



**WANG**

**VS25**

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**Bulletin**

# **VS25 Bulletin**

**First Edition  
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## PREFACE

This document is an introduction to the Wang VS25 computer system. It provides an overview of VS25 operating procedures. Other essential manuals are the VS System Operation Guide (800-1102SO-06) and the VS System Management Guide (800-1104SM-03). Depending on the anticipated use of your system, one or more of the following documents may also be helpful:

VS Programmer's Introduction (800-1101PI)  
VS Principles of Operation (800-1100PO)  
VS System Utilities Reference (800-1303UT)  
VS File Management Utilities (800-1308FM)  
VS Procedure Language Reference (800-1205PR)



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## CHAPTER 1 SYSTEM OVERVIEW

### 1.1 INTRODUCTION

The VS25 and VS45 are new additions to Wang's family of information processing systems. They are based on a newly implemented system architecture and state-of-the-art hardware.

Designed specifically for today's distributed business processing requirements, the VS25 blends well with the office environment. The compact system cabinet encloses all system components except printers and workstations. It can be installed in most offices without special power or air conditioning.

The VS45 offers expansion over the VS25 system for users requiring more memory, disk storage, and workstation support. Both the VS25 and VS45 systems are completely software compatible with the existing members of the VS product family. In the tradition of Wang VS systems, the VS25 and VS45 are powerful yet extremely user-friendly.

Wang has designed the VS25 and VS45 to accommodate today's demanding user and tomorrow's growth requirements. Both systems offer industry-standard languages, data communications, network access, and software utilities, as well as Wang's pace-setting word processing. Modular system design enables the user to add memory, disk storage units, and peripheral devices without hardware replacement.

Wang word processing is the unchallenged industry leader, offering a wide range of application capabilities and virtually every type of editing and formatting feature. Easy training and user-friendliness result in unprecedented user acceptance. Word processing and data processing are completely integrated within VS systems.



## 1.2 VS SOFTWARE

### VS Operating System

Wang has designed VS software for effectiveness and ease of use. These goals are realized by the VS operating system. The same advanced virtual storage operating system is shared by all members of the VS family. The operating system is the program that governs the use of resources and interprets user requests to the system. Users interact with the operating system through a menu-driven command processor. The menu technique is faster and subject to fewer errors than the typical command language offered on competing systems.

Besides menu choices, the operating system displays messages and prompts in clear English, providing information or requesting clarification. Users can interrupt task processing at any time to enter the debugger or to inspect the status of files, I/O activities, or the entire system, and then resume task operations from the point of interruption.

### Virtual Storage

Virtual storage management gives each VS25 and VS45 user simultaneous address space of up to 2 million bytes, half for the program file and half for data (including some system overhead), regardless of the actual size of main memory. Program segmentation and overlays are eliminated, freeing programmers to concentrate on the logical structure of their code. The operating system brings pages of a user's address space from disk into main memory as needed and moves unneeded pages back to disk. The entire process is totally transparent to programmers and users.

### Background Processing

Though designed primarily for interactive processing, the VS offers batch-type handling of tasks that require no user input. These background jobs are run from a separate job queue and have lower-priority access to system resources to minimize interference with interactive jobs. Once submitted, background jobs leave workstations free for interactive use.

### VS Data Management System

The VS Data Management System is a complete and efficient system for creating, updating, and maintaining files. DMS manages disk file space and services all file I/O requests as required by various devices. Consecutive, indexed, and alternate indexed files are supported. Records in files may be located in a sequential or random fashion, or through index key values. Data compaction conserves disk space and speeds data transfer. Integrated file sharing allows several users to perform concurrent updates and/or inquiries, avoiding unnecessary delays and preserving file integrity.

### 1.3 VS25 DISK STORAGE

The 8-inch fixed-disk drive provides a fast yet economical method of data access. Because the fixed disk is housed in a sealed environment, it is virtually immune to particle contamination, thereby allowing the disk drive heads to fly close to the disk surface. The resulting decreased air gap permits a greater data density than was previously possible, enabling the user to access data faster and store more data in less space.

Additionally, the Winchester fixed-disk technology allows lubricated disk surfaces and a decrease in head-loading force, permitting the head to "take off" and "land" on the platter surface during power-up and power-down procedures. The reduced possibility of a head crash furthers data integrity. These features contribute to a compact disk drive that retains the performance and reliability of other disk models, at significant price reductions.

A 34M-byte fixed-disk drive housed in the system cabinet is standard equipment for the VS25. The operating system resides on this disk, which serves as the principal disk storage medium. A second 34M-byte disk is optional. The VS45 can be configured with fixed disks and/or external, large-capacity removable disks. (Office environmental considerations are affected by the inclusion of external disks.)

A 1.2M-byte dual-sided, double-density diskette drive is also supplied as standard equipment in the VS25 system cabinet. Diskettes back up the fixed disk and serve as a transfer medium for system software and applications packages.

#### 1.4 SUMMARY OF VS25 AND VS45 FEATURES

New Central Processor	Executes instructions in 500-nsec average microinstruction time
Loadable Microcode	Allows dynamic upgrades of processor function
DSDD Diskette Drive	Loads and backs up files with 1.2M-byte dual-sided double-density diskettes
Fixed Disk Drive	Supports operating system and user files in 34M-byte or 68M-byte capacities
Remote Diagnostics	Report system status through data communications
Multi-User System	Supports 1 to 20 users
Multiprogramming	Processes many tasks concurrently
Virtual Storage	Allots up to 2 million bytes of program and data address space to each task
Communications	Connect the VS with remote users and systems through networks
Assembler	Enables program development through more than 200 instructions
Floating-Point Instructions	Offer binary and decimal floating-point capability as a standard item
Standard Languages	Support application program development in COBOL, BASIC, FORTRAN, PL/I, and RPG II
VS Utilities	Provide simplified system and job control, programmer productivity aids (including data entry, file definition and handling, screen formatting, report and menu generation), and sophisticated inquiry facilities
System Security	Provides complete yet flexible security at user, file, program, and workstation levels
Word Processing	Offers all Wang word processing capabilities
Tape Cartridge	Provides an optional 14M-byte backup and archiving medium

CHAPTER 2  
SYSTEM INTRODUCTION

This chapter describes power-up procedures and introduces the command processor and the SECURITY program.

2.1 POWER-UP PROCEDURE

This section describes standard power-up procedures for the VS25. After your machine has been properly installed, follow these simple steps, referring to Figure 1 as necessary:

1. Power up all workstations and printers.

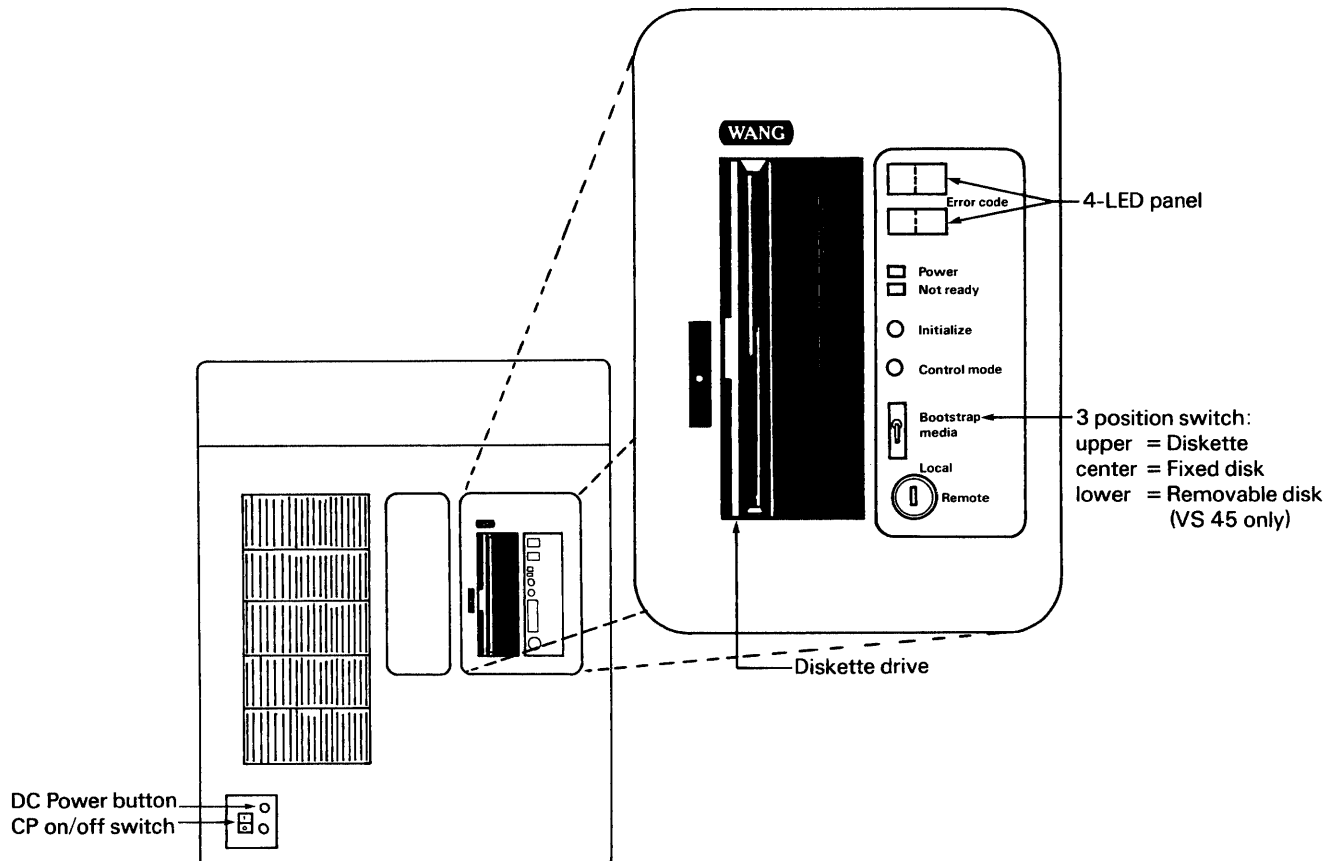


Figure 1. VS25 System Cabinet

2. Set the Bootstrap Media switch to the proper position to load system microcode. For a normal power-up it should be set to the center position, i.e., for the internal fixed disk. (For a cold-start, it should be set to the upper position, i.e., for the diskette. See Appendix A for the cold-start procedure.) The 4-LED panel displays the error code "40BA" if the medium selected by the switch does not contain the bootstrap program.
3. Turn the key on the right of the front panel to Local. Power up the CP: press the red rocker switch in the lower left corner of the front panel to turn on the AC power; then press the red button next to it to turn on the DC power. The 4-digit LED displays numbers that first count down from FFFF to 0000 (in hexadecimal notation), then count up through a series of numbers (typically 10, 12, 14, 60, and 40), and finally turn blank. Wait approximately one minute for the internal fixed disk to get up to speed before proceeding.
4. The IPL Drive Selection screen is displayed (refer to Figure 2). The cursor is now positioned next to the entry for the fixed disk drive. Press ENTER to perform an Initial Program Load (IPL) from this drive. You do not need to power up or load the heads of the drive, which is located inside the CP cabinet.

