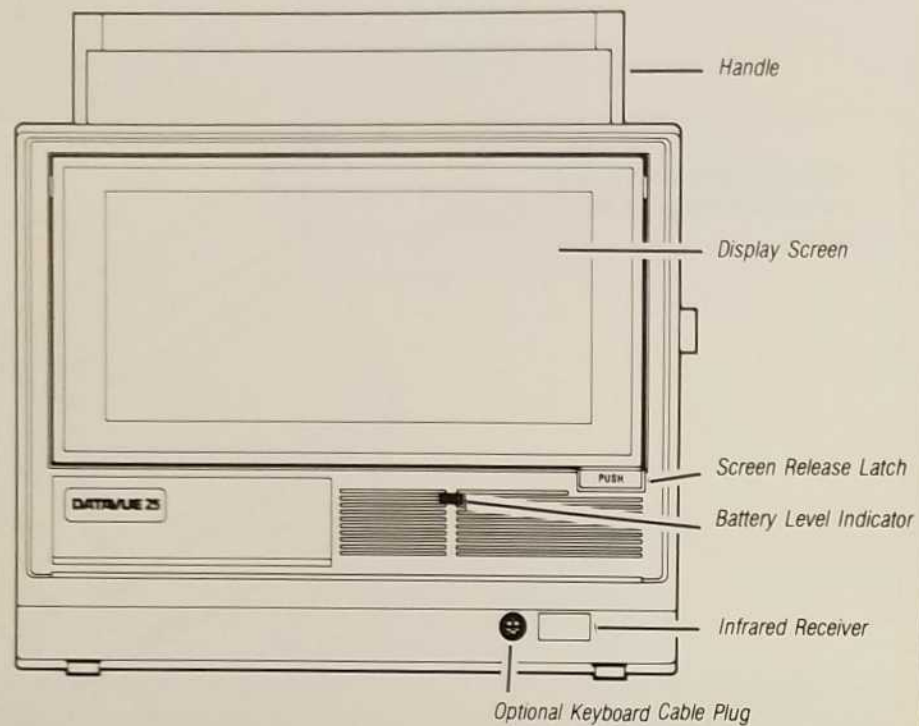
    COPY *.* B:

    Remove the word processor diskette and insert the data diskette in the physical drive. Swap drive designations by pressing CTRL, Left Shift, and D at the same time. The RAM drive (your word processor) is now A and the physical drive (your data) is now B. Load your word processor (for Wordstar, for example, type WS and press ENTER) and operate as you would on any two-drive system.

2. Your spreadsheet is copy protected and won't copy to the RAM drive. Instead, copy your data (or only the files you need) to the RAM drive, and use the spreadsheet program diskette in the physical drive. REMEMBER TO COPY YOUR DATA BACK TO YOUR DATA DISKETTE WHEN YOU'RE THROUGH, BEFORE TURNING OFF THE DATAVUE!

3. Your filer system is on one diskette and your data is on another. But once the filer programs load, that diskette is never read. Insert the filer system diskette in the physical drive and load it as you would normally. Swap drive designations, remove the program diskette, and insert your data diskette in the physical drive.

To display the help screen showing switch settings and keyboard options press the CTRL, Left Shift, and T (for Teach) keys at the same time.

Caution: BE SURE TO ALLOCATE ALL 360K TO THE RAM DRIVE BEFORE USING THE DISKCOPY COMMAND! Although it appears that DOS has copied the entire 360K disk, it has not and may result in missing data or produce unpredictable results!

Handle

Display Screen

Screen Release Latch

Battery Level Indicator

DATAVUE 25

Infrared Receiver

Optional Keyboard Cable Plug

Memory Slot

Modem Slot

Power Pack Slot

Power Pack Release Button

Disk Release Button

Diskette Drive

AC Adaptor Plug

Reset Button

On/Off Switch

Serial Port

Parallel Printer Port

RGB Port

Composite Port

External Bus Connector (Remove Screws)

External Floppy Drive Connector (Remove Screws)

Battery Slot

▲ OPEN

DATAVUE 25

Separate Keypad

Function Keys

Return

Control Keys

ESC

CTRL

ALT

ENTER

NUM LOCK

SCROLL LOCK

CAPS LOCK
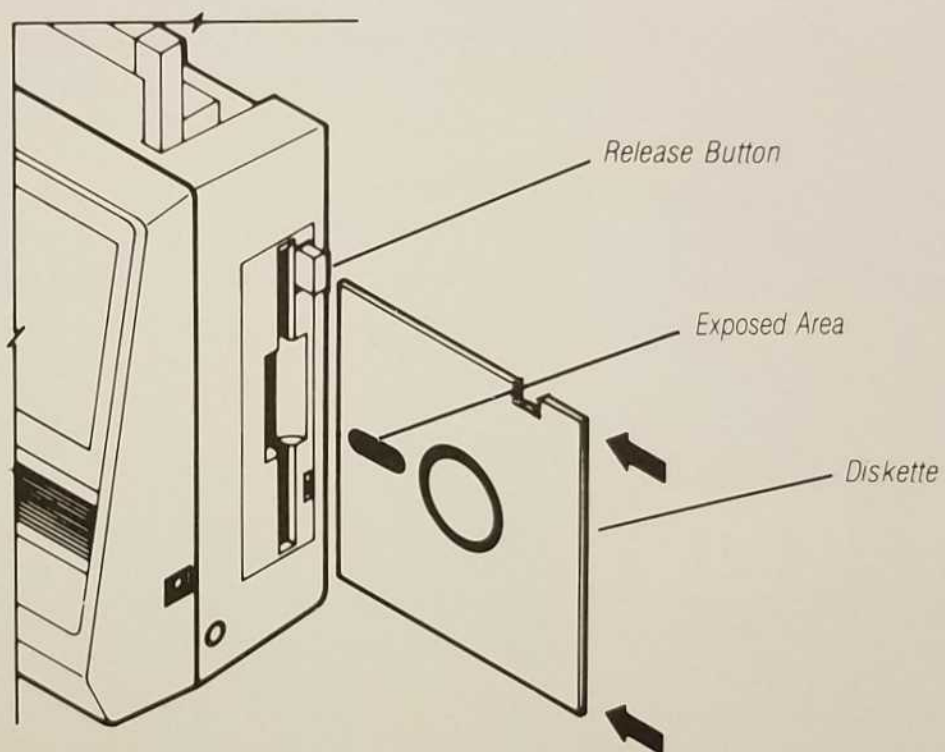
- Always label your diskettes with a felt-tipped pen. Pencils or pens could damage the diskette. Use the adhesive labels that come with a box of diskettes.
- Do not leave diskettes in a parked car on a very hot day or expose them to temperatures below 50° F (10° C).
- Do not bend diskettes.

To use a diskette, insert it in the Datavue's physical (diskette) drive with the notch up and the label facing away from you. The drive is the slot on the right side of your computer.

Slide the diskette notch up, label facing the back, into the disk drive until it clicks.

Release Button

Exposed Area

Diskette

While the RAM drive (discussed in the next section) is electronic, the diskette drive is mechanical. To avoid confusion between the two drives, this manual always calls the diskette drive the physical drive.

To insert the diskette in the physical drive, follow these steps:

1. Press the button (labeled PUSH) at the top of the physical drive. Then remove the white cardboard protector from the Datavue physical drive. Grasp the flap and pull it out.
2. Hold the diskette with the LABEL FACING THE BACK OF THE COMPUTER AND THE NOTCH UP, and slide it into the physical drive.
3. When it is all the way in the slot you will hear a faint click.
4. Press the release button (labeled PUSH) at the top of the physical drive until you hear another click. This is like closing the door to the physical drive.

An Electronic Drive — The RAM Drive

Datavue includes a built-in electronic drive that works just like the mechanical diskette drive, and gives you the versatility and convenience of a two-drive system. This electronic drive is called a RAM drive because it uses a portion of RAM. Datavue lets you set aside up to 360K of RAM to use to store programs and data, just like the diskette drive. When you start up, Datavue asks you to designate how much RAM to allocate to the RAM drive. You may assign from 0 to 360K in 8K increments. Or, you can turn switch SW2-1 ON so that Datavue will automatically allocate the full 360K to the RAM drive whenever you start up.

When using the RAM drive, remember to always copy any data you want saved to a diskette before you turn the power off. All RAM memory, including the RAM drive, is lost when power is turned off.

Caution: Be sure to allocate all 360K to the RAM drive before using the DISKCOPY command. Using DISKCOPY to copy to a RAM drive of less than 360K may cause data loss or unpredictable results.

For detailed instructions on using the RAM drive, see the section on ''Using the RAM Drive'' in Chapter 4: Operations.

If your Datavue has greater than 768K, you should immediately see a display like this on your screen.

```
        USE THE ← AND → TO INCREASE OR DECREASE RAM DISK MEMORY

               MEMORY IS RE-ASSIGNED IN 8K INCREMENTS

        HIT THE ENTER KEY (above the PrtSc key) WHEN THE SETUP IS CORRECT

                            MAIN MEMORY

    = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
    ------------------------------------------------------------------------
    = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =

                          EXTENDED MEMORY

REPRESENTS 8K OF MAIN MEMORY          REPRESENTS 8K OF RAM DISK MEMORY
REPRESENTS 8K OF                      REPRESENTS 8K OF
   EXTENDED MEMORY                       RESERVED MEMORY

MAIN MEMORY = 640K [64K MIN]          RAM DISK MEMORY = 0K [360K MAX]
EXTENDED MEMORY =                     RESERVED MEMORY = 0K [24 MAX]
   640K [640K MAX]

                        [1K = 1024 BYTES]
              DATE: 9-07-1985     TIME: 12:41:52
                    BATTERY LEVEL = 100%
```

If this message does not appear:

- Check the setting of switch SW2-1. If it is ON, this screen displays for only a few seconds.
- Sit down in front of your computer and adjust the tilt of the screen.
- Press the CTRL, Left Shift, and S keys at the same time to adjust the LCD palette and alter the intensity of different parts of the display. Choose the one that is best.
- Press the CTRL, Left Shift, and Up Arrow keys at the same time to increase the contrast on the screen. Press the CTRL, Left Shift, and Down Arrow keys at the same time to decrease the contrast on the screen.
- Review the steps outlined above to make sure you did everything right.
- Be sure the computer is plugged in.
- If you are still having trouble, turn to Chapter 5: Problem Solving for more things to check.

The Datavue Memory Screen

The screen you see when you first turn on your computer allows you to allocate a portion of RAM (up to 360K) to the RAM drive. This procedure is called partitioning memory.

If you are using Datavue for the first time, you do not have to partition memory right now. You can skip the rest of this section and come back to it later when you have a better idea of how you want to use your computer. Return to this section when you're ready to set up your RAM drive.

Before going any further, let's list the symbols used on this screen and the names we'll use to refer to them:

Plus Symbol

Pyramid

Square

Diamond

If you already know how you want to divide up the memory, use the right and left arrow keys. The plus symbol indicates 8K increments of RAM allocated to the RAM drive. To increase RAM drive memory (and decrease working storage), press the Left Arrow key. The plus symbols increase from right to left. To decrease RAM drive memory (and increase working storage) press the Right Arrow key.

Managing Memory

Depending on how you bought your Datavue, the amount of memory in your computer is one of the following:

256K
768K
1280K

The first 640K of memory is called "main" memory. Anything over 640K is called "extended" memory. For practical purposes, both may be considered RAM, or "working storage."

You'll see two lines across the middle of your screen. One is made of squares and the other is made of diamonds. Each square indicates 8K of main memory and each diamond indicates 8K of expanded memory. As you allocate RAM to a RAM drive, these squares or diamonds will be replaced by plus symbols, and the amounts of memory allocated will be displayed on the summary lines below.

You can, and certainly will want to, reserve some RAM for a RAM drive. The RAM drive turns your Datavue into a much more versatile, two drive computer.

If you have the standard 256K of memory, however, you must manage your memory carefully. With 256K, the maximum size your RAM drive can be is 192K. This is less than your diskette drive (360K) and only leaves 64K for working storage — too little for most software available today.

Increasing memory to 768K or 1280K gives ample RAM for a full RAM drive and enough working storage to run the larger and more complex software appearing on the market.

If you have ample memory for a full 360K RAM drive, you probably will want to turn switch SW2-1 ON so that your full 360K RAM drive will automatically be allocated every time you start up. With this switch ON, you'll see this memory allocation screen briefly when you start up, but you won't be able to change the RAM drive memory allocation.

Another feature you'll want to use if you have enough memory is reserved memory. Turning switch SW2-5 ON will reserve 24K of RAM to save your screen so that when you return from using a CTRL Left Shift feature, your screen will be as you left it. Otherwise, you return to a blank screen. Datavue uses part of the 24K as a data buffer for the remote (dumb) terminal mode. With this switch ON, the three rightmost squares or diamonds on the screen will be replaced with three pyramid symbols, and the reserved memory line will read 24K. These CTRL Left Shift key functions are explained fully in the next chapter.

Ready to Go

When you're through partitioning memory, make sure your DOS diskette (or any bootable application software diskette) is in the physical drive and press ENTER. DOS loads, responds with copyright information and the date and time, and displays the A> prompt. Remove the DOS diskette, insert your favorite software, and begin!

Datavue lets you tailor your computer to your own needs, through switches (also called DIP switches) and features used by pressing the CTRL key, the Left Shift key, and another key, all at the same time. Switches are also used to tell Datavue what optional equipment you have installed.

This chapter explains the switch settings and the customizing features available.

Help When You Need It

Datavue offers a unique help (teach) screen that gives a summary of all the customizing features and a diagram of the factory switch settings.

To see this help screen, press the CTRL, Left Shift, and T (for Teach) keys at the same time. The following screen appears.

SW1

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | ON |
| ↓ | ↑ | ↑ | ↑ | ↑ | ↓ | ↑ | ↑ | OFF |

SW2

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | ON |
| ↓ | ↑ | ↓ | ↓ | ↑ | ↓ | ↓ | ↓ | OFF |

SW3

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | ON |
| ↑ | ↑ | ↓ | ↑ | ↑ | ↑ | ↑ | ↑ | OFF |

DIP SWITCH SETTINGS

FACTORY SETTING
[FOR 256K UNIT]

SW1-1 OFF ⎤
SW1-2 ON ⎬ 256K RAM   OFF ⎤   ON ⎤
SW1-3 ON ⎦   OFF ⎬ 512K RAM ON ⎬ 640K RAM OR MORE
                         ON ⎦   OFF ⎦
SW1-4 ON=   NO 8087 COPROCESSOR INSTALLED
SW1-5 ON ⎤ NO   OFF ⎤ 40×25   ON ⎤ 80×25   OFF ⎤ 80×25
SW1-6 ON ⎦ MONITOR ON ⎦ COLOR   OFF ⎦ COLOR   OFF ⎦ B/W
SW1-7 ON ⎤ 1 DISK OFF ⎤ 2 DISK ON ⎤ 3 DISK OFF ⎤ 4 DISK
SW1-8 ON ⎦ DRIVE   ON ⎦ DRIVES OFF ⎦ DRIVES OFF ⎦ DRIVES
SW2-1 ON=   AUTO BOOT MAXIMUM RAM DISK [360K OR 720K MAX]
SW2-2 ON=   MAKE RAM DISK ACTIVE
SW2-3 ON=   DO ROM AND RAM CHECKS [USE OF LCD IS FORCED]
SW2-4 ON=   USE EXTERNAL VIDEO CARDS IN EXPANSION I/O UNIT
SW2-5 ON=   KEEP 24K OF HIGH RAM FOR CTRL-L SHIFT FUNCTIONS
SW2-6 ON=   720K RAM DISK FORMAT, OFF=360K RAM DISK FORMAT
SW2-7 -- RESERVED
SW2-8 -- RESERVED
SW3-1 -- RESERVED
SW3-2 ON=   ENABLE POWER SAVING MODE ON FLOPPY DISK DRIVE
SW3-3 ON=   2ND FLOPPY DISK DRIVE IS INTERNAL
SW3-4 ON=   INTERNAL VIDEO RAM IS BEING USED [B8000-BFFFF]
SW3-5 ON ⎤ USA   OFF ⎤ TYPE 2 ON ⎤ TYPE 3 OFF ⎤ TYPE 4
SW3-6 ON ⎦ FONT ON ⎦ FONT   OFF ⎦ FONT   OFF ⎦ FONT
SW3-7 ON=   INTERNAL RAM USED [40000-7FFFF], OFF=EXTERNAL
SW3-8 ON=   INTERNAL RAM USED [80000-AFFFF], OFF=EXTERNAL

-- PRESS ANY KEY TO CONTINUE --

Press any key to display the second screen:

```
HOW TO USE THE CTRL KEY WITH THE LEFT SHIFT KEY TO ALTER THE SYSTEM

CTRL LEFT-SHIFT      T        TO TEACH HOW TO SETUP AND USE THE COMPUTER
CTRL LEFT-SHIFT   +and–       TO INCREASE AND DECREASE KEYBOARD AUDIO FEEDBACK
CTRL LEFT-SHIFT      D        TO SWAP DRIVE A: TO DRIVE B: [AND BACK AGAIN]
CTRL LEFT-SHIFT      S        TO CHANGE THE LCD COLOR PALETTE ON THE SCREEN
CTRL LEFT-SHIFT      I        TO INVERT THE BLACK/WHITE ON THE LCD
CTRL LEFT-SHIFT      C        TO TOGGLE BETWEEN UNDERLINE AND BLOCK CURSORS
CTRL LEFT-SHIFT      W        TO SEE THE WORLD CLOCK
CTRL LEFT-SHIFT      R        TO ACTIVATE THE REMOTE TERMINAL MODE
CTRL LEFT-SHIFT    ↑5↓        TO INCREASE, PRESET, OR DECREASE SCREEN CONTRAST
CTRL LEFT-SHIFT      M        TO SELECT THE LCD OR EXTERNAL MONITOR DISPLAY
CTRL LEFT-SHIFT      B        TO CHECK THE BATTERY LEVEL

            -- PRESS ANY KEY TO RETURN --
```

These screens provide:

- a summary of all the customizing features discussed in the previous section.
- a diagram of all the switches and a list of what each switch does.

You can see this screen whenever you want, even if you are using application software. When you are through using the help screen, press ENTER.
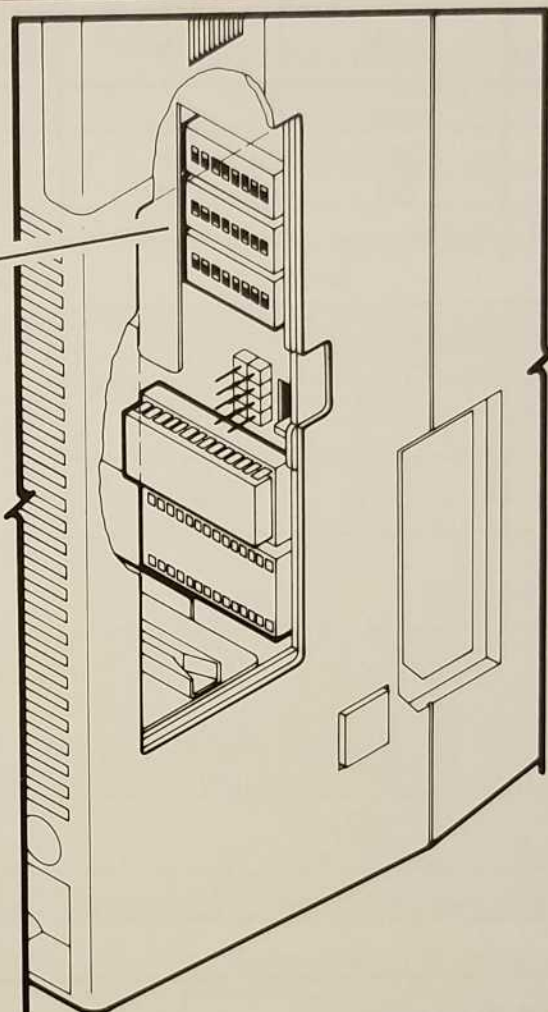
Caution: The switch settings shown on the first screen are FACTORY SETTINGS. They may not match the actual settings of your switches. To see the actual settings, remove the cover from the modem compartment and look at the switches, or run the diagnostics programs (see Chapter 5: Problem Solving) and select the Dip Switch Test. Your actual settings will be displayed.

There are three switch blocks, each containing eight slider switches, located in the modem compartment on the left side of the computer. Remove the cover to see the switches:

The top bank is bank one and the dip switch is on when the switch is up.

Dip
Switch
Banks

These switches are set at the factory, and won't need to be changed if you're just starting to use your Datavue. After you become familiar with your Datavue and want to tailor it to your needs, or to add options, you may want to change some settings.

To change a switch, use a pencil, ballpoint pen, bent paper clip, or other pointed object. Always move the switch gently, sliding it up for ON or down for OFF.

The rest of this section explains what each switch does.

Switch Block 1

MEMORY INSTALLED

SWITCH	256K	512K	640K or More
1	OFF	OFF	ON
2	ON	OFF	ON
3	ON	ON	OFF

MONITOR TYPE & INITIAL SET-UP MODE

SWITCH	NONE	COLOR 40×25	COLOR 80×25	MONO 80×25
5	ON	OFF	ON	OFF
6	ON	ON	OFF	OFF

COPROCESSOR INSTALLED?

SWITCH	YES	NO
4	OFF	ON

NUMBER OF PHYSICAL DRIVES INSTALLED

SWITCH	1	2	3*	4*
7	ON	OFF	ON	OFF
8	ON	ON	OFF	OFF

(* Not available at this time)

Switch Block 2

SWITCH	ON	OFF
1	Automatically take maximum RAM for RAM drive (up to 360K)	Display memory allocation screen on start up for manual allocation.
2	Allow RAM drive to be used.	Turn RAM drive OFF.
3	Do ROM & RAM check during start up and display on LCD.	Skip ROM & RAM checking during start up (saves time).
4	Use external video cards in the expansion unit.	Use monitor through Datavue's LCD or RGB & composite jacks.
5	Keep 24K of high RAM to save last screen while performing CTRL-Left Shift features.	Do not reserve RAM. Return from CTRL-Left Shift features to a blank screen.
6	720K RAM drive format*	360K RAM drive format.
7	Not used	
8	Not used	

(* Not available at this time)

Switch Block 3

SWITCH	ON	OFF
1	Not used	
2	Only supplies power to physical drive when needed. Saves battery power.	Supplies power to physical drive all the time. May be required for some software.
3	Second physical drive is internal.*	Second physical drive is external.
4	Internal video RAM is being used.	Internal video RAM is not being used (external must be available).