(To IPL if the system is already powered up: press the green Control mode button on the right side of the front panel to halt system processing, then press the red Initialize button to trigger microcode loading.)

```

VS25 Self Test Monitor Package Version BP R2
      IPL Drive Selection
      Bootstrap Volume = SYSDSK

Device   Capacity   Type   Volume   Status
-----
2270V-4  1.2 Mb   Dsket
Q2040    34 Mb   Fixed  SYSTEM   Media Tolerant

Position Cursor to Indicate Device and Select:

(ENTER) IPL          (8) Stand Alone Diagnostic Monitor
  
```

Figure 2. IPL Drive Selection Screen

Workstation 0 should now display the System Hardware Status screen (see Figure 3). This screen displays the results of self-test diagnostics. (Refer to Appendix F for a listing of error codes.)

```

VS25 Self Test Monitor Package Version BP R2
      System Hardware Status
      System Volume = SYSDSK

Status _____ Diagnostic _____
Passed          (SIO) Serial Data Link Test
Non Fatal Error (BP) Usart Loopback Verif. Test   Code = 3C03
Passed          (PU)  CP Control Memory & CP/BP Test
Passed          (CPU) CP Random Operands Test
Passed          (CPU) CP Integrity Test
Passed          (MM)  Main Memory Test
Passed          (BP)  BP DMA & Mars Test

      Diagnostics Complete, Beginning System Initialization

```

Figure 3. System Hardware Status Screen

When all components, including the workstation, have been tested and found operational, the message, "Diagnostics completed. Beginning system initialization", appears on the workstation screen. Now begins the loading of system microcode.

If the message "Non-Fatal Error" is displayed, make a note of the name of the failed test and the error code, and report it to Wang Field Service at a later time. Press ENTER to continue.

If diagnostics messages do not appear on the workstation 0 screen within one minute, power down workstation 0 and power it up again to trigger microcode loading. Continue with Step 4, above.

5. In about 30 seconds, the message shown in Figure 4 appears, asking for the name and library of the system configuration file to be used when bringing up the system. You may enter configuration file information now, or you may take the displayed default values simply by pressing ENTER. It is recommended that you take the defaults: press ENTER.

```
*** MESSAGE M001 BY SYSGEN

                INFORMATION REQUIRED

Specify the name of the system configuration file and press ENTER

                -or-

Press (1) to use one workstation and one disk.

                SYSFILE = @CONFIG@
                SYSLIB  = @SYSTEM@

Specify the communications configuration file to be used, if any

                COMMFIL = *****
                COMMLIB = @SYSTEM@
```

Figure 4. SYSGEN Configuration File Screen

6. The next screen asks you for the current date and time. Enter the date and time in the YY/MM/DD HH/MM/SS format indicated, and press ENTER. (Note that date and time information is lost whenever the system is brought down.)

Now the system is up and running in accordance with the configuration file specified. The workstation displays the Operator's Console screen (operator main menu) as shown in Figure 5. You are now in operator mode.

## 2.2 ENTERING USER MODE

In operator mode, using the screen shown below, you can manage the entire computer system. One of your first tasks should be to enter user mode and run the SECURITY program in order to allow other users to log on.

```
*** Wang VS Operator's Console ***
2:52 pm          Friday   September 10, 1982

Press (1) to Return to User Mode,
      - or -
Use the Function Keys to Manage:

(2) PRINT Queue           (9) PRINTERS
(3) PROCEDURE Queue       (10) DISKS
(4) TRANSMIT Queue
(5) RETRIEVE Queue
                                (13) WORKSTATIONS
(6) INTERACTIVE Tasks
(7) NON-INTERACTIVE Tasks    (14) SYSTEM Options

Press (HELP) at Any Time to Return to the Operator Console Menu
```

Figure 5. Operator's Console Screen (Operator Main Menu)

Press PF1 ("Program Function Key #1") on this screen. The Logon screen appears, as shown in Figure 6.

```
*** Wang VS Logon ***

Workstation 34          12:14          Thursday June 10, 1982

Hello, new user

Please identify yourself by supplying the following information:

Your userid   = ____
Your password = _____
```

Figure 6. Logon Screen



Enter your user ID and password. (If this is the first time your VS25 has been powered up, no user IDs or passwords have been assigned yet; in this case, enter the three-letter user ID "CSG", which does not require a password.) Press the RETURN key. You are now logged on. The Command Processor screen (user main menu) appears.

### 2.3 INTRODUCTION TO THE COMMAND PROCESSOR

The command processor screen displays system commands associated with the program function (PF) keys on the top row of the workstation keyboard. You select a command by pressing the appropriate PF key. (See Figure 7.)

For more detailed information about functions available on the command processor screen, refer to VS Programmer's Introduction.

```
*** Wang VS Command Processor ***  
Workstation 001 Ready          4:54 pm          Monday December 28, 1981  
  
Hello Customer Services Group  
Welcome to BOSTON  
  
Press (HELP) at any time to interrupt your program or to stop  
processing of the current command.  
  
Use the Function Keys to Select a Command:  
  
(1) RUN Program or Procedure          (9) Enter WORD PROCESSING  
(2) SET Usage Constants  
(3) SHOW Program Completion Report   (12) SUBMIT Procedure  
  
(4) Manage Queues                    (15) PRINT COMMAND Screen  
(5) Manage FILES/LIBRARIES  
(6) Manage DEVICES                   (16) LOGOFF
```

Figure 7. Command Processor Screen (User Main Menu)

The RUN Program or Procedure command (PF1) is the most commonly used command. It runs both system and user programs. When you press PF1, the system prompts you for the name of the program or procedure you want to run.

The Manage Queues command (PF4) lets you display and control the Print, Transmit, and Retrieve queues. When you invoke this command, a small menu directs you to select the appropriate queue.

You can use the Manage FILES/LIBRARIES command (PF5) to check on the presence and attributes (e.g., size and creation date) of files. For example, configuration file @CONFIG@ is in library @SYSTEM@ on volume SYSTEM.

If you press PF16 on the Command Processor screen and then press ENTER, you terminate your workstation session.

## 2.4 RUNNING THE SECURITY PROGRAM

Once you are logged on as user CSG, you should run the SECURITY program to allow other users to log on. Press PF1, then enter the name "SECURITY" on the next screen and press ENTER. (See Figure 8.)

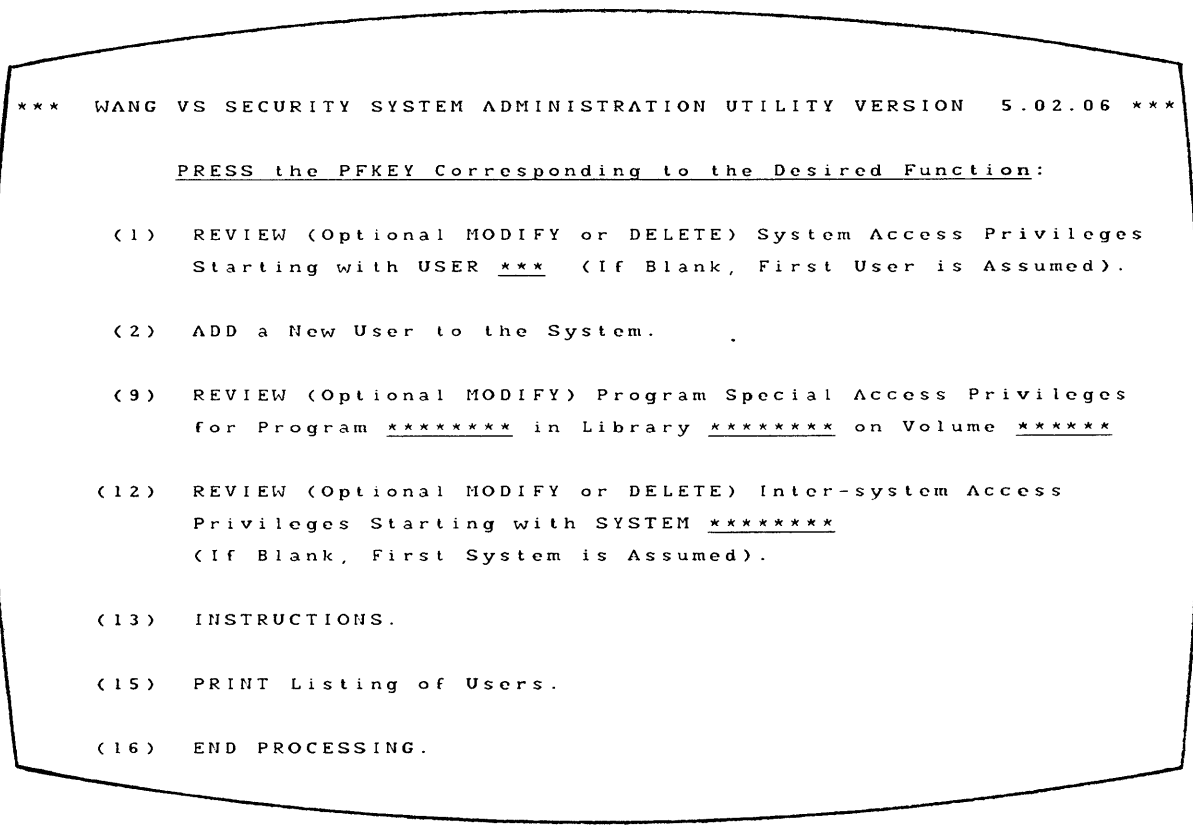


Figure 8. SECURITY Program Screen

The VS security system is a mechanism for protecting system resources against unauthorized use. The SECURITY program can be used to protect resources on three levels:

- On the system level - Before users may access system resources, they must log onto the system by entering a user ID and password. User log-ons may also be restricted to or prohibited from certain workstations.
- On the file level - Each user may access only those files belonging to the protection classes to which the user has been granted access rights. Access to other files is denied by the system. Up to 30 unique file protection classes may be defined. Programs also may be granted these access rights.
- On the access level - The kind of file access granted may vary with protection class and user: for a given user, some classes of files may be modified, some may only be read and executed, and some program files may only be executed. The same categories of access also apply, independently of user, to programs that access files.