FONT SELECTION				
	USA	TYPE 2	TYPE 3*	TYPE 4*
5	ON	OFF	ON	OFF
6	ON	ON	OFF	OFF

7	First optional bank of internal RAM is being used.	External RAM is being used instead.
8	Second optional bank of internal RAM is being used.	External RAM is being used instead.

(* Not available at this time)

Audio Feedback

Audio feedback is a beep that sounds whenever you press a key. You can vary the volume of the beep from a clearly audible sound to none at all. To adjust the audio feedback follow these steps:

1. Press the CTRL, Left Shift, and Plus Sign keys at the same time and hold them down.
2. You can hear a beep sound that increases in volume as you hold the three keys down.
3. Release all three keys and press any of the keys on your keyboard. The beep you hear is called the audio feedback. If you decide you don't like this feedback, you can decrease the sound again.
4. To decrease or eliminate the audio feedback, repeat the steps above except press the key marked with a minus sign (−) instead of the plus sign. In other words, press the CTRL, Left Shift, and the minus (−) keys at the same time. The beep decreases. Release the keys when the feedback reaches the volume you want.
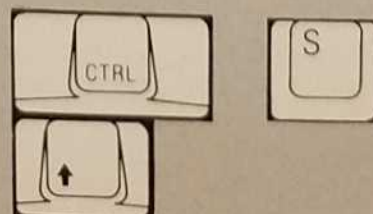
To Increase Beep   To Decrease Beep

This audio feedback adjustment works any time you are using Datavue, no matter what kind of software you are using. The audio feedback setting is stored in the Datavue and remains the same until you change it.
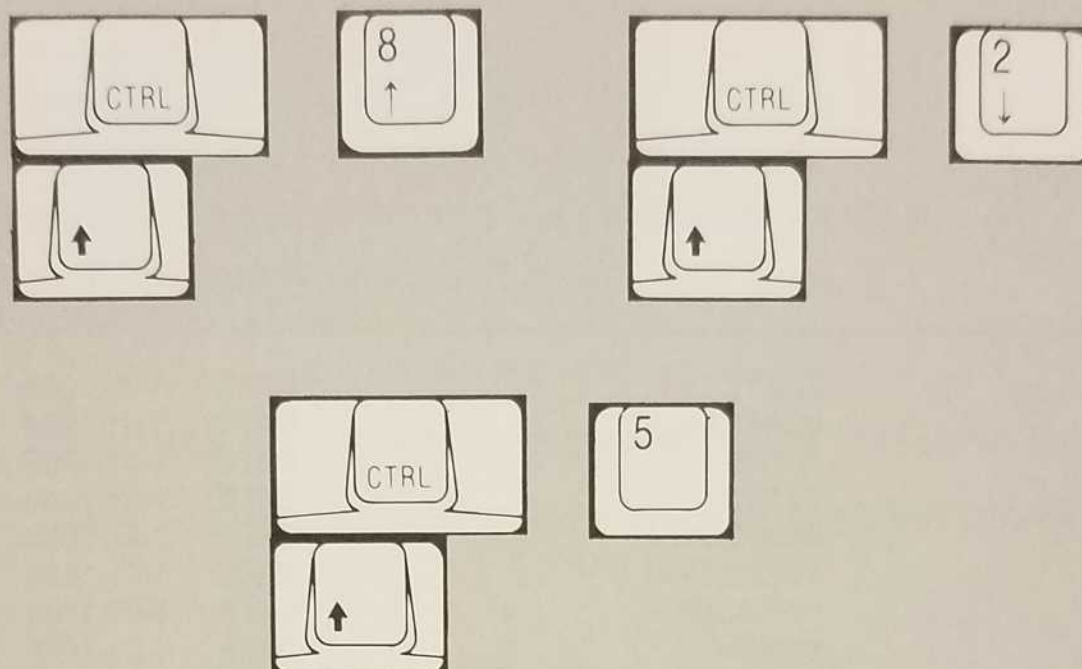
Screen Adjustments

LCD Palette

There are six LCD palettes, or settings, for character intensity. Application software displays different shades and intensities depending on how it's programmed and the characteristics of the monitor used. The palette adjustment lets you select the best display for your Datavue's LCD screen. Keep pressing CTRL, Left Shift, and S to cycle through the palettes until you find the best one for your software.
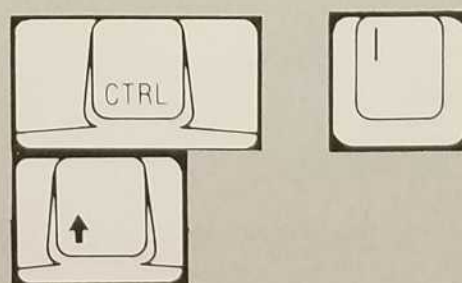
Screen Contrast

You can also adjust the contrast on your screen. Press the CTRL, Left Shift, and Up Arrow keys at the same time to increase the contrast. Press the CTRL, Left Shift, and Down Arrow keys at the same time to decrease the contrast. Press the CTRL, Left Shift, and 5 (on the numeric keypad) keys at the same time to return to the default (middle) setting.
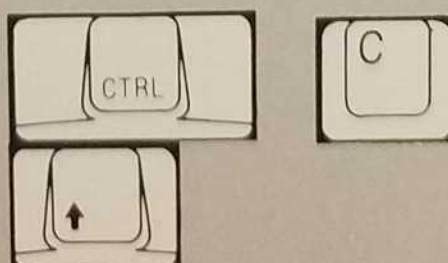
Inverse Video

Press the CTRL, Left Shift, and I keys at the same time to switch dark and light on your screen. This is called inverse video. Press these same keys again to switch it back.

Cursor Shape

Press the CTRL, Left Shift, and C keys at the same time to change the cursor from a blinking line to a blinking block. Press these keys again to change the cursor back to a line.

rld Clock

The World Clock lets you select and display, besides Greenwich Mean Time (GMT), any 23 cities or locations in the world with their current date and 24-hour time.

You choose and set your home time zone date and time, and define all locations as a plus or minus difference from GMT. Choose locations which are meaningful for you, such as places you do business, or where friends or relatives live. You must make any adjustments for Daylight Savings time changes. The year is given as four digits to allow for use into the 21st century.

Press the CTRL, Left Shift, and W keys at the same time to display the world clock screen. For example:

[GMT]	DATE: 1-01-1986	TIME: 1:00:00
LONDON	DATE: 1-01-1986	TIME: 1:00:00
PARIS	DATE: 1-01-1986	TIME: 2:00:00
CAIRO	DATE: 1-01-1986	TIME: 3:00:00
MOSCOW	DATE: 1-01-1986	TIME: 4:00:00
MAURITIUS	DATE: 1-01-1986	TIME: 5:00:00
KARACHI	DATE: 1-01-1986	TIME: 6:00:00
BOMBAY	DATE: 1-01-1986	TIME: 6:30:00
DACCA	DATE: 1-01-1986	TIME: 7:00:00
BANGKOK	DATE: 1-01-1986	TIME: 8:00:00
PEKING	DATE: 1-01-1986	TIME: 9:00:00
YOKOHAMA	DATE: 1-01-1986	TIME: 10:00:00
MELBOURNE	DATE: 1-01-1986	TIME: 11:00:00
KURIL ISLANDS	DATE: 1-01-1986	TIME: 12:00:00
AUCKLAND	DATE: 1-01-1986	TIME: 13:00:00
SAMOA	DATE: 12-31-1985	TIME: 14:00:00
HONOLULU	DATE: 12-31-1985	TIME: 15:00:00
ANCHORAGE	DATE: 12-31-1985	TIME: 16:00:00
SAN FRANCISCO	DATE: 12-31-1985	TIME: 17:00:00
DENVER	DATE: 12-31-1985	TIME: 18:00:00
CHICAGO	DATE: 12-31-1985	TIME: 19:00:00
ATLANTA	DATE: 12-31-1985	TIME: 20:00:00
BERMUDA	DATE: 12-31-1985	TIME: 21:00:00
RIO DE JANEIRO	DATE: 12-31-1985	TIME: 22:00:00

PRESS ESC TO RETURN, ↑ OR ↓ TO ALTER THE HOME TIME ZONE, S TO SET THE CLOCK

Press ESC to return where you were. Press the Up or Down Arrow keys to change the home location, indicated by the reverse video bar.

To change the time or locations, press S and this screen appears:

[GMT]	+ 0:00	MENU FOR SETTING THE WORLD CLOCK
LONDON	+ 0:00	
PARIS	+ 1:00	
CAIRO	+ 2:00	
MOSCOW	+ 3:00	DATE: 12-31-1985 TIME: 20:00:00
MAURITIUS	+ 4:00	
KARACHI	+ 5:00	
BOMBAY	+ 5:30	
DACCA	+ 6:00	ESC . . . . RETURNS TO THE WORLD CLOCK
BANGKOK	+ 7:00	
PEKING	+ 8:00	F1 . . . . MOVES TO THE NEXT SECTION
YOKOHAMA	+ 9:00	
MELBOURNE	+10:00	< AND > . . . . ALTER VALUES
KURIL ISLANDS	+11:00	
AUCKLAND	+12:00	RETURN . . . . MOVES TO THE NEXT ITEM FOR UPDATING
SAMOA	−11:00	
HONOLULU	−10:00	F10 . . . . RESETS ALL PARAMETERS TO THE DEFAULT VALUES
ANCHORAGE	− 9:00	
SAN FRANCISCO	− 8:00	
DENVER	− 7:00	
CHICAGO	− 6:00	
ATLANTA	− 5:00	RESET HOME TIME ZONE DATE AND TIME
BERMUDA	− 4:00	REDEFINE CITY NAMES
RIO DE JANEIRO	− 3:00	REDEFINE TIME DIFFERENCE FROM GMT [TOP CLOCK POSITION]

Press F1 to cycle through the three things you can change. These are listed at the bottom right of the screen, and the active one is highlighted:

> Reset home time zone date and time.
> Redefine city names
> Redefine time difference from GMT

As you cycle through this list, the cursor moves to the information to be changed.

Use the Right and Left Arrow keys to change numeric values; type in the location name. Press ENTER to move to the next item to update.

If you want to return all items to the default values, press the F10 key.

Press ESC to return to the World Clock display.

Using Datavue as a Remote (Dumb) Terminal

The Datavue can be used as a remote, or "dumb" terminal, to communicate with:

- A data retrieval service, such as the Source.
- A mainframe computer.
- Another Datavue or other microcomputer.