Once you are running the SECURITY program, PF1 and PF2 access the User list, where you must enter information for each user, e.g., user IDs, names, and access rights. The User list should be placed in protection class "#", with a system security administrator as owner, so that only security administrators can gain access to it. The list is maintained and updated through the SECURITY program.

Each record in the system User list contains the following information:

- |          |   |
|----------|---|
| USER ID  | - Each user must have a unique ID up to three characters in length. The first character must be alphabetic, the others alphanumeric.  |
| PASSWORD | - A password, though optional, should be assigned for security reasons to each user ID (including user ID "CSG", once it has been used to gain initial access to the system). It may be up to eight uppercase characters in length. Display of the password is suppressed when it is entered during log-on. |
| NAME     | - This name appears in a greeting displayed on the Command Processor screen at log-on time.   |

SECURITY ADMINISTRATOR - This field must have a value of either Y or N. It defines whether the user is a system security administrator. If this value is set to Y, the user has access to all files on the system, including the SECURITY program and all private files. If this value is set to N, the user is not a system security administrator, and the user's access rights are set on a per-file-class basis (see p. 14).

For more information on VS system security, refer to the VS System Management Guide.

#### 2.4.1 PF1 - Review, Modify, or Delete User Records

Starting with the SECURITY Program screen, i.e., the screen illustrated in Figure 8, enter the initials of the user to be reviewed and press PF1. If the initials are left blank, the new screen displays the record of the first user ID. If an incorrect ID is entered, the new screen presents the record of the next valid ID. Once a user's record is displayed, you may modify it by pressing PF9, entering the changes, and then pressing ENTER; to delete the record, press PF12. Security administrators may modify any information (except the ID itself) for any other user. A security administrator's record can be deleted only by another security administrator; administrators cannot delete their own records.

After examining a displayed record, the system security administrator can inspect the first record by pressing PF2, the next record by pressing PF5, or any other record by supplying another ID and pressing PF8; by pressing PF16 he can return to the SECURITY Program screen. By pressing PF13 on that screen, he can review instructions for modifying user records.

#### 2.4.2 PF2 - Add a New User

Starting with the SECURITY Program screen, press PF2. A new, blank user record appears; enter a new, unique user ID, then fill in the requested information and press ENTER. You may instead press PF1 to return to the SECURITY menu, or PF13 to review the instructions for modifying user records.

#### 2.4.3 PF9 - Review or Modify Program Access Privileges

To review and modify a program's special access privileges, enter the file, library, and volume name of the program, and press PF9. The next screen displays the 26 lettered file classes and the program's current level of access (R--Read, E--Execute, W--Write, or blank--no access) to each, and indicates whether the program has security administrator status, i.e., write access to all 26 of these classes. To modify, enter the changes and press ENTER.

#### 2.3.4 PF13 - Review the Instructions for SECURITY

By pressing PF13 on the SECURITY Program screen, the security administrator is supplied with an explanation of each PF key option.

#### 2.3.5 PF15 - Print the User List

This option allows the security administrator to print a listing of all user information except passwords. No screen display is provided. As this listing contains privileged information, the administrator should take special care to store it in a secure location.

## CHAPTER 3 MANAGING DEVICES

### 3.1 INTRODUCTION

PF keys 9 through 13 on the Operator's Console screen (see Figure 5) may be used to control all I/O devices. By pressing proper PF keys, the operator can logically mount and dismount disk and tape volumes; logically attach and detach disk and tape drives, printers, and telecommunications devices; manage remote networking devices; and control logons and logoffs for workstations. The current status of each type of device is displayed by pressing the appropriate PF key.

Most device management functions can be executed from both user and operator workstations. However, the Attach and Detach commands and the telecommunications functions (Activate, Deactivate and Change) appear only on the Operator's Console screen.

### 3.2 CONTROLLING DISKS

To reach the Control Disks screen, press PF10 (DISKS) on the Operator's Console screen. The Control Disks screen provides information about all the disk drives configured for the system. The current user's ID appears on the Owner Information screen, as explained below.

The information is listed in the order of the drive number (unit number or device address). The following information is provided for all disk devices:

- Drive number
- Device model number
- Capacity in M bytes (megabytes) or K bytes (kilobytes)
- Platter type--removable, fixed, or diskette

If a disk volume is mounted on the drive, the following additional information appears:

- Volume name
- Restrictions--removal, write protection, or exclusive use
- Number of open files
- Any status other than Ready

Figure 9 shows a Control Disks screen. Note that a list of commands for controlling disks and the PF keys associated with them is given at the bottom of the screen. These commands are described below.

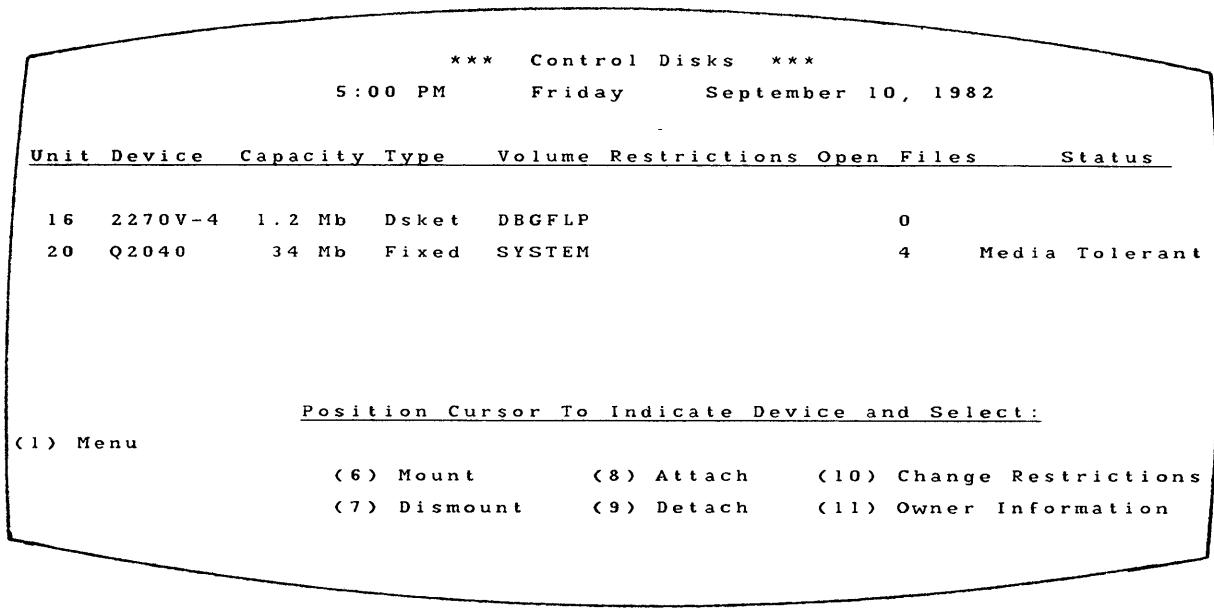


Figure 9. Control Disks Screen

Mounting a Disk Volume

To logically mount a volume on a disk drive, move the cursor to the line describing the drive and press PF6. (Note that the Quantum fixed disk (model Q2040) included in the CP cabinet of VS25 systems cannot physically be mounted or dismounted.)

The Mount Disk screen, illustrated in Figure 10, appears. Enter values for the following parameters:

- Volume name
- Label type. "No Label" is valid for diskettes only; "Standard Label" is the default.
- Mode--"Shared" is the default.
- Allow work files? Choose "YES" or "NO"; "NO" is the default.
- Allow spool files? Choose "YES" or "NO"; "NO" is the default.
- Allow paging files? Choose "YES" or "NO"; "NO" is the default.

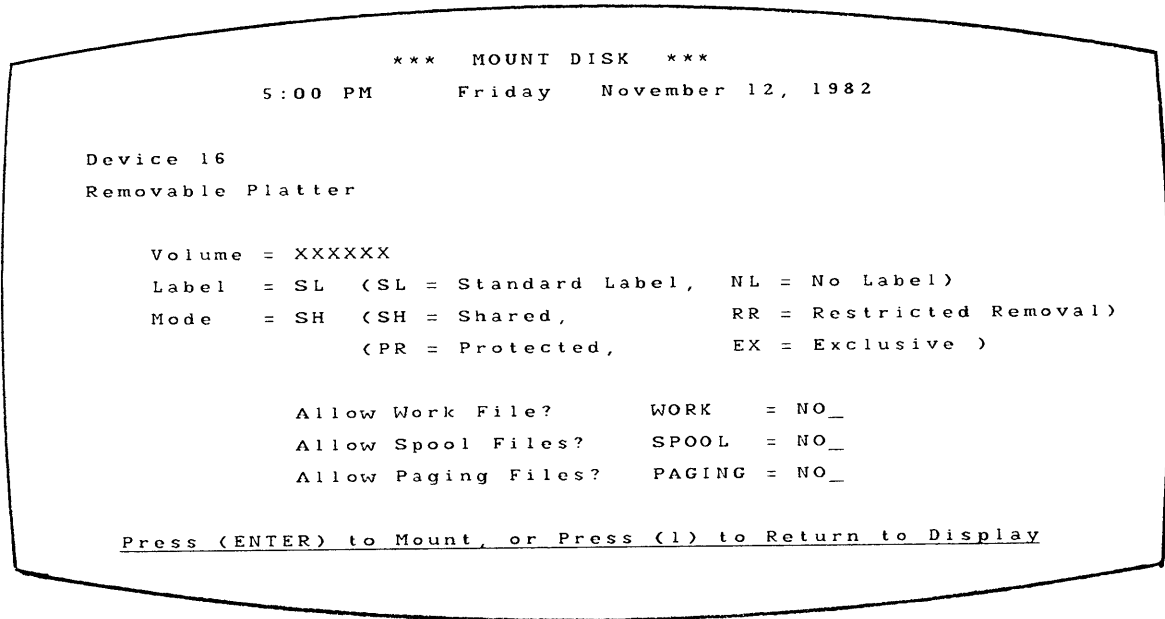


Figure 10. Mount Disk Screen

Press ENTER to logically mount this disk volume; if appropriate, the system prompts you to physically mount the volume. You may instead press PF1 to cancel the mount request and return to the Control Disks screen.