You must add the optional internal modem or an external modem plugged into the serial port. If you communicate with another Datavue or compatible computer using a cable and not telephone lines, you don't need a modem.

Press the CTRL, Left Shift, and R keys at the same time to display the Remote Terminal screen:

```
COPY TO PRINTER OFF
```

BAUD RATE	PARITY	STOP BIT(S)	WORD LENGTH	SERIAL PORT	LF+CR FOR RECEIVED DATA	COPY OUTPUT TO SCREEN
1200	NONE	1	8 BITS	COM2:	YES	YES

```
PRESS <OR> TO CHOOSE PARAMETERS FOR SETTING
PRESS THE SPACEBAR TO CHANGE THE PARAMETERS
PRESS THE RETURN KEY TO START COMMUNICATIONS
PRESS THE P KEY TO TOGGLE COPY TO THE PRINTER ON/OFF

PRESS THE F1  KEY TO EXIT THIS PROGRAM AND NOT HANG UP
PRESS THE F2  KEY TO EXIT THIS PROGRAM AND HANG UP
PRESS THE F10 KEY TO SEND A BREAK CODE

            [COMMONLY USED VALUES ARE:]
```

BAUD RATE	PARITY	STOP BIT(S)	WORD LENGTH	SERIAL PORT	LF+CR FOR RECEIVED DATA	COPY OUTPUT TO SCREEN
1200	NONE	1	8 BITS	COM2:	YES	YES

Press the Right or Left Arrow keys to choose the parameter you want to change.

Press the Spacebar to cycle through the options available for each parameter:

OPTION	VALUES
Baud Rate	110 150 300 600 1200 2400 4800 9600
Parity	Odd Even None
Stop Bit(s)	1 2
Word Length	7 bits 8 bits
Serial Port	COM1: COM2:
LF+CR for Received Data	Yes No
Copy Output to Screen	Yes No

Press P at any time to send copy to the printer, or not to.

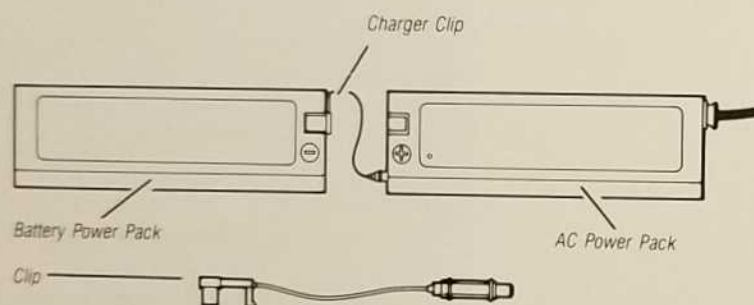Press ENTER to start communications.

To exit the Remote Terminal, press F2 to exit and hang up, or F1 to exit and not hang up. Press F10 to send a break code.

The option you choose for each parameter is stored in the computer for you and remains the same until you change it.

While the battery pack is in the computer, charge it this way.

Charge Clip

AC Power Pack

While the battery pack is out of the computer, charge it this way.

Charger Clip

Diskette

Battery Power Pack

AC Power Pack

Clip

It takes about three hours to recharge the battery pack. If you are recharging the battery while it's in the Datavue, you can charge to only 85% of capacity. It is best to let the battery discharge to 10-15% of power capacity frequently before recharging.

Battery Indicator

Immediately under the LCD screen is a small red indicator light. The light begins to blink when the battey is low. Press the CTRL, Left Shift, and B keys at the same time to see the percentage of power capacity remaining.
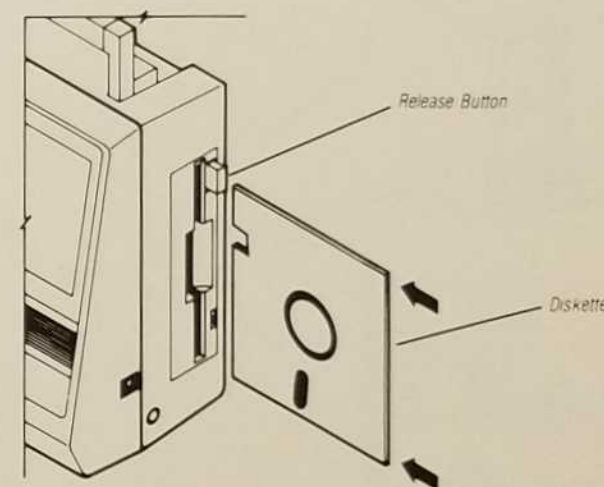
There are two ways to keep your data safe as power declines:

- Plug the AC adapter or auto adapter into a power source and the charge clip into the side of the computer. Operate in this manner or exchange the discharged battery for a fully charged battery and disconnect the adapter.

OR:

- Save your data, turn the computer off and insert a new battery.

Traveling Hints and Suggestions

- When traveling with Datavue or moving it, always insert the white cardboard protector in the physical drive. This protects the physical drive from any damage.

Or, insert a scratch diskette turned 90 degrees:

Slide the diskette into the disk drive until it clicks. Then press the little square button until it clicks.

Release Button

Diskette

- When you travel by plane, carry Datavue with you. NEVER CHECK IT IN BAGGAGE CLAIM!
- Don't leave Datavue in a parked car for long periods if the temperature is either very hot or very cold. The screen display may not work if it has been in extreme temperatures. If this happens, let the computer return to normal room temperature (which might take about an hour) before using it.
- If you need to ship Datavue, pack it in the box that it came from the factory in, if possible.
- Dropping the Datavue or hitting it sharply may damage the LCD screen or physical drive alignment. Your warranty will not cover abuse.

8. DOS prompts you with this message:

Insert source diskette in drive B:
Insert destination diskette in drive A:
Strike any key when ready

9. Remove the DOS diskette from the physical drive, insert a new diskette, and press any key.

10. DOS displays this message to let you know it's copying:

Copying 2 side(s), 9 sectors per track

When DOS finishes, it displays this message:

Copy complete

Copy another disk (Y/N)?

11. Type N and DOS will return to the B>.
12. Type A: and press ENTER to change the default drive to A.

This completes the copying phase. Follow the DISKCOMP instructions above to make sure your new working copy of DOS is ok.

Using the RAM Drive

Datavue's RAM drive works like a second physical drive, so you have the versatility of a two-drive system. We suggest that, when you run normal application programs, you follow these steps:

1. Load DOS into the Datavue.
2. Remove the DOS diskette.
3. Put the application diskette in the physical drive.
4. Copy the programs into the RAM drive using COPY or DISKCOPY.
5. Remove the application diskette from the physical drive.
6. Put the data diskette in the physical drive.
7. Change the default drive designation to B, the RAM drive.
8. You are now ready to start.

This puts your application programs on the RAM drive where they will run faster and allows the Datavue to read and write your data to the diskette.

When you are asked for file names by the application program, be sure to include the drive designation as part of the filename. For example, suppose your word processor is in Drive B (the RAM drive) and your data diskette is in Drive A (the physical drive.) Your word processor asks you what file you want to edit. The file you want is called MEMO.DOC and is on your data diskette. Type A:MEMO.DOC.

Caution: Your application program may be copy-protected to prevent piracy. This will usually prevent you from using the RAM drive as we have just described. Always follow the installation instructions that come with your application program.

Datavue is a solidly constructed and thoroughly tested computer that should give you years of trouble free operation. However, as with any equipment, things can go wrong. If your Datavue is not operating properly, you can check a number of functions yourself. In addition, a diagnostics diskette is included at the back of this manual. This diskette allows you to check many internal functions of your Datavue.

Check These Things First

If your Datavue fails to turn on, check these things first:

- Is your computer plugged into an electrical outlet?
- Are both on/off switch on the back of the Datavue and the switch on the power pack turned ON?
- Is the memory board plugged securely into the connection? The black part of the plug must completely cover the gold-colored prongs. Sometimes you have to press hard.
- Is the screen adjusted so you can see the memory partition screen?
- Is the palette being used visible? Press the CTRL, Left Shift, and S keys at the same time to cycle through the palettes and choose the best one.
- Is the Datavue in the external monitor mode? Press the CTRL, Left Shift, and M keys at the same time to turn the external monitor mode on or off.

If your Datavue has been operating and suddenly stops, check these things first:

- Is the keyboard infrared beam still pointed directly at the computer?
- If you are using a battery power pack, has the battery run down? The light on your computer just under the screen comes on to warn you that the battery is low.
- If the red light on the keyboard does not come on when you press a key, the keyboard batteries need to be replaced. Follow the instructions and diagrams in Chapter 1 for installing batteries.
- Sometimes application software will "lock up." Press CTRL and BREAK keys at the same time. This should return you to the A> prompt.

Memory Test

This is a special test that allows you to see if any of the ROM or RAM memory chips in your Datavue are not working properly. Turn switch SW2-3 ON and the tests will be run during start up.

Since this test takes considerable time, you may want to use it only when you suspect your memory may be malfunctioning. Keep switch SW2-3 OFF for normal use.

Diagnostics Diskette

Datavue comes with a diskette that can perform extensive tests to determine if your Datavue is not working properly. To use this diskette follow these steps:

1. Turn your computer completely OFF and remove any diskette.
2. Insert the Diagnostic Diskette in the physical drive and turn your Datavue ON.
3. The memory partition screen appears. Do not partition any memory to the RAM drive (if switch SW2-1 is ON to automatically partition RAM on start up, turn it OFF before running diagnostics). Press ENTER.

The following diagnostics menu appears on your screen.

```
*** DIAGNOSTICS FOR THE DATAVUE 25 ***
            Version 2.0

    Keyboard              TESTS
    Lcd                   TESTS
    Floppy Disk           TESTS
    Battery Level         TESTS
    Speaker               TESTS
    Dip Switch            TESTS
    Parallel Port         TESTS
    Rs-232 Port           TESTS
    Clock                 TESTS
    Modem                 TESTS
    Automatic             TESTS
Quit

  HIT LETTER TO SELECT [K → KEYBOARD]
```

When this menu appears on your screen, REMOVE THE DIAGNOSTICS DISKETTE. These tests will not work properly with the diagnostics diskette in the computer.

Select each test you want to run by typing the first letter of the test name listed on the screen.

To return to this Diagnostics menu on most tests, press ENTER (marked CR for Carriage Return on the screen).

Keyboard Test

Type K at the Diagnostics menu, and the Keyboard Test menu appears:

```
* * * * * *      KEYBOARD DIAGNOSTICS      * * * * * *

                    Test for dead keys
               Output scan and ascii codes
                  [may be extended ascii]

   ---      HIT CR TO RETURN TO MAIN MENU      ---
```

Type T to Test For Dead Keys. A picture of the keyboard appears. As you press each key on the keyboard, that key becomes shaded on the screen.

Type O for Output Scan and ASCII codes. Press a key on the keyboard and the scan and ASCII codes that correspond to that key appear on the screen.

If any of these keybaord tests appear abnormal, contact your Datavue dealer.

Press ENTER to return to the Diagnostics menu.

LCD Test

Type L and the test for the LCD screen runs automatically. If you notice any missing pixels, contact your Datavue dealer. When the LCD test is finished, it returns automatically to the Diagnostics menu.

Floppy Disk Tests

Type F at the Diagnostics menu, and the physical drive test menu appears:

```
**** FLOPPY DISK DIAGNOSTICS ****

        Read/write tests
        Exercise seek function
        Format disk
        Make test diskette

        HIT B for drive B:

-- HIT CR TO RETURN TO MAIN MENU --
```

These tests check the condition of your physical drive. Before you perform these tests, insert a blank diskette or a scratch diskette in the physical drive.

IMPORTANT: The diskette will not be destroyed, but ANY DATA OR SOFTWARE STORED ON THE DISKETTE WILL BE ERASED.

Press ENTER to return to the Diagnostics menu.

Battery Level Tests

Type B at the Diagnostics menu to display the battery level test screen. This screen shows the battery level and provides instructions for further checking the battery level using electronic test equipment.

Press ENTER to return to the Diagnostics menu.

Speaker Test

Type S at the Diagnostics menu to perform the Speaker Test. This test runs automatically and plays a series of notes ranging in frequency from high to low. Datavue returns to the Diagnostics menu automaticaly when the test finishes.

Dip Switch Settings Test

Type D at the Diagnostics menu and the Dip Switch Settings Test screen appears:

```
            SW1

   1  2  3  4  5  6  7  8
                              ON
   ↓  ↑  ↑  ↑  ↑  ↓  ↑  ↑
                              OFF



            SW2
                                       THE CPU CANNOT READ SW3-1, DO AT PORT 71H IS DATA
   1  2  3  4  5  6  7  8               FROM THE UCO WHICH IS USED TO CHECK THE BATTERY
                              ON         THE SW3-1 ARROW SHOULD BE FLIPPING UP AND DOWN
   ↓  ↑  ↓  ↓  ↑  ↓  ↓  ↓
                              OFF
                                               ALL OTHER SHOULD SHOW AS SET
                                            SCREEN SHOWS CURRENT SETTING FOR OTHER
            SW3                               SWITCHES AND MUST CHANGE IF FLIPPED
                                              — HIT CR TO RETURN TO MAIN MENU —
   1  2  3  4  5  6  7  8
                              ON
   ↑  ↑  ↓  ↑  ↑  ↑  ↑  ↑
                              OFF


   DIP SWITCH SETTINGS
```

This screen shows you exactly how each of the switches is set (not the factory settings). The Datavue cannot tell how Switch SW3-1 is set. However, all others should show on this screen as they are actually set.

Press ENTER to return to the Diagnostics menu.

Parallel Port Tests

Type P at the Diagnostics menu and the Parallel Port Tests menu appears:

```
            **** PARALLEL PORT DIAGNOSTICS ****
                     Output to Printer
                     Loopback Tests

              -- HIT CR TO RETURN TO MAIN MENU --
```

The Output to Printer test works only if your Datavue is connected to a parallel printer.

The Loopback Tests work only if you use a special loopback cable. A message that the test has failed appears if the cable is not connected.

Press ENTER to return to the Diagnostics menu.

RS-232 Port Test

Type R at the Diagnostics menu and the RS-232 Port Test menu appears:

```
**** SERIAL PORT DIAGNOSTICS ****
         Output to printer
         Loopback tests

  -- HIT CR TO RETURN TO MAIN MENU --
```

The Output to Printer test works only if your Datavue is connected to a serial printer. An error message appears if a printer is not connected.

The Loopback Tests work only if you use a special loopback cable. An error message appears if the cable is not connected.

Press ENTER to return to the Diagnostics menu.

Clock Tests

Type C at the Diagnostics menu and the Clock Tests menu appears:

```
**** CLOCK DIAGNOSTICS ****
        Read clock
        Set clock
        Get date/time from disk
        Write date/time to disk

-- HIT CR TO RETURN TO MAIN MENU --
```

Use the clock tests to display or set the date and time, or to read the date and time from, or write it to, whatever diskette is in the physical drive.

Press ENTER to return to the Diagnostics menu.

Modem Tests

The test for modems is available only if you purchase the modem option.

Automatic Tests

Type A at the Diagnostics menu for the Automatic Tests. All the tests available on the Diagnostics diskette are performed automatically, one right after another. Because one of the tests is for the physical drive, be sure to insert either a blank or scratch diskette in the physical drive. Any data or software on this diskette will be erased.

Quit

Type Q at the Diagnostics menu to leave the diagnostics tests. Then press the reset button. The memory partition screen appears. Insert your DOS or other software diskette in the physical drive.

Memory Chip Test

This is a special test that allows you to see if any of the memory chips in your Datavue are not working properly. To perform this test, turn the SW2-3 switch to the ON position. A diagram of all the chips appears on your screen, telling you if they are all working properly.

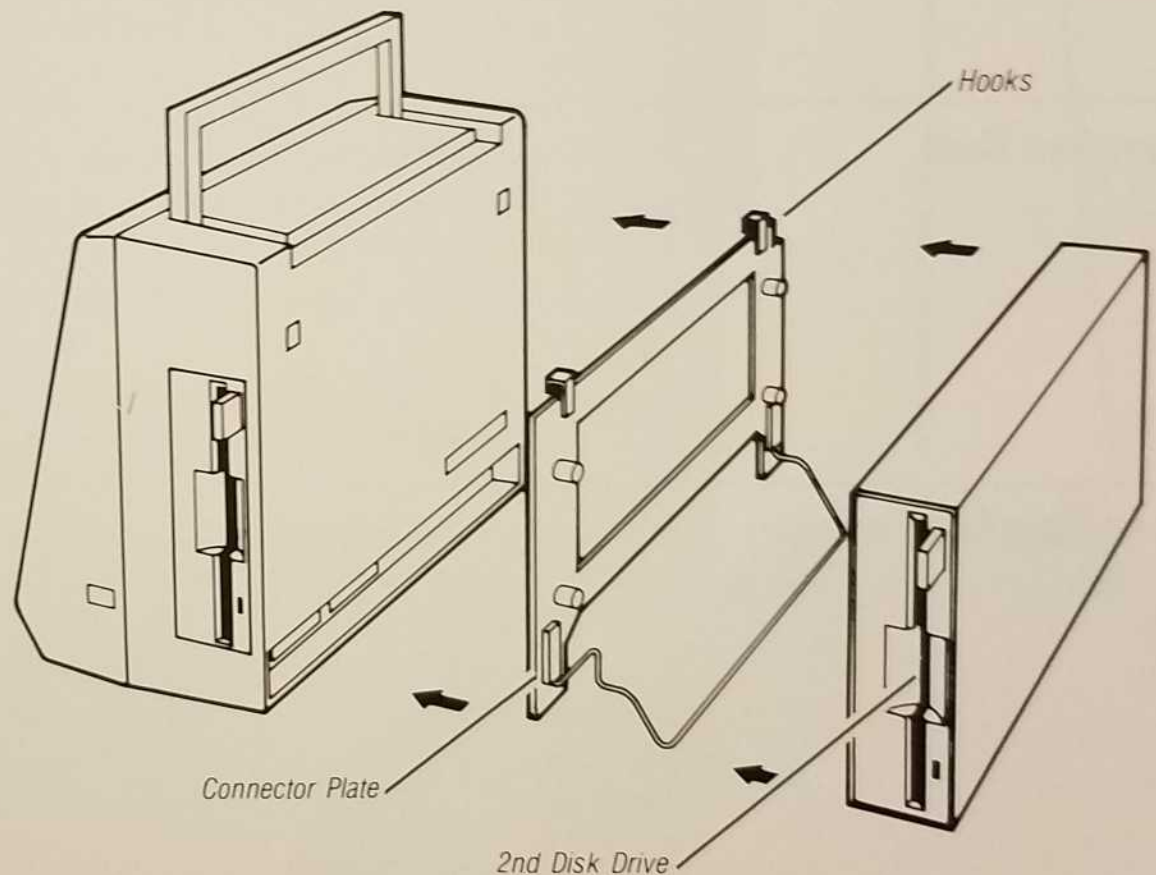To end this test, turn the SW1-5 switch to the OFF position.

A number of options are designed specifically for use with the Datavue. These are described briefly here, but specific instructions for installing and operating them come with the individual options.

Also, Datavue is completely compatible with the IBM PC. Printers or "mice" designed for use with the IBM PC can also be used with the Datavue.

Add-On Physical (Diskette) Drive

Datavue has an optional second 360K byte physical drive that attaches directly to the back of Datavue. With the add-on drive your system becomes a two physical drive system.

Attach the second disk drive like this. Don't forget to change switch SW2-6 to ON.

Hooks

Connector Plate

2nd Disk Drive

How it Works

To attach the add-on physical drive, follow these steps:

1. Attach the connector plate to the back of the Datavue by putting the hooks on the plate into the slots on the back of the Datavue case.

2. Attach the add-on physical drive to the plate with the knobs on the plate and the slots on the back of the add-on.

3. Take the connector that is attached to the add-on physical drive and insert it into the expansion port on the back of the Datavue.

4. Change these switch settings:

> Switch SW1-7 must be OFF
> Switch SW1-8 must be ON
> Switch SW3-3 must be OFF

Now when you use any software, the add-on physical drive can be used and identified as the B drive. For example, if you put a word processing program in the A drive, you could put another diskette in the add-on physical drive and instruct Datavue to create your text files on the diskette in the add-on physcial drive. Identify the add-on as the B drive.

Modem

Datavue offers an optional internal modem that is Bell 212A Standard. It can communicate at either 300 or 1200 baud. It features auto-dial, auto-answer and re-dial. It accepts Hayes-type commands and is bundled with the communications software Crosstalk XVI.

The Datavue built-in modem is easy to use. Install it in the modem compartment on the left side of your computer (just below the memory slot). It adds little weight to the Datavue.

Expansion Unit

The optional expansion unit allows you to use up to three IBM PC compatible expansion boards, and can be purchased with or without a 10 megabyte hard drive.

If you use the expansion unit to run a monitor, be sure to turn switch SW2-4 ON.