#### Dismounting a Disk Volume

When logically dismounting a volume, move the cursor to the line of the display that describes the volume and press PF7. The volume name blinks, so you can verify that this is the volume you wish to dismount. Press ENTER to logically dismount the volume; if appropriate, the system prompts you to physically dismount it. You may instead press PF1 to cancel the dismount request and return to the Control Disks screen.

#### Changing Mount Restrictions

This command modifies the mount restrictions. To change these restrictions for a specific volume, move the cursor to the entry for that volume and press PF10. The system highlights the Restriction column and lets you modify the entry. Enter one of the following restrictions:

- Shared
- Removal (restricted removal)
- Protected
- Exclusive

A blank restriction is equivalent to Shared.



Press ENTER to effect the change, or press PF1 to cancel the command and return to the Control Disks screen.

### Owner Information

To receive information about volume owners, press PF11 on the Control Disks screen. (A volume's owner is the user who mounted the volume.) The following owner information now appears in the rightmost columns of the screen, as illustrated in Figure 11:

- Owner's User ID and/or job name--supplied unless the volume is mounted for initialization or is a "No Label" (NL) volume.
- Proc-ID--specified only if a background job mounts a volume. The name in this column is the name of the job that was submitted; it is not the Procedure name.
- The volume's eligibility for spool, work, or paging file allocation.

The Control Disks screen showing owner and paging information makes available two additional commands--Change Restrictions, and Status Information.

\*\*\* Control Disks \*\*\*  
5:00 PM Thursday September 16, 1982

Unit	Device	Capacity	Type	Volume	User	Proc-ID	SPOOL	WORK	PAGING
16	2270V-4	1.2 Mb	Dsket	DBGFLP			YES	NO	NO
20	Q2040	34 Mb	Fixed	SYSTEM			YES	YES	YES

Position Cursor To Indicate Device and Select:

(6) Mount	(10) Change Restrictions
(7) Dismount	(11) Status Information

Figure 11. Control Disks Screen Showing Owner Information

## Change Restrictions

This command modifies a disk volume's work, spool, and paging file eligibility. To change these restrictions for a volume, position the cursor next to that volume's entry and press PF10. The system highlights the Work, Spool, and Paging columns and lets you change the entries. Type YES or NO in the column you wish to change. Then press ENTER to effect the change, or press PF1 to cancel the command and return the screen to its previous state.

## Status Information

Pressing PF11 (Owner Information) on the Control Disks screen shown in Figure 9 replaces the Restrictions, Open Files, and Status columns with User, Proc-ID, and SPOOL, WORK, and PAGING columns. To return to the original screen, press PF11 on the new screen.

## Attach and Detach

The operator may logically attach or detach any system device except for workstations. Press PF9, PF10, or PF12 on the Operator's Console screen to select the type of device, and then position the cursor on the resulting screen to select the specific device. Then press PF8 to attach the device, or PF9 to detach it. The system then displays the device in flashing characters and asks you to confirm the operation by pressing ENTER. A device cannot be detached while it is in use. A detached device cannot be accessed until the operator re-attaches it or the system is re-IPLed.

### 3.3 INTRODUCTION TO BACKUP PROCEDURES

Your data processing files and programs should periodically be backed up (i.e., copied onto backup disk volumes), on a schedule satisfactory for your installation. This section provides instructions for operating the 2270V-4 diskette drive built into the CP cabinet of the VS25 and VS45.

The 2270V-4 diskette drive uses only soft-sectored, dual-sided, double-density diskettes that have a capacity of 1232K bytes (1.2M bytes). Any VS system having archiving workstations can also use these diskettes. Table 1 shows Wang diskette types and applications.

In order to back up your system's data processing files, you have to initialize new diskettes, then mount them and run the BACKUP utility. To initialize a diskette you must run the DISKINIT utility: on the Command Processor screen (user main menu) press PF1, enter the program name "DISKINIT", and press ENTER. Then enter the word "INITIALIZE" and the name you have chosen for the diskette, and press ENTER. The screen shown in Figure 12 uses the name "FLOPPY".

Table 1. Diskette Compatibility Table

<u>Application</u>	<u>(Hard-Sectored Model:</u> single-sided, single density)	<u>(Soft-Sectored (Model:</u> single- or dual-sided, single or double density)
WP Archiving	2270-0 2270V-1	
VP/MVP	2270V-0 2270V-1 2270V-3	
LVP		2270V-2 2270V-3
IBM		2270V-2 2270V-3
VS80 Cabinet	2270V-0	
VS25/45 Cabinet		2270V-4
VS Archiving Workstations	2270V-1 2270V-2 2270V-3	2270V-2 2270V-3

```

*** MESSAGE 001 BY WT1M00
                RESPONSE REQUIRED BY PROGRAM DISKINIT
                TO SELECT FUNCTION

Please select one of the functions and specify volume to be processed.
Wang VS Disk Initialize Utility Program - Version 5.02.11
The following functions are provided by this utility program:
INITIALIZE - To initialize a new disk volume by analyzing the disk surfaces
              for reliable data storage and optionally creating a standard
              Volume Table Of Contents and volume serial number for it.
REFORMAT   - To reconstruct a standard Volume Table Of Contents on a
              disk volume.
RELABEL    - To change the volume serial number of a disk volume.
VERIFY     - To scan the surfaces of a given disk volume to make sure that
              all blocks are readable and report any bad blocks that exist.
REMOVE     - To remove an unreliable block from volume and replace it
              with a reserved block if available on the specified volume.

FUNCTION = INITIALIZE on VOLUME = FLOPPY
    
```

Figure 12. DISKINIT Program Screen

After you press ENTER, you are shown the message, "Specified volume is not mounted. Please respecify volume or press 'PF5' key to initiate a mount operation." Press PF5; you are then asked to identify the device number that has been assigned to the diskette drive. (See Figure 13.)

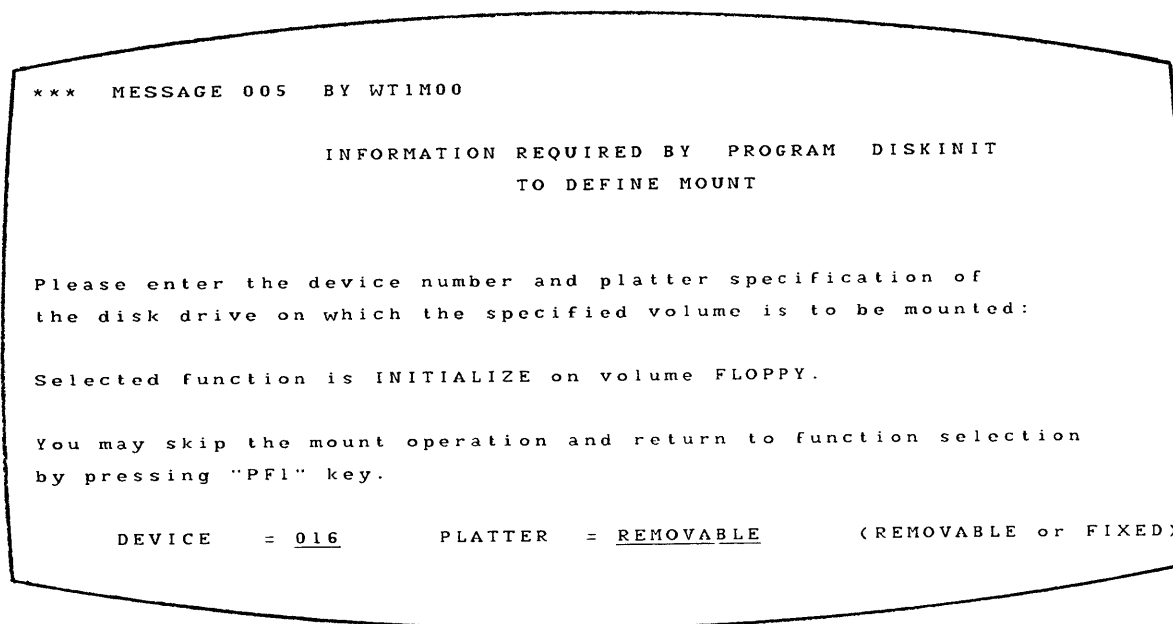


Figure 13. DISKINIT Drive Selection Screen

Enter the drive number (shown here as "16"), then press ENTER. The next prompt you see should begin with the words,

```
MESSAGE 0001 by MOUNT
```

```
Assistance required
```

Physically mount your diskette in the drive. The next screen should match the illustration in Figure 14. You can accept the default values and initialize the diskette by pressing ENTER.

If your diskette has been initialized and is still mounted, you may press PF1 to return to the Command Processor screen, and on this screen press PF1 to run the BACKUP program.

\*\*\* MESSAGE 013 BY WTIM00

INFORMATION REQUIRED BY PROGRAM DISKINIT  
TO DEFINE INPUT

Please enter the following input parameters for this function:

Function "INITIALIZE" ready to process:

Specified volume is FLOPPY on device 016 removable platter.

CAUTION: INITIALIZE function destroys all previous data on the volume.  
You may terminate this function right now by pressing "PF1" key.

NEWVOL	=	<u>FLOPPY</u>	(Volume serial number for initialized volume)
LABEL	=	<u>SL</u>	(SL - Standard Label, NL - No Label)
TOLERATE	=	<u>NONE*</u>	(NONE - Smallest VTOC - No fault tolerance) (CRASH - Medium VTOC - Tolerate system halt) (MEDIA - Largest VTOC - Also tolerate bad media)
VTOCSIZE	=	<u>008</u>	(Minimum of 4 pagesize blocks)
OWNER	=	<u>*****</u>	(Owner identification for VOL1 label)
PASSES	=	<u>BRIEF*</u>	(BRIEF - Only 1 pattern for quick initialize) (NORMAL - All patterns for thorough initialize)

Figure 14. Final DISKINIT Screen

### BACKUP Procedures

When the diskettes needed for backup have been initialized, run the BACKUP utility by pressing PF1 on the command processor screen. You must then specify whether you want to back up a file, library, or an entire volume (e.g., the entire contents of the internal Q2040 disk), and provide their names on the BACKUP Input screen (see Figure 15). Then press ENTER to view the BACKUP Output screen (not shown).

If an initialized diskette is currently mounted, you may enter its volume name (in Figure 14, "FLOPPY") on the BACKUP Output screen. If your diskette has not been mounted, you may press PF4 on the BACKUP Output screen, then mount it and specify its volume name.

### Backup to Multiple Diskettes

A single diskette may not be sufficient to contain the files you are backing up. (For example, to back up the contents of a Q2040 disk volume you may need up to thirty 1.2M-byte diskettes.) In such cases, when the currently mounted diskette is full the BACKUP utility prompts you to enter the name of the next backup diskette and press ENTER. You are then asked to remove the current diskette and insert the next one.

It is wise to keep enough initialized diskettes on hand, as otherwise you must cancel the BACKUP utility during backup operations to initialize extra diskettes as needed. You should give these diskettes sequential names, e.g., "SYS1", "SYS2", etc., to keep them straight.

### Backup Log

A print file containing the names of the files, libraries, or volumes being backed up is stored on the system disk or sent to the Print queue to be printed. This backup log is not placed on the diskette.

### Backup of WP Documents

WP documents may also be backed up with the BACKUP utility and the system diskette drive, by using file names for documents and standard-labeled (SL) diskette volumes. Document 0001B, e.g., is file 0001 in library DOCMNTB; 0001b is file 0001 in DOCMNTBB. (The system diskette drive cannot be used for WP-mode backup on non-labeled (NL) diskettes, although an archiving workstation may be used in that fashion.)

```
*** MESSAGE 0001 BY BACKUP
      INFORMATION REQUIRED BY PROGRAM BACKUP
      TO DEFINE INPUT
      *** WANG VS BACKUP PROGRAM - VERSION 4.00.00 ***

Please specify the following information and press ENTER,
or press PF4 to mount the input volume

RANGE      = FILE***      ( VOLUME / LIBRARY / FILE )
VOLUME     = SYSTEM      LIBRARY = @SYSTEM@      FILE      = USERLIST
FUNCTION    = BACKUP*     ( BACKUP / RESTORE )
ERRDISP    = YES         ( YES to display errors / NO )
DEVICE     = DISK        ( DISK / TAPE )
FILESEQ    = ****        ( For DEVICE = TAPE only )
INCREMEN   = NO*        ( YES for incremental BACKUP / NO )
      (Press PF16 to end BACKUP processing.)
```

Figure 15. BACKUP Input Screen

### Restoring from Diskettes

To install software or restore data that has been backed up onto multiple diskettes, use the BACKUP utility. Enter the range and the input volume, library, and file names (refer to Figure 15). Then specify a RESTORE operation and press ENTER.

When multiple diskettes were needed in a single backup operation using BACKUP, the subsequent restore operation using the RESTORE option of BACKUP prompts you to insert successive diskettes in order, and verifies their order.

### 3.4 CONTROLLING WORKSTATIONS

To reach the Control Workstations screen, press PF13 (WORKSTATIONS) on the Operator's Console screen. The Control Workstations screen provides information about all local workstations that are configured for the system and all remote workstations that are currently connected (see Figure 16). This information is listed in order by unit number (device address).

The unit number and device model number appear for all workstations; additional information appears in the following specific cases:

- Status appears for any unit that is not READY, or shows "Operator" for any workstation that is an operator's console
- Node name appears if the workstation is a remote workstation connected through Remote WangNet.
- User ID appears if the user is logged on
- User name appears if the user is logged on

```
*** Control Workstations ***
11:44 AM      Friday      September 10, 1982

Unit  Device      Node      User      Name      Status
---  -
0     2266C
2     2246C
3     2246C      XXX      Matt Brown      Disconnected
5     2256C      LOGON INHIBITED      Disconnected
6     2256C
7     2256C      MAS      Mark Schorr
8     2256C      Disconnected
9     2256C      SSN      Susan Newton      Disconnected

Position Cursor To Indicate Device and Select:
(6) Control Interactive Tasks
(8) Acquire
(3) Last      (5) Next      (9) Release      (13) Logon/Logoff Control
```

Figure 16. Control Workstations Screen



A status of "Disconnected" is indicated for local workstations that are physically disconnected (powered off or unplugged), and for those remote system workstations that have been disconnected by loss of the physical inter-system connection or by explicit operator or user request. The operator can request disconnection by moving the cursor to a workstation's display line and pressing PF13 (Logon/Logoff Control), then PF4 (DISCONNECT Workstation) on the resulting Control Logon/Logoff screen (see Figure 18).

For now, press HELP on the Control Workstations screen to return to the Operator's Console screen, then press PF6 (Interactive Tasks). You should see something like the following screen (Figure 17).

Notice that only workstations with logged-on users are shown. You may control (or disconnect) a single selected workstation by using the screen that results from pressing PF13; via an additional key (PF10) on that screen you may control all workstations.

```

*** Control Interactive Tasks (Status and Time) ***
      4:24 pm      Wednesday      August 25, 1982

WS  User      Status      Program      Executed/Current      Starting      Elapsed      CPU
Date / Time      Time      Time
-----
3  EFM              EFMINITL WP      8/26 10:10      6:14      0:05:43
7  RNL      Idle
9  DRL      Help Processor  WP      8/26 4:20      4:00      0:00:23

Position Cursor to Indicate Task and Press PFkey to Perform Action:
      (7) Paging & I/O      (11) Change Status
      (8) Program Status    (12) Cancel Program
      (6) Non-Interactive Tasks      (13) Logon/Logoff Control

```

Figure 17. Control Interactive Tasks Screen

For logon-logoff control from the screen shown in either Figure 16 or Figure 17, position the cursor to the number of the workstation that you want to control. Press PF13 and refer to Figure 18.

```
*** Control Logon/Logoff ***
4:24 pm Wednesday August 25, 1982

User RNL at Workstation 7 is currently IDLE.

Select:

For THIS Workstation ONLY

(4) DISCONNECT Workstation
(5) LOGOFF User at Program (or Procedure) COMPLETION
(6) LOGOFF User IMMEDIATELY

To Control ALL Workstations

(10) Control LOGON Service

Or Press (1) to Return to the Task Control Display
```

Figure 18. Control Logon/Logoff Screen for Workstations

PF10 (Control LOGON Service) gives the operator simultaneous control over all workstations logged onto your system. See Figure 19.

```
*** Control Logon/Logoff ***
4:24 pm Wednesday August 25, 1982

Select:

For ALL Workstations

(2) ALLOW Logons
(3) INHIBIT Logons (without affecting Users)
(4) INHIBIT Logons and DISCONNECT Workstation
(5) INHIBIT Logons and LOGOFF Users at Program (or Procedure) COMPLETION
(6) INHIBIT Logons and LOGOFF Users IMMEDIATELY

Or Press (1) to Return to the Task Control Display
```

Figure 19. Control Logon/Logoff Screen for All Workstations

### 3.5 CONTROLLING PRINTERS

To reach the Control Printers screen, press PF9 (PRINTERS) on the Operator's Console screen. The Control Printers screen provides information about all printers that are configured for the system. This information is listed in order by unit number (device address). Press HELP to return to the Operator's Console screen.

To inspect the Print queue, press PF2 on the Operator's Console screen.

APPENDIX A  
COLD-START PROCEDURES

The following procedure should be followed to bring a VS25 system on line using diskettes as the bootstrap medium. If your system is delivered with the system disk (i.e., the internal fixed disk, model Q2040) formatted and loaded, then the cold-start does not have to be performed. However, if you are unable to IPL your system from the fixed disk, you (or your Wang customer engineer) may have to cold-start, i.e., transfer essential parts of the operating system from bootstrap diskettes, as explained below. When this procedure has been performed, you can then bring in the rest of your operating system software by using the BACKUP utility. Use these instructions along with Figure 1 on page 5, which is a diagram of the VS25 system cabinet control panel.

1. Power up all workstations and printers, or at least the dual mode (user/operator) workstation. For convenience, this workstation should be located near the system cabinet.
2. Set the drive selector switch labeled "Bootstrap Media" to the top position. This setting selects the diskette as the bootstrap volume.

NOTE

COLDSTART consists of a core of programs that assume the system disk is empty. These programs overwrite the system disk. So COLDSTART should be used only if an IPL is not possible from a large disk device. If the cold-start sequence is interrupted for any reason, it must be restarted from the beginning.

3. Power up the CP, using the CP ON/OFF switch. Then press the red DC POWER button located next to the CP ON/OFF switch. Wait one minute for the internal fixed disk to get up to speed.
- 3A. Insert the first cold-start diskette into the diskette slot and close the diskette slot door. (The proper diskette should be labeled with the word "FORMAT".)

On the VS25 system cabinet (see Figure 1), the Power LED and the Not Ready LED are illuminated. The 4-LED panel should quickly count down through the diagnostic Test / Error Code numbers from FFFF through 0000 (in hexadecimal notation), then count up through a series of numbers (typically 10, 12, 14, 60, and 40), and finally turn blank.

The diskette LED should light as the diskette is accessed and the bootstrap program is read in. This process takes about ten to fifteen seconds. If the bootstrap medium cannot be read, an error code, typically "40BA", is displayed on the 4-LED panel. For a list of error codes, refer to Appendix E.

4. The IPL Device Selection screen is displayed (see Figure 2), and the cursor is positioned next to the diskette drive. Press ENTER.

The System Hardware Status screen is now displayed (see Figure 3). The screen displays the results of each test with the message sequence "Loading", "Running", and "Passed". When all components, including the workstation, have been tested and found operational, the message, "Diagnostics completed. Beginning system initialization" appears on the workstation screen. The system microcode is now loaded.

If the message "Non-Fatal Error" is displayed, make a note of the name of the failed test, and report it to your Wang field service representative at a later time. Press ENTER to continue.

#### 4A. Diagnostics options:

Under some circumstances, you may be advised by your Wang field service representative to insert the diagnostics diskette into the drive, re-IPL, and run PROM-based and RAM-based diagnostic tests of system hardware, including processors, memory, and device adapters. Pressing PF8 from the IPL Drive Selection screen runs the diagnostic tests contained on the optional diagnostics diskette. (Refer to Figure 2.)