If you use the expansion unit to add memory, be sure to turn switch SW3-7 or SW3-8 (or both) OFF.
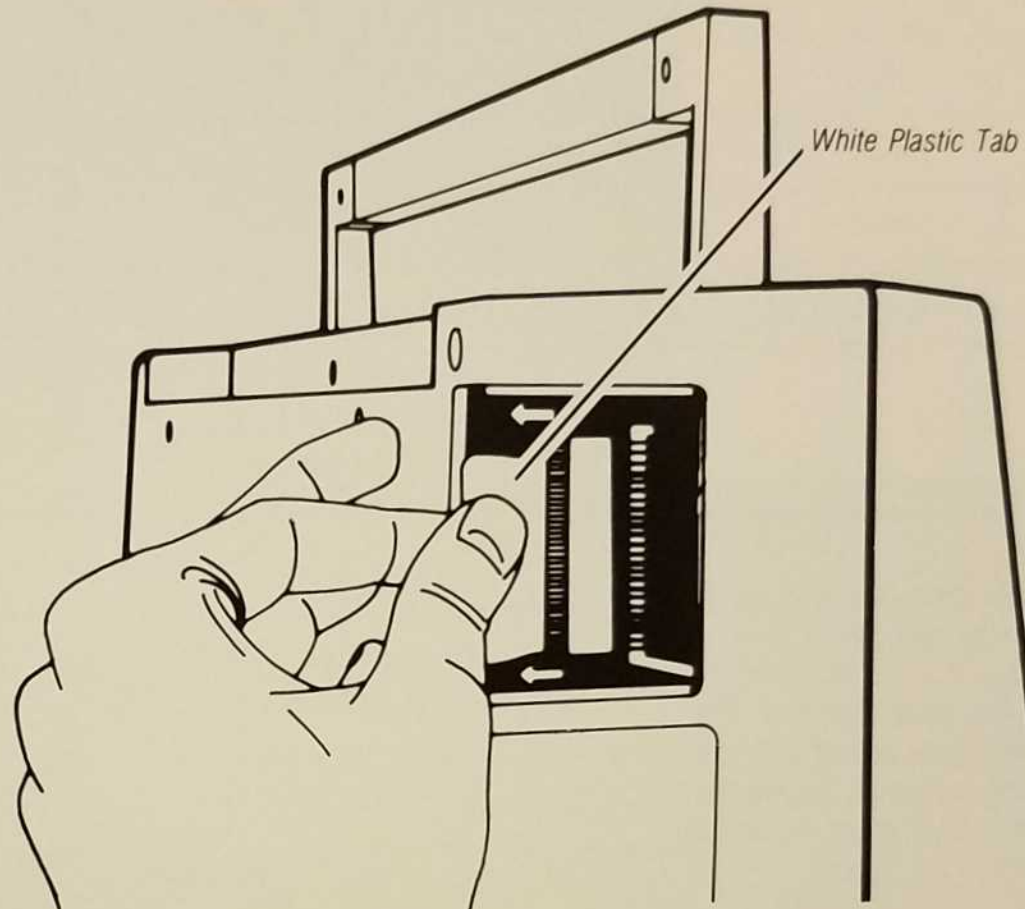
Expanding Memory

Datavue comes with 256K bytes of memory already installed, but this can be expanded to 1280K. You can buy your Datavue with an additional 512K or 1024K.

If you buy additional memory, it will be located on an expansion memory board in the memory compartment on the left side of the Datavue. If you buy the full 1024K expansion (for a fully-loaded Datavue of 1280K, or 1.25 MEG, total) you will probably never need to remove the memory board.

However, if you buy the 512K expansion (768K total), you may want to add memory at some time. You must use 256K chips, and must add memory in banks of 256K at a time.

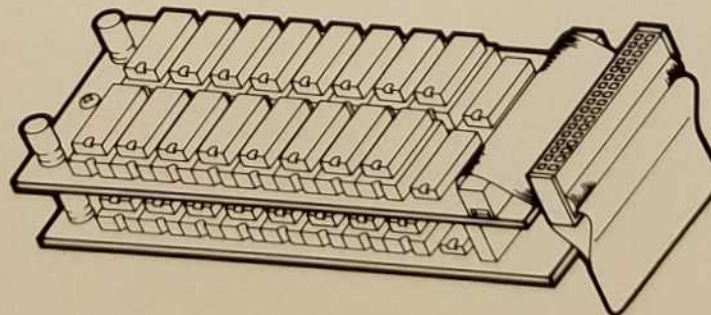Open the cover to the memory board compartment on the left side of the computer:

Pull the white plastic tab to your left to disconnect the board. Then slide the board out.

White Plastic Tab

To remove the memory board and install more memory chips, follow these steps:

1. Turn OFF all power to the Datavue.

2. After opening the cover, disconnect the board by pulling the white plastic tab a little to your left. You'll be able to tell when the board plug is disconnected.

3. Now, slide the whole memory board out.
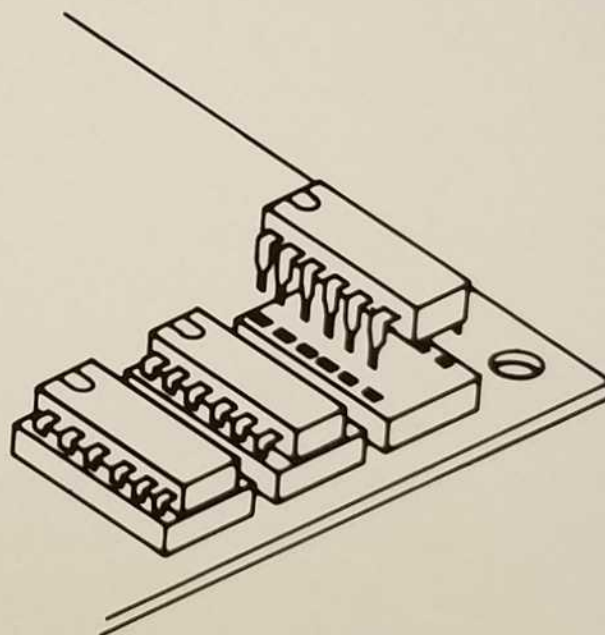
The memory board out of the machine.

The memory board really contains two individual boards bolted together. If you bought 512K of additional memory, the lower board will be filled with chips and the upper board will be empty. The empty chip sockets are in two rows and are numbered 1-8 and 9-16.

Memory can only be increased in 256K increments by filling up a whole row of eight sockets at a time. Be sure to use only 256K chips. Install the first row of chips in sockets 1-8. If you also install a second set, use sockets 9-16.

To install new chips, follow these steps:

1. The pins on your new chips are ususally spread apart a little too much. Before inserting, press the pins in slightly.

2. Now, insert the chip on the board in the correct slot as shown in this illustration.

Press the chip on the board in the desired slot. Make sure that the chips are all inserted facing the same direction. The tops (end with notch) are all to be facing upwards, as are the standard RAM chips already inserted into the board.

3. Make sure that all the chips are inserted facing the same direction. The tops (the end with the notch) should all be facing up, as are the chips that were installed in your Datavue at the factory.

4. After you have installed the extra memory chips, insert the board back into the slot. Notice the tracks that the upper board should slide into.

5. Plug in the connector.

If you bought the Datavue with the 512K memory upgrade installed, the switches should be set correctly, and are the same for all total memory over 640K.

Here's a summary of possible memory combinations and appropriate switch settings:

System Board	256K			
Board sockets 1-8 & 9-16	Empty	512K		
Upper board sockets 1-8		Empty	256K	
Upper board sockets 9-16		Empty	Empty	256K
TOTAL MEMORY	256K	768K	1024K	1280K
SWITCHES: SW1-1 SW1-2 SW1-3	OFF ON ON	ON ON OFF		

Color or Composite Monitor

Datavue contains all the circuitry necessary to use a color or composite monitor. Plug a color monitor into the RGB jack or a composite monitor into the composite (RCA type) jack. Both jacks are on the back of the Datavue.

Make sure you set switches SW1-5 and SW1-6 for your monitor. These settings will be different for different monitors.

You can switch back and forth between the monitor and the Datavue LCD by pressing the CTRL, Left Shift, and M keys at the same time.

Carrying Case

A carrying case designed specifically for the Datavue is available in a sturdy, canvas-like cloth.

The carrying case features an outside pocket for storing extra batteries, the Datavue Guide to Operations, or other supplies.

Car Adaptor

This option is the same design as the AC power pack that comes standard with the Datavue. But instead of plugging into an electrical outlet, it plugs into an automobile cigarette lighter.

Keyboard Cable

An optional keyboard cable is available for use with the Datavue. The available cable is coiled and can be extended up to ten feet.

High Performance Components

You can add these components to greatly increase the performance of your Datavue. All are installed on the system board by removing the case and plugging them into the appropriate socket. See the Appendix, Technical Information, for more details.

8087 Coprocessor

Adding an 8087 coprocessor can greatly increase the processing speed of your Datavue. The most significant increase will come when performing complicated mathematical calculations.

Be sure to turn switch SW1-4 OFF.

ROM

You can add a pre-programmed 16K or 32K ROM chip. The Datavue will read this ROM on startup. Although programming ROM is a complicated process and must be performed by experts, this gives you the capability of making your own programs permanently available on the Datavue, independent of other storage devices. This is called firmware.

CMOS

CMOS (Complementary Metal Oxide Semiconductor) is RAM powered by a battery to retain the data stored in it. Datavue comes with 2K of CMOS, which is used to store settings for the world clock, audio feedback, monitor, and remote terminal. You can add up to 8K to permanently store your own data. For example, you may want to store a telephone number list for your modem.

Technical Information

Memory Map

Address	STANDARD		OPTION 1		OPTION 2	
FFFFF – FC000		ROM 1 32K Bytes (27256)		ROM 1 32K Bytes (27256)		ROM 1 32K Bytes (27256)
FBFFF – F8000						
F7FFF		BLANK		ROM 2 32K Bytes (27256)		ROM 2 16K Bytes (27128)
F4000						
F3FFF – F0000						

For Option 2 all data in that area is read as FFH

Address	Description
EFFFF – E0000	Bank switched RAM Up to 640K can be addressed in this 64K area (Optional) See below for switching info.
DFFFF – D0000	Reserved
CFFFF – CC000	Reserved
CBFFF – C8000	Hard Disk ROM
C7FFF – BC000	Reserved
BBFFF – B8000	16K for color graphics video Internal standard (external option)
B7FFF – B4000	Reserved
B3FFF – B0000	16K for monochrome Video adapter (external option)
AFFFF – A0000	Reserved
9FFFF – 80000	
7FFFF – 40000	256K Expansion RAM (Option)
3FFFF – 00000	256K Main Board RAM (Standard)

ROM

You can put programs into a 27128 or 27256 ROM and have these programs always present for use.

When the BIOS is booting, it checks from C8000H to F7FFFH at 2K increments (C8000H, C8800H, . . .) looking for AA55H. This is the data code that tells the system that a program is present in ROM. The third byte is the number of 512-byte blocks contained in the routine. Checksums are not calculated. The system then does a far call to the fourth byte on that boundary (for example, C8003H). This allows the ROM code to do its own initialization, if needed, or to take over the system and run its own software.

This allows some interesting possibilities. Word processors, communications software, dedicated industrial controllers, etc. can be implemented without the need for disk-based software.

As viewed from the modem door, ROM 1 is the upper ROM, ROM 2 is the lower ROM. Be sure to turn off the computer and pay close attention to the direction of the notch on the ROM when inserting ROM chips.

Most of the routines that can be called using the CTRL Left Shift XXX keyboard sequence can also be called from within a program by using a far call to 0F000:0FEA8H with AL=ROUTINE to call.

- AL = 0 Show battery level
- AL = 1 Show date and time (cursor is moved to home position)
- AL = 2 Invert black/white on the LCD
- AL = 3 Toggle between LCD and RGB or composite monitor
- AL = 4 Cycle through the 6 palette choices
- AL = 5 Toggle between block and underline cursor
- AL = 6 Enter the dumb terminal program
- AL = 7 Enter the help screen program
- AL = 8 Enter the world clock program

Writing to and reading from CMOS RAM is done through an I/O port and is rather complicated. To make the use of CMOS RAM easier, the following BIOS calls are available:

Set the address you want to read from or write to into the DX register.