Under other circumstances, you may be advised by Wang field service representative that remote diagnostic tests must be run from a Wang TAC center. Refer to Appendix G for the remote diagnostic procedures.

5. After about 1 minute, the COLDSTART Volume Initialization screen is displayed (see Figure 20).

```
*** VS 25 Coldstart - Version 05.02.05 ***

Fixed Disk Q2040

The following information is required for volume initialization

Volume Name           SYSTEM
Volume Owner          _____
Date (MM/DD/YY)      ___/___/___
VTOC Size (in blocks) 100

Please supply the required parameters and press ENTER
-or-
Press PF1 to continue without initializing the disk.
```

Figure 20. COLDSTART Volume Initialization Screen

The screen asks for the name, owner, date of creation, and size of VTOC of the volume to be configured as the system volume, and displays default values for these. You may change this information or take the default values. Pressing ENTER causes the entire disk to be formatted, a process currently taking about SEVENTY MINUTES. Pressing PF1 causes formatting to be bypassed and only the volume label to be rewritten, in about 30 seconds. Press one of these keys.

6. If you pressed PF1 in Step 5, you should see the message, "Writing volume label," which remains on the screen for about 15 seconds. This is followed by the message, "Formatting complete. Please insert first diskette to be copied." At this point, go to Step 7.

If instead you pressed ENTER in Step 5, the fixed disk is first formatted, and then a VTOC is written onto it. While the disk is being formatted, the message "Formatting Disk" remains on the workstation screen. After approximately .70 minutes, the message changes to "Writing volume label" while the VTOC is being written. This is followed by the message, "Formatting complete. Please insert the first diskette to be copied." Go to Step 7.

7. Remove the diskette labeled "FORMAT" and replace it with the one labeled "SYSTEM1". You do not have to press the ENTER key. The message "Copy in progress" appears on the workstation screen.
8. Copying continues until the following message appears on the workstation screen: "All files on this diskette have been copied. Please mount the next volume to be copied and press ENTER, or press PF16 to terminate." This message should appear in about 2 minutes. Replace the diskette labeled "SYSTEM1" with the diskette labeled "SYSTEM2", and press the ENTER key. The message "Copy in progress" appears on the workstation screen.
9. Repeat Step 8, using successively numbered diskettes, until the contents of all cold-start diskettes have been copied. [At the time of publication, this is diskette "SYSTEM3".] After removing the last cold-start diskette, press PF16.

NOTE

You must press PF16 after removing the last diskette in order to successfully start the system in Step 11.

The message, "Copy completed. IPL when ready", appears on the workstation screen.

10. Change the Bootstrap Media switch to the middle setting (see Figure 1). This specifies the newly formatted and loaded fixed disk as the system volume. From this point on, you perform a normal IPL from the system volume.
11. Press the Control mode button, which is the green button on the system cabinet control panel, i.e., the lower of two buttons immediately above the Bootstrap Media switch. Then press the Initialize button, i.e., the red button above the Control mode button.

The Power LED and the Not Ready LED should now be illuminated. The 4-LED panel should quickly count down through the diagnostic Test / Error Code numbers from FFFF through 0000 (in hexadecimal notation), then count up through a series of numbers (typically 10, 12, 14, 60, and 40), and finally turn blank.



12. The IPL Drive Selection screen is displayed (see Figure 2), and the cursor is now positioned next to the fixed system drive entry. Press ENTER. The system microcode is now loaded.

The System Hardware Status screen is now displayed (see Figure 3). When all components, including the workstation, have been tested and found operational, the message, "Diagnostics completed. Beginning system initialization", appears on the workstation screen.

13. In about 60 seconds, a message appears on the workstation screen asking for the name and library of the system configuration file to be used when bringing up the system, as shown in Figure 21. You may enter configuration file information now, or you may take the displayed default values simply by pressing ENTER. It is recommended that you take the defaults: press ENTER.

```
*** MESSAGE M001 BY SYSGEN
                INFORMATION REQUIRED

Specify the name of the system configuration file and press ENTER
                -or-
Press (1) to use one workstation and one disk.

                SYSFILE = @CONFIG@
                SYSLIB  = @SYSTEM@

Specify the communications configuration file to be used, if any

                COMMFIL = *****
                COMMLIB = @SYSTEM@
```

Figure 21. SYSGEN Configuration File Screen

14. The next screen asks for the current date and time. Enter the date and time in the YY/MM/DD HH/MM/SS format indicated.

Now the system is up and running in accordance with the configuration file specified. The workstation displays the Operator's Console screen. Use the user ID "CSG" to log on, then run the SECURITY program to enable other users.

You can now install the remainder of your operating system software by using the RESTORE function of the BACKUP utility.

APPENDIX B  
CONTROL MODE DUMP PROCEDURE

A Control mode dump is performed by using the Control mode dump program. This program allows the entire contents of main memory to be copied to diskettes. The dump should be performed only by an authorized DP staff person or by Wang field service personnel. The Control mode dump procedure for the VS25 is similar to that for the VS100.

All workstation operations required during this procedure must be performed at workstation 0. When entering alphanumeric characters, begin entering at the current cursor position; do not reposition the cursor. Be sure to enter 0s where indicated. The character "\*" represents the current value of a position and must not be changed while performing the dump. For any instruction of the form, 'Enter the characters "0000\*\*\*\* 0000"', you must enter the 0s and skip over the characters represented by "\*\*\*\*" by using the space bar.

Before beginning to take a VS25 Control mode dump, you should have a listing of your system configuration and a blank non-labeled (NL) diskette. Any data already written on the diskette is overwritten by the dump program.

The procedure for performing a Control mode dump on a VS25 or a VS45 is as follows.

1. If the system is not already in Control mode, press the green Control mode button on the front panel of the CP cabinet.
2. Record the displayed line. The line is made up of the current PCW and possibly a message.
3. Enter the characters "V 000070" and press ENTER to find the address of the master control block (MCB) and the dump program. The display shows "V 000070 AAAA\*\*\*\* \*\*\*\*\*". "AAAA" is the address of the MCB.
4. Enter the characters "V 00AAAA" and press ENTER. "AAAA" is the value displayed in Step 3. The display will then show "V 00AAAA \*\*\*\*\* \*\*\*\*ZZZZ", where "ZZZZ" is the address of the dump program.
5. Enter "W" and press ENTER to display the current PCW. Enter the characters "M 0000ZZZZ 00000000" and press ENTER. "ZZZZ" is the address of the dump program from Step 4.

6. Subtract 02 (in hexadecimal notation) from the "ZZZZ" of Step 5 to get YYYY. Enter the characters "V 00YYYY" and press ENTER. The dump device address, "QQQQ\*\*\*\* \*\*\*\*\*", is displayed. This device address should be modified to "2000\*\*\*\* \*\*\*\*\*", the physical device address of the diskette drive.
7. Enter the character "X" and press ENTER to exit from Control mode and begin execution of the dump program.
8. The program reenters Control mode to request that the diskette dump volume be mounted. "W \*\*\*\*\*4001\*\*\*\*" is displayed. Enter the characters "M \*\*\*\*\* 0\*\*\*\*\*" and press ENTER. Then enter the character "X" and press ENTER. This action clears the Control mode bit and the message code and starts the dump. Physically mount the diskette. A Control mode dump always fits on a single diskette. Execution of the dump program begins when the program detects that the diskette is ready.
9. The dump program continues writing for a short time. It may re-enter Control mode for either of two reasons:
  - a. The dump is complete. This is indicated by the display "W \*\*\*\*\* C000C000". Dismount the diskette volume and proceed to Step 10.
  - b. An I/O error has occurred. This is indicated by the display "W 00000004 C000\*\*\*\*". The dump cannot continue, but a partial dump has been completed. Dismount the diskette volume and proceed to Step 10.
10. Re-IPL the system. Verify all disk (not diskette) VTOCs by running the LISTVTOC utility (see the VS Utilities Reference). Print the I/O error log and mail it to Wang Quality Assurance along with the dump diskette, the recorded line from Step 2, and a Software Problem Report form (800-5104) describing the circumstances of the problem. The mailing address is as follows:

WANG Quality Assurance  
MS 1369  
WANG LABORATORIES, INC.  
One Industrial Avenue  
Lowell, MA 01851

If the condition in Step 9b occurred, also include a note advising that the dump is partial.

APPENDIX C  
GENEDIT PROCEDURE

C.1 INTRODUCTION

The program GENEDIT is used to edit an existing configuration file or create a new file. GENEDIT is run on line (i.e., any time after the system is IPLed) and can be run while other users are logged onto the system. If you are entering GENEDIT through the GENERATE procedure, GENERATE links you to GENEDIT at the appropriate point.

C.2 RUNNING GENEDIT

To run GENEDIT, press PF1 (Run Program or Procedure) from the Command Processor screen (user main menu). Enter "GENEDIT" in the field provided for program name and press ENTER. The GENEDIT Configuration File screen (refer to Figure 22) then allows you to edit an existing configuration file or create a new one. To edit an existing file, enter the file, library, and volume names on the indicated lines. To create a new file, leave the lines blank. Before pressing ENTER, enter "5" in the space next to "CP=" to indicate that you are configuring a VS25 or VS45. (To exit GENEDIT without editing or creating a file, press PF16.)

```
*** WANG VS GENEDITOR ***
Please (ENTER) The Config File to be Edited

FILE      = *****
LIBRARY   = *****
VOLUME    = *****

CP = 5    =3 for VS-80, VS-60, and VS-50
              =4 for VS-90 and VS-100
              =5 for VS-25 and VS-45

Press (ENTER) with a BLANK Filename to
Create a New Config File

Press (PFK 16) to EXIT
```

Figure 22. GENEDIT Configuration File Screen

### C.3 SPECIFYING THE GENERAL CONFIGURATION

After you press ENTER from the GENEDIT Configuration File screen, the GENEDIT General Configuration screen (refer to Figure 23) allows you to specify the number of peripheral devices and non-interactive tasks (background jobs) in the configuration file. Enter the number of workstations, printers, disk and tape drives, TC lines, and non-interactive tasks, and press ENTER. In Figure 23, the user has configured a system that consists of 10 workstations, 2 printers, 2 disk drives, and 2 non-interactive tasks.