Write: Set the data you want to write into the AL or AX register. Do a far call to the desired routine.

Read: Do a far call to the desired routine. The data read is returned in the AL or AX register.

```
F000:FF60  READ BYTE    [AL HAS THE BYTE READ]
F000:FF64  WRITE BYTE   [AL HAS THE BYTE TO WRITE]
F000:FF68  READ WORD    [AX HAS THE WORD READ]
F000:FF6C  WRITE WORD   [AX HAS THE WORD TO WRITE]
```

RAM

Memory can be increased from 256K (standard) to 1280K (1.25 megabytes) in 256K increments.

The maximum system RAM is 640K. Sections of this can be enabled internally or externally to allow the use of memory cards or other devices in the expansion interface box.

For the 768K configuration, the 128K portion that exceeds the 640K limit can be used as a RAM drive. This 128K resides in the 64K area from E0000H to EFFFFH. This is done by bank switching in 64K blocks of RAM.

For a 1024K (1 megabyte) configuration, the system memory is 640K and 360K of the 384K over that can be used as a RAM drive.

The remaining 24K can be used by the system for CTRL-Left Shift functions to store the screen image and as a buffer:

- 16K of the high RAM is used to store the current screen when any of the CTRL-Left Shift functions are called.

- 8K is used as a data buffer for the dumb terminal program.

For a 1280K (1.25 megabyte) system, the upper 256K is free for use.

Bank switching of the RAM is done through control port 77H (write only). The data pattern written to this port controls RAM as follows:

D7	D6	D5	D4	D3	D2	D1	D0	
X	X	X	X	0	0	0	0	Bank #0 Open RAM Window
X	X	X	X	0	0	0	1	Bank #1 Open RAM Window
X	X	X	X	0	0	1	0	Bank #2 Open RAM Window
X	X	X	X	0	0	1	1	Bank #3 Open RAM Window
X	X	X	X	0	1	0	0	Bank #4 Open RAM Window
X	X	X	X	0	1	0	1	Bank #5 Open RAM Window
X	X	X	X	0	1	1	0	Bank #6 Open RAM Window
X	X	X	X	0	1	1	1	Bank #7 Open RAM Window
X	X	X	X	1	0	0	0	Bank #8 Open RAM Window
X	X	X	X	1	0	0	1	Bank #9 Open RAM Window
X	X	X	X	1	0	1	0	Close RAM Window
X	X	X	X	1	0	1	1	Close RAM Window
X	X	X	X	1	1	0	0	Close RAM Window
X	X	X	X	1	1	0	1	Close RAM Window
X	X	X	X	1	1	1	0	Close RAM Window
X	X	X	X	1	1	1	1	Close RAM Window

X=Don't Care

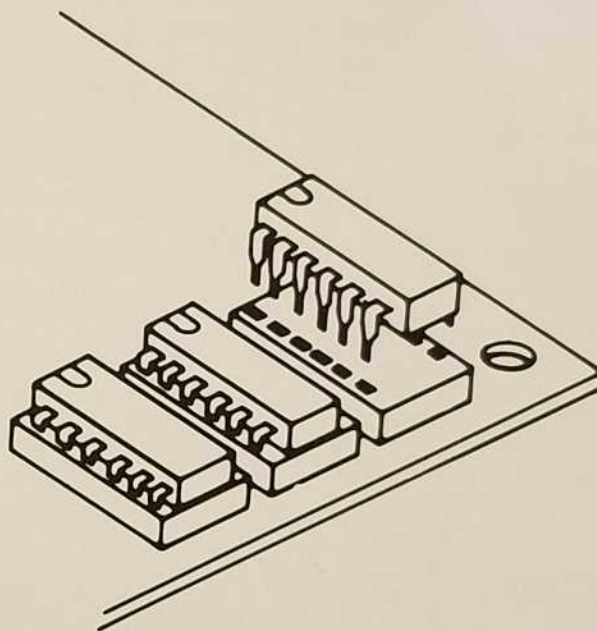With the RAM window closed, any external drive wishing to use the area from E0000H to EFFFFH can do so.

Battery Backup CMOS RAM

2K bytes are standard and 8K bytes are optional.

To upgrade from 2K to 8K, turn the power off, remove the 6 screws that hold the front and back of the case together, and remove the socketed RAM chip (M5M5117P or equivalent) on the I/O board and replace it with an 8K RAM chip (M5M5165P or equivalent).

When installing a 2K memory chip (24 pins) in the CMOS RAM socket (28 pins), be sure that the end that is not notched is even with the end of the socket:

Press the chip on the board in the desired slot. Make sure that the chips are all inserted facing the same direction. The tops (end with notch) are all to be facing upwards, as are the standard RAM chips already inserted into the board.

Lower RAM locations (1K) are used by the system to store setup parameters. This allows the system to power up in the same mode as when it powered down.

RAM locations 0400H to 07FFH are free for the programmer (2K standard). RAM locations 0400H to 3FFFH are free for the programmer when the optional 8K is installed.

This memory is addressed through I/O port addresses 27BH, 37FH, and 370H - 377H.

The procedure is to first set address lines A11, A12 via the port 27BH. The data on the LSB D1, D0 lines are latched (D0 - > A11, D1 - > A12).

Then set address lines A3 to A10 through port 37FH. (D0 - > A3, . . . D7 - > A10).

8 bytes of data can now be read/written directly from/to the CMOS RAM by reading/writing any of ports 370H to 377H.

Example: Write the number 55 to location 37 in the RAM.
$$37 \text{ DECIMAL} = 25 \text{ HEX} = 100101$$

This corresponds to putting the following pattern on the address bus:

A12	A11	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1	A0
0	0	0	0	0	0	0	1	0	0	1	0	1

```
MOV   DX,27BH
MOV   AL,0
OUT   DX,AL              ;SET A12,A11
MOV   DX,37FH
MOV   AL,00000100B
OUT   DX,AL              ;SET A10 TO A3
MOV   DX,375H            ;A2, A1, A0 PATTERN IS 101B = 5
MOV   AL,55              ;370H+5 = 375H
OUT   DX,AL
```

To make it easier, there are two routines in the system BIOS ROM that when called will do a read/write to the CMOS RAM area.

How to use:

Set the address you want to read from or write to into the DX register.

Write: Set the data you want to write into the AL or AX register. Do a far call to the desired routine.

Read: Do a far call to the desired routine. The data read is returned in the AL or AX register.

```
F000:FF60   READ BYTE     (AL HAS THE BYTE READ)
F000:FF64   WRITE BYTE    (AL HAS THE BYTE TO WRITE)
F000:FF68   READ WORD     (AX HAS THE WORD READ)
F000:FF6C   WRITE WORD    (AX HAS THE WORD TO WRITE)
```

The backup battery may run down if the computer is not used for 45 days or more (NICAD type). If this happens, it may be necessary to set switch 2-3 ON to force the computer to boot up using the LCD display when no RGB is attached.

DIP Switches

See Chapter 2: Customizing Your Datavue for the location and use of the dip switches. This section provides technical information about the switches.

Switch 1 is read through an 8255 chip having ports 60H, 61H, 62H, and 63H:

- Port 60H is used as a read only port.
- Port 61H is used as a control port and can be written to or read from.
- Port 62H is used as a read only port.
- Port 63H is the 8255 chip control port and is used to set up ports 60H - 62H.

The relationship between ports 60H, 61H, 62H, the SW1-1 to SW1-8 settings, and the data that is read at ports 60H and 62H are as follows:

PORT 60H DATA BIT	PORT 61H D7=0	PORT 61H D7=1
D0	KEYBOARD D0	1
D1	KEYBOARD D1	SW1-4
D2	KEYBOARD D2	1
D3	KEYBOARD D3	1
D4	KEYBOARD D4	SW1-5
D5	KEYBOARD D5	SW1-6
D6	KEYBOARD D6	SW1-7
D7	KEYBOARD D7	SW1-8

PORT 62H	PORT 61H D2=0	PORT 61H D2=1
D0	SW1-3	0
D1	1	1
D2	1	SW1-1
D3	1	SW1-2

Caution: Some software does direct read/write without using the system BIOS routines. This software may not work correctly unless SW3-2 is ON.

A 5.25 inch floppy disk drive can be attached to the back of the case. In this configuration, it is necessary to distinguish between Drive B being internal or external. After power on, the internal/external Drive B selections can be made by setting D2 of port 73H to 1 or 0.

SW3-5 and SW3-6 can be used to select different fonts. Type 3 and 4 fonts are currently undefined.

Port 73H (write only) is a control port used to enable or disable the functions selected by dip switch SW3-2 to SW3-8. The following are the data bit settings:

D0 = 0   Used to turn power to the backlit LCD (when installed) ON or OFF.
D1 = 0   Always supply power to the floppy disk drives (OFF saves battery power).
D2 = 0   The 2nd floppy disk drive is internal.
D3 = 0   Internal video RAM is being used (B8000-BFFFF).
D4 = 0   Selects   D4 = 1   Selects   D4 = 0   Selects   D4 = 1   Selects
D5 = 0   USA font   D5 = 0   Type 2 font   D5 = 1   Type 3 font   D5 = 1   Type 4 font
D6 = 0   Internal RAM is being used (40000-7FFFF), OFF for external cards.
D7 = 0   Internal RAM is being used (80000-BFFFF), OFF for external cards.

This allows a programmer to select these options from a program if desired.

CRT Video and LCD Video

The Datavue 25 has RBG and composite video connectors out the back. The RBG pinout is the same as the industry standard.

The CRT video and LCD video are controlled by a V6355 controller chip. The selection of a CRT monitor or the LCD screen is done by reprogramming the chip and by writing to port 72H (write only).

Port 72H also controls the reverse video and contrast on the LCD screen.

$D0 = 1$ Lower the contrast.
$D1 = 1$ Raise the contrast.
$D2 = 1$ Set the contrast to a mid-range value.
$D3 = 1$ Select a CRT monitor ($D3=0$ selects the LCD).
$D4 = 1$ Reverse the black and white on the LCD screen.
$D5$ Not used.
$D6$ Not used.
$D7$ Not used.

The V6355 chip has 16 palettes. Each one can be reprogrammed to give any of an 8 level gray scale on the screen. All colors can be made the same, or they can be set as desired.

The CTRL-Left Shift-S command rotates through six different palette settings to make the LCD screen readable for a variety of color combinations. The first five settings are fixed. The sixth setting is user selectable; however, the desired values must be written to CMOS RAM.

PALETTE

0	General use.
1	Enables the intensity bit for Wordstar type programs.
2	Reverses the use of the intensity bit.
3	Gives an 8-level gray scale in text mode.
4	For composite video output.
5	User definable. The default values give the same effect as inverse video on the LCD screen (the values are the reverse of palette 3).

RBG output will not be affected by the palette selection.

Default Palette 5 values are:

```
00H, 70H, 00H, 60H, 00H, 50H, 00H, 40H
00H, 30H, 00H, 20H, 00H, 10H, 00H, 00H
00H, 70H, 00H, 60H, 00H, 50H, 00H, 40H
00H, 30H, 00H, 20H, 00H, 10H, 00H, 00H
```

8087 Coprocessor

When SW1-4 is OFF, an 8087 coprocessor can be used.