Note that the VS25 supports a maximum of 16 serial devices. If this value is exceeded, you cannot proceed until the value is reduced to the maximum allowable number. The minimum configuration allowed for the VS25 is 1 workstation, 1 diskette drive, and 1 fixed disk drive.

```
*** WANG VS GENEDITOR ***
Please select your general configuration:

010 WORKSTATIONS
02  PRINTERS
02  DISKS
00  TAPES
00  TC LINES

02  NON-INTERACTIVE TASKS

00  REMOTE WANGNET LINES
00  LOCAL WANGNET LINES

Press (ENTER) to continue

(30) System menu
```

Figure 23. GENEDIT General Configuration Screen

You can set a variety of system parameters by pressing PF30 (System menu) on the GENEDIT General Configuration screen. The GENEDIT System Modifiable Parameters screen (refer to Figure 24) then displays a list of system parameters and default values for those parameters. To modify parameter values, press PF1, enter new values in appropriate fields, and finally press ENTER to confirm these modifications. Be sure to enter "Y" next to WP and/or MAILWAY if your system supports them.

```

*** WANG VS GENEDITOR ***
Wang VS System Modifiable Parameters:
  Open Files per task           25
  Link levels per task          16
  PCEXITS per task              08
  Number of Sharer buffers      10
  Clock rate (50/60 Hertz)      60
  Devices per TC IOP (VS/100)   16
  Fix Sharer buffers ?          N
  Fix Sharer control blocks ?   Y
  Devices per serial IOP (VS/100) 16
  System name                    _____
  WP supported?                  N
  Mailway supported?             N
  Seg2 default size (K bytes)    256
  System WANGNET ID              WANGVS

PRESS (ENTER) TO RETURN
      (1) CHANGE

```

Figure 24. GENEDIT System Modifiable Parameters Screen

After modifying the system parameters, press ENTER again to return to the GENEDIT General Configuration screen. If you then press ENTER again, the GENEDIT Non-Interactive Task Segment 2 Sizes screen (refer to Figure 25) allows you to set the segment 2 size for non-interactive tasks (background jobs). In Figure 25, two segment 2 sizes are displayed because the user has specified two non-interactive tasks on the preceding GENEDIT General Configuration screen.

```

*** WANG VS GENEDITOR ***
Non-interactive task segment 2 stack sizes (K)

*512
*512

Press (ENTER) to continue

```

Figure 25. Non-Interactive Task Segment 2 Sizes Screen

The default value is 512K, but you can set the Segment 2 size to a any value between 64K and 1024K in increments of 4K. To modify any of the default values, type in the new values in the appropriate fields and press ENTER.

#### C.4 DEVICE SELECTION

After you have specified the general configuration and the segment 2 size for the non-interactive tasks, GENEDIT displays a sequence of screens that list the dependent devices for each device controller. The four device controllers for the VS25 are the serial device controller #2, the small disk IOP #0, the fixed disk controller #1, and the disk controller #5. Figure 26 shows the Serial Device Controller #2 screen for the configuration specified in Figure 23. Screens for the other device controllers have a similar format and provide you with the same options.

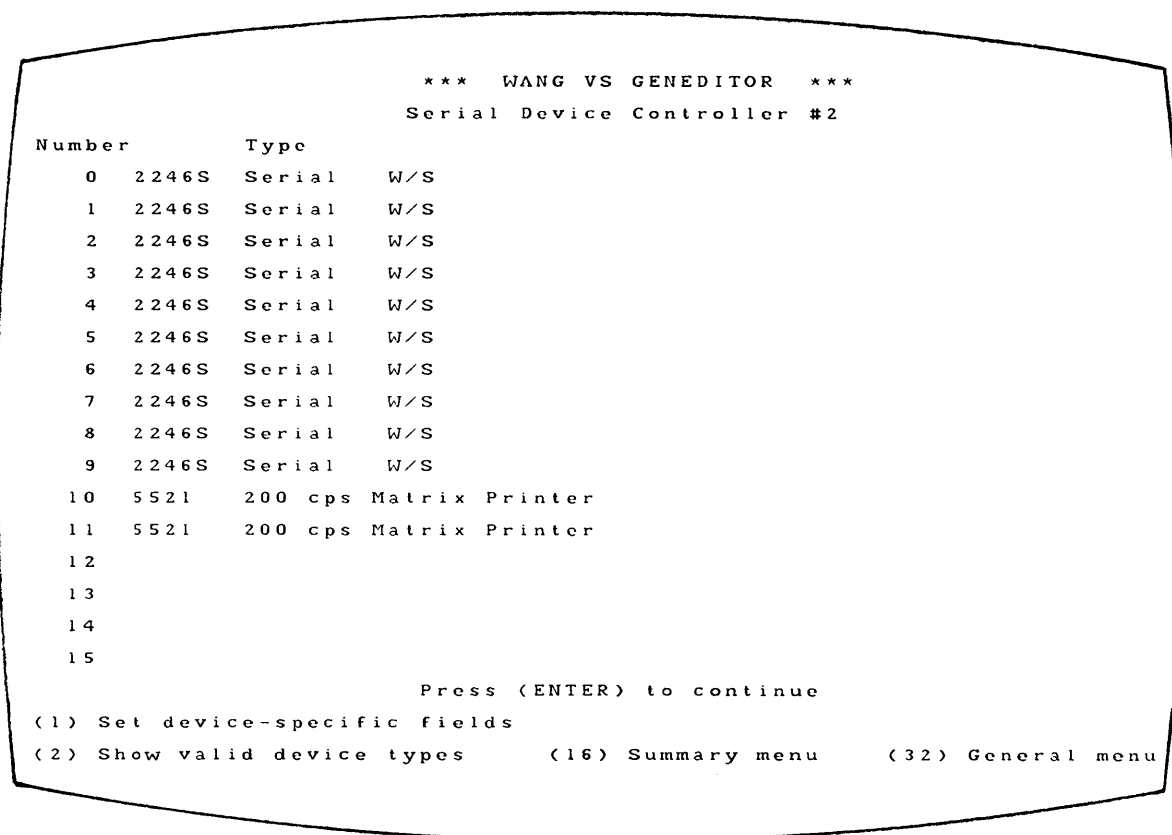


Figure 26. GENEDIT Serial Device Controller #2 Screen

Each device controller screen displays default values for the devices supported by that device controller. To modify the supported devices, enter different model numbers in the appropriate fields. If you enter the model number of a device not supported by the device controller, GENEDIT displays an error message. The functions available from the device controller screens are summarized below.

<u>PF Key</u>	<u>Function</u>	<u>Description</u>
ENTER	Continue	Continues to the next device controller screen in the sequence, or to the GENEDIT General Configuration screen if all the device controller screens have been displayed.
1	Set Device-Specific Fields	Allows the user to set the device-specific fields for printers.
2	Show Valid Device Types	Displays the valid device types for a device controller. For a list of all devices supported by device controllers on the VS25, refer to Table 2.
16	Summary Menu	Leaves the device controller screen sequence and displays the GENEDIT General Configuration screen.
32	General Menu	Returns to the GENEDIT General Configuration screen, from which you can modify the configuration. By pressing PF32, you begin the entire configuration process again.

#### C.4.1 Setting the Device-Specific Fields

To set the device-specific fields for printers, press PF1 from the GENEDIT Device Controller screen. The GENEDIT Set Device-Specific Fields screen (refer to Figure 27) then allows you to indicate whether a printer is to be used for word processing (WP). If a printer is to be used for word processing, you must type "Y" in the appropriate field; the default value is "N." An additional non-interactive system task is generated for each printer designated as a word processing printer. To return to the GENEDIT Device Controller screen, press ENTER.

There are no modifiable device-specific fields for workstations, disk drives, tape drives, or telecommunications devices.



```

*** WANG VS GENEDITOR ***
Serial Device Controller #2
Number      Word Processing (Y or N)
0  2246S
1  2246S
2  2246S
3  2246S
4  2246S
5  2246S
6  2246S
7  2246S
8  2246S
9  2246S
10 5521      Y
11 5521      Y
12
13
14
15

Press (ENTER) to continue

```

Figure 27. GENEDIT Set Device-Specific Fields Screen

C.4.2 Devices Supported by the VS25

Table 2 lists all devices supported by device controllers on the VS25. If you press PF2 from the Device Controller screen, you can obtain a list of all devices supported by that device controller.

Table 2. Devices Supported by the VS25 and VS45

<u>Device Controller</u>	<u>Devices Supported</u>
Serial Device Controller #2	2246S Serial Workstation 2246S Serial Workstation 2246C Combined Workstation 2246K Katakana Workstation 2266C Archiver C Workstation 2266S Archiver S Workstation 2246SI Ideographic S Workstation 2246CIJ Ideographic J C Workstation 2256C Combined Workstation (64K) 2276C Archiver C Workstation (64K) 22460 Okidata Workstation 2246S1 029 Standard Keypad Workstation 2246S2 Reversed Numeric Kypd. Workstation

Table 2. Devices Supported by the VS25 and VS45 (continued)

<u>Device Controller</u>	<u>Devices Supported</u>
Serial Device Controller #2	5571 430-lpm Train Printer 6581WC 40-cps Wide Daisy Printer 5573 250-lpm Band Printer 5574 600-lpm Band Printer 5521K 200-cps Katakana Printer (Matrix) 55312K 120-cps Katakana Printer (Matrix) 5548Z Typesetter 5521I 200cps Ideographic Printer (Matrix) 5581WD Dual-Head Daisy Printer 5521IK 200-cps Ideog. Kypd. Prtr. (Matrix) 5535 180-cps Matrix Printer OK555 OKIDATA Matrix Printer for 22460 2246S3 029 Rvse. Numeric Keypad Workstn. 2246SDB Autodial Workstation 2270V1 Hard-Sector Diskette 2270V2 Soft-Sector Diskette 2270V3 Hard-/Soft-Sector Diskette 5521 200-cps Matrix Printer 55312 120-cps Matrix Printer 5577 High-Density Printer LPS12 Laser Printer 5570 600-lpm Train Printer DWOS20 20-cps Daisy Printer 6581W 40-cps Daisy Printer 5575 Hi-Speed Band Printer BIZDIAL BIZCOMP Autodial Modem 5533 100-cps Matrix Printer CIU Device TCB1 Device
Small Disk IOP #0	2270V4 Diskette
Fixed Controller #1	Q2040 8-inch Fixed Disk
Disk Controller #5 (for VS45 only)	2265V1 75M-byte Removable Disk 2265V2 288M-byte Removable Disk 2280V1 30M-byte Fixed/Removable Disk 2280V1 60M-byte Fixed/Removable Disk 2280V3 90M-byte Fixed/Removable Disk

C.5 CREATING OR REPLACING A CONFIGURATION FILE

After you have entered the information about the device controllers and the devices dependent upon them, the GENEDIT program returns to the GENEDIT General Configuration screen. Note that you cannot modify configuration information at this point; to do so, you must begin the configuration process again by pressing PF32.