CTRL-Left Shift Functions

The CTRL-Left Shift functions are explained in Chapter 2: Customizing Your Datavue.

In addition:

- Only one function can be active at a time

- The remote (dumb) terminal program is used for communication purposes. It can go through either COM1 or COM2. It is menu driven for ease of use. At present, there is no checking of the clear to send or data set ready.

- Data is received through an interrupt driven routine. If 24K of RAM is saved for the CTRL-Left Shift functions, then the last 8K is used as a data buffer. If not, the last 8K of video RAM is used as a buffer. If the buffer is overrun, an error message occurs and the system prompts the user. Further data is lost, however.

Technical Notes

1. To conserve power, the Datavue uses CMOS parts wherever possible including the printer port. If the computer is turned off before the printer, garbage may be printed as the printer circuit loses power. Turn the printer off first.

2. Some software continually refreshes the screen during certain displays. The video chip for LCD, RGB, and composite video is built such that it is never necessary to disable video to refresh the screen. Certain software assumes a CRT and waits for VSYNC, turns off video, then updates the data. When done, it enables video again. For a CRT, the first few raster scans are not shown and the picture is OK. For an LCD, all rasters are shown. This and timing differences cause about five raster lines at the top and the middle to be missing from the LCD.

Parallel Port Pin Chart

Pin No.	
#1	Strobe
#2	Data 0
#3	Data 1
#4	Data 2
#5	Data 3
#6	Data 4
#7	Data 5
#8	Data 6
#9	Data 7
#10	ACK
#11	Busy
#12	PE
#13	SLCT
#14	N/C (no connect)
#15	N/C
#16	init
#17	N/C
#18	ground GND
#19	ground GND
#20	ground GND
#21	ground GND
#22	ground GND
#23	ground GND
#24	ground GND
#25	ground GND

Serial Port Pin Chart

Pin No.	
#1	FG (frame ground)
#2	TXD Transmit Data
#3	RXD Receive data
#4	RTS Request to send
#5	CTS Clear to send
#6	DSR Data set ready
#7	signal ground
#8	CD (carrier detect)
#20	DTR (data terminal ready)
#21	RI (ring indicator)

DATAVUE PORTABLE COMPUTER

Addendum

For Hard Drive and Dual 3½" Drive Models

A. Introduction

This version of the Datavue 25 includes these features:

- Fluorescent (backlit) or Gaslight screen

- 20 MEG hard drive plus one 3½" diskette physical drive

   ## OR

- Two 3½" diskette physical drives

plus all the features normally available with the Datavue 25.

This booklet only describes how to use these special features. Be sure to read the Datavue 25 *Guide to Operations* for full instructions on how to get the most from your Datavue portable computer.

B. Customizing the Backlit Screen

The Datavue 25 fluorescent and gaslight screens are very easy to read under all lighting conditions, and are more legible in a darkened room than a normal LCD monitor.

In addition to the screen control functions in the Operations Manual, there are several Control-Left Shift functions which allow you to adjust the brightness of the lighting, or turn the lighting off completely to save battery power.

Light Switch

To turn the backlight off, press the CTRL key, the left shift key and the O (for on/off) key. Press the same keys again to toggle it back.

Light Intensity

To increase the intensity of the light, press the CTRL key, the left shift key and the PG DN key at the same time. To decrease the intensity press the CTRL key, the left shift key and the PG UP key at the same time. Press the CTRL key, the left shift key, and the 6 on the keypad to return to the default setting.

Screen Contrast

The screen contrast can be increased by pressing the CTRL key, the left key and the up arrow key at the same time. To decrease the contrast, press the CTRL key, the left shift key and the down arrow key at the same time. To return to the default setting, press the CTRL key, the left shift key and 5 on the keypad at the same time.

Eliminating Blinking Lines

Some application software reacts with the Datavue in a way that produces a blinking line or unexpected parenthesis at the top or middle of the LCD screen. If this happens, press the CTRL, *Left Shift*, and L keys at the same time, then press the reset button. This should eliminate the blinking lines.

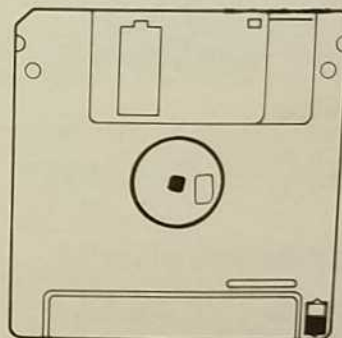## C. Using the Dual 3½" Drive Model

About 3½" Diskettes

The Datavue 25 with dual drives uses 3½" diskettes. These diskettes are smaller and sturdier than conventional 5¼" diskettes, yet hold twice as much data — up to 720K.

Use only double-sided, double density diskettes!

Insert the diskette in the physical drive with the label facing toward the back of the computer. Push it in until it clicks into place. To release the diskette, push the button on the drive and the diskette pops out.

The write-protect device on these diskettes looks like a switch. Hold the diskette in front of you with the label on the top. Turn the diskette over, and you'll see a small black slider switch in the bottom right corner.

Slide this switch down to write-protect the diskette to keep data from being written to the diskette. Slide the switch back up to allow data to be written to the disk.

Getting Started

The lower drive is always the default or A drive.

To begin, insert the DOS diskette into the lower drive, and follow the instructions in the Datavue *Guide to Operations*.

The drive designations are as follows:

   A: Lower 3½" diskette physical drive (default drive)
   B: Upper 3½" diskette physical drive
   C: RAM drive

Using the 5¼" Optional Diskette Drive

Using the add-on 5¼" diskette physical drive with the two physical drive model requires some special procedures.

Even with the add-on physical drive, the Datavue cannot work with more than two physical drives at one time.

Leave the switches set for two drives (Switch SW1-7 OFF and SW1-8 ON).

The drive designations remain the same. You may manually switch the B Drive back and forth between the top 3½" diskette physical drive and the add-on 5¼" diskette physical drive.

Press the CTRL, Left Shift, and E (for external) keys at the same time to switch Drive B to the external, add-on 5¼" diskette physical drive. Press them again to switch Drive B back to the upper 3½" diskette physical drive.

To boot from your 5¼" drive:

1) Press CTRL, Left Shift, and E simultaneously. This changes the designated B drive from the top 3½" drive to your external 5¼" drive.

then,

2) Press CTRL, Left Shift, and D simultaneously. This changes the designated A drive to B (the external 5¼" drive) and the B drive to A. Now your default drive (A) is the add-on floppy drive.

Optional DOS Commands for Using the 5¼" Optional Diskette Drive

All of the DOS commands that you are accustomed to for systems using 5¼" floppy disk drives operate exactly the same for 3.5" floppy drives.

FORMAT, DISKCOPY, and DISKCOMP commands assume 3.5" floppy disk drives as the default.

To use DOS 2.11 version 1.20 (which supports 720K media) with 5¼" media, a "/5" softswitch option has been added.

Example: FORMAT B:/5 will format a 5¼" floppy disk on drive B: to a 360K format.

Example: DISKCOPY B: B:/5 will do a diskcopy for 5¼" floppy disks in the B: drive.

Example: DISKCOMP B: B:/5 will do a diskcomp for the 5¼" flopy disks in the B: drive.

D. Using the Hard Drive Model

The hard drive has a capacity of 20 MEG, and is mounted internally.

TO PROTECT YOUR HARD DRIVE ALWAYS TURN THE UNIT OFF VIA THE POWER SWITCH ON THE BACK OF THE MACHINE. IF THE POWER CORD IS UNPLUGGED BEFORE THE POWER IS TURNED OFF, THE DRIVE HEAD WILL NOT PARK AND LOCK.

Partitioning the Hard Drive

You may divide your fixed disk (hard drive) into 1 to 4 separate areas called partitions. Each partition can be a different size, and is set up using a program provided by the operating system. You may want to partition your drive into more than one area if several people will use the disk or you require more than one operating system. To partition your fixed disk use the FDISK command discussed in section 2.9 of your MS-DOS manual.

Formatting the Hard Drive

Before you can use your fixed disk, the partition(s) must be formatted.

THE FORMAT COMMAND ERASES EVERYTHING ON THE DRIVE — you should only use it if the partition has *not* already been formatted and used to store data.

The command to format your hard drive is FORMAT C:/S/V where /S copies the MS-DOS system files onto the hard drive, and /V allows you to assign a volume label. Refer to sections 2.9.2 and 2.4.1 in your MS-DOS manual for complete instructions.

Loading Software on the Hard Drive

To copy your favorite software to the hard drive use the DOS COPY command discussed in section 3.4 of your MS-DOS manual.

Using the Hard Drive

You can use an external battery pack with the hard drive model. The battery pack must sit next to the Datavue and plug into the AC Adaptor Plug on the right side of the Datavue. You should not plug the battery into the Datavue at the same time as the machine is plugged into the wall.

(Note: This battery is not the Datavue internal battery DV2700)

Follow these steps to start:

1) Be sure no diskette is in the physical drive.

2) Turn the on/off switch on the back of the Datavue ON when the Memory Screen appears, follow the instructions on page 1-15 of the Datavue *Guide to Operations* to allocate memory of your RAM drive.

3) When you're through partitioning memory, press ENTER. DOS loads from the hard drive, responds with copyright information and date and time, and displays the C prompt.

4) When you finish, turn the on/off switch on the back of the Datavue OFF. The Datavue stays on for 15 seconds more while the machine goes through the process of parking the head.

The Drive designations are as follows:

- A: 3½" diskette physical drive
- B: RAM drive
- C: Hard drive

Using the 5¼" Optional Diskette Drive

Using the add-on 5¼" diskette physical drive with the hard drive requires some special procedures.

Change the switch settings to two disk drives. Set switches:

SW1-7 OFF
SW1-8 ON

The drive designations also change:

- A: 3½" diskette physical drive
- B: 5¼" diskette physical drive
- C: RAM drive
- D: Hard drive

E. Transferring Files From 5¼" Diskettes to 3½" Diskettes

Using the optional add-on 5¼" diskette physical drive greatly enhances the capabilities of these Datavue models. You can run most IBM-compatible software, and load it onto the hard disk.

Or, you can use the Datavue with the add-on 5¼" diskette to copy files from standard 5¼" diskettes to newer, and more convenient, 3½" diskettes, or vice-versa. Use the DOS COPY command (not DISKCOPY) to copy files from one diskette to the other.

Remember that the 5¼" diskette holds 360K and the 3½" diskette holds 720K. This means that you can copy all the files from two full 5¼" diskettes to one 3½" diskette, but you can copy only part of the files on a 3½" diskette to a 5¼" diskette.

F. Using the Ram Drive

The RAM drive works the same on these Datavue models as explained in the Datavue *Guide to Operations*.

To use a DISKCOPY command with the 3½" diskette, remember that the diskette contains 720K of data and therefore your RAM drive must be set for 720K.

To ensure that you have enough memory in the RAM drive to copy a filled 3½" diskette, be sure switch SW2-6 is ON to allow the RAM disk to be set to a full 720K.