If you press ENTER from the GENEDIT General Configuration screen, the GENEDIT Replace/Create Configuration File screen (refer to Figure 28) allows you to replace the old configuration file with your edited version by pressing ENTER. If instead you are creating an entirely new file, enter the file, library, and volume names on the indicated lines, and press ENTER. GENEDIT then displays the message, "File Creation in Progress".

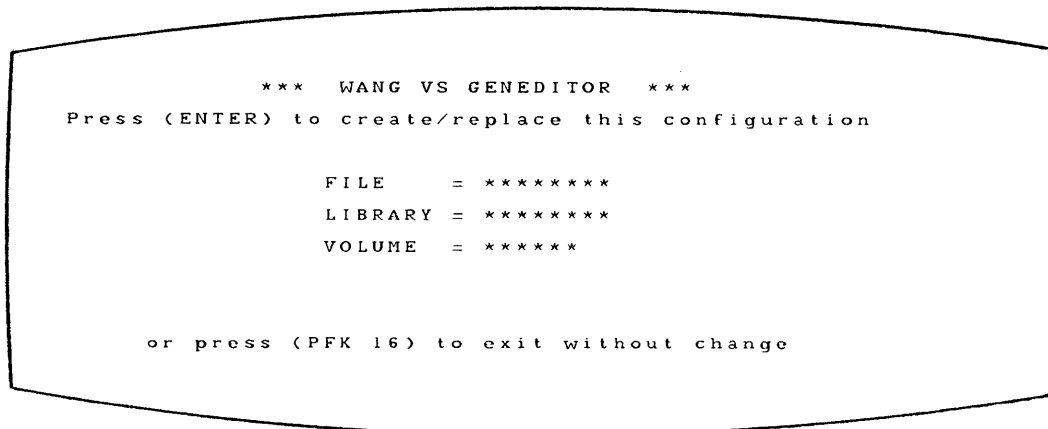


Figure 28. GENEDIT Replace/Create Configuration File Screen

When the file is successfully created or replaced, GENEDIT returns you to the GENEDIT Configuration File screen. To return to this screen without creating or replacing a file, press PF16. You then have the options to create additional configuration files, edit other files, or return to the Command Processor screen by pressing PF16. For further information, refer to Section C.2.

APPENDIX D  
VS25 AND VS45 SPECIFICATIONS SUMMARIES

The following pages summarize the VS25 and VS45 architecture and other specifications.

### VS25 and VS45 Architecture Summary

Virtual Program Address Space (including program file)	1M bytes per user
Virtual Data Address Space (including system overhead)	1M bytes per user
Microinstruction Time, avg.	500 nsec
Microinstruction Size	39 bits
Memory Cycle Time, avg.	400 nsec
Memory Bus Width	16 bits
Arithmetic Logic Unit (ALU) Width	16 bits
Decimal ALU Width	8 bits
Real Time Clock Width	64 bits
Real Time Clock Frequency	120 Hz*
32-bit General Registers	16
64-bit Floating-Point Registers	4
32-bit Control Registers	16
32-bit Segment Control Registers	8

\*International: 100 Hz

VS25 and VS45 Model Summary

	<u>VS25</u>	<u>VS45</u>
Memory Range	256K-512K bytes	256K-1M bytes
System Diskette	yes	yes
Workstations	1-10	1-20
Other Serial Devices	1-6	1-12
Fixed Disk Storage	34M-68M bytes	34M-68M bytes
Removable Disk Drives	none	up to 4
Removable Disk Capacity	not applicable	30M to 640M bytes
Remote Diagnostics	yes	yes
Data Communication Option	yes	yes

DISK SPECIFICATIONS

	<u>DSDD Diskette</u>	<u>8-Inch Fixed Disk</u>
Cylinders	77	512
Tracks/Cylinder	2	8
Blocks/Track	4	4
Capacity/Block	2048 bytes	2048 bytes
Total Formatted Capacity	1.2M bytes	33.55M bytes
Average Access Time	91 msec	65 msec
Average Latency Time	83 msec	10 msec
Speed	360 rpm	3000 rpm
Transfer Rate	500K bits/sec	4.34M bits/sec



APPENDIX E  
SITE PLANNING SPECIFICATION SUMMARY

The following specifications are to assist you in planning a site for your VS25 computer system.

Physical Dimensions

Height (including casters)	36.0 in. (91.4 cm)
Width	27.0 in. (68.6 cm)
Depth	26.5 in. (67.3 cm)
Weight	250 lbs.

Temperature Range

Operating Environment	60 to 90° F (16 to 32° C)
Storage Environment	0 to 125° F (-17 to 51° C)
Transit Environment	40 to 140° F (4 to 60° C)
Maximum Rate of Change	12° F/hr (6° C/hr)

Humidity Range

Operating Environment	20% to 80% non-condensing (Maximum wet bulb temperature: 75° F (25° C))
Storage Environment	10% to 90%
Transit Environment	15% to 90%

Altitude Range

0 to 10,000 ft (0 to 3000 m)

Power Requirements

8 amps @ 105 to 127 v (50 or 60 Hz)

Power Connections

6-ft cable and grounded 3-prong plug (14/3 AWG type SJT)

Heat Dissipation

850 W (2500 BTU/hr)

CAUTION

Never move your VS25 system cabinet without using the plastic clip and metal screw to lock down the fixed disk. (Refer to hardware installation procedures.)





APPENDIX F  
VS25 DIAGNOSTIC ERROR CODES

Your VS25 computer is designed for ease of use in a wide variety of applications. Diagnostic error codes are part of the design; they inform you when to take corrective action, and what information to relay to Wang Field Service.

If an error message occurs, copy down the numbers displayed on the 4-LED panel (Refer to Figure 1); this information allows the Wang customer engineer to take the appropriate corrective action.

A listing of all diagnostic tests and error codes follows. A few of these error codes tell you how to avoid subsequent occurrences of the error. Some messages, such as the self-test monitor messages numbered from 4200 through 44FF (in hexadecimal notation), may provide useful information to the system administrator. All messages should be recorded and forwarded to your Wang customer engineer.

## VS25 Diagnostic Error Code Summary

This page is indexed by the upper two hexadecimal digits which are displayed on the VS25 Front Panel.

<u>When the top 2-digit LED reads:</u>	<u>Record the following information for Wang Field Service:</u>
00	Bus Processor (PROM)
10	Bus Processor
20	Bus Processor
30	Bus Processor
40	Diagnostic Monitor
41	Boot Sequencer
42	First Boot File
43	Self Test
44	System Loader
45 to 48	Diagnostic Monitor File
49 to 4A	unused
4B	CPU Control Memory
4C	CPU Self-Test
4D	CPU Random Test
4E	CPU Main Memory
4F	BP DMA and MARS
50	Fixed Disk DA
60	Fixed Disk DA
70	Serial I/O DA
80	Floppy Disk Controller
90	Device Error
90	Workstation 0
92 to 94	unused
95	Fixed Disk Device
96 to 97	unused
98	Floppy Disk Device
99 to 9A	unused
9B	SMD Disk Device
9C to 9F	unused
A0	Motherboard Signal
A0 to A3	Un-Isolated
A4 to A7	SIO Signal
A8 to AB	Fixed Disk Signal
AC to AF	SMD Disk Signal
B0	SMD Disk DA
C0	Invalid Error Code
D0	Invalid Error Code
E0	BP Operational Code
F0	BP Operational Code

The full list of 4-digit test/error code (EC) numbers follows.  
 An "X", as in "41X9", stands for any hexadecimal digit.

<u>TEST / EC #</u>	<u>Test Title / Error Code Description</u>
01	PROM POWER ON
0100	BP code hung on jump to routine start
0102	BP code hung when wait state generater set
02	PROM CHECKSUM
0201	BP PROM Checksum error
04	I/O Communication Check
0401	BP cannot access I/O address 4 (DMAR)
06	INTERRUPT CONTROLLER
0600	BP routine halted, unknown cause
0601	BP 8259 mask not readable on master SI = Mask pattern
0602	BP 8259 mask not readable on slave 4 SI = Mask pattern
0603	BP 8259 mask not readable on slave 3 SI = Mask pattern
0604	BP 8259 mask not readable on slave 2 SI = Mask pattern
0605	BP 8259 mask not readable on slave 1 SI = Mask pattern
08	PROGRAMMABLE INTERVAL TIMER
0800	BP Routine halted, unknown cause
0801	BP Data miscompare on PIT count read SI=Exp, DI=Rcvd
0802	BP PIT count incorrect
0803	No BP PIT interrupt request
0A	RAM COMMUNICATION CHECK
0A01	BP parity error cannot be cleared
0A02	BP RAM address 0 can't be accessed
0A03	BP RAM low-byte parity error can't be forced
0A04	BP Ram high-byte parity error can't be forced
0A05	BP DATA RAM not available BX = DRAM status
0C	RAM and PARITY RAM DATA LINE TEST
0C00	BP Routine halted, unknown cause
0C01	BP RAM Data miscompare
0C02	Unexpected BP PE, Address = DS:BX Main ram data = SI
0C03	BP RAM Data miscompare
0C04	Forced BP PE not detected

<u>TEST / EC #</u>	<u>Test Title / Error Code Description</u>
0E	RAM ADDRESS LINES TEST
0E00	BP Routine halted, unknown cause
0E01	BP RAM Data miscompare
0E02	Unexpected BP parity error Address = DS:BX      Main RAM data = SI
0E03	BP RAM chip addressing error Address overwritten = DS:DI    Last address written = DS:BX
0E04	BP parity RAM chip addressing error Address overwritten = DS:DI    Last address written = DS:BX
0E05	BP RAM bank addressing error Address overwritten = ES:BX    Last address written = DS:BX
0E06	BP parity RAM bank addressing error Address overwritten = ES:BX    Last address written = DS:BX
10	RAM INTEGRITY TEST, WORD OPERATIONS
1000	BP routine halted, unknown cause
1001	BP RAM data miscompare, pattern B6DB Address = DS:BX      Received = [DS:BX]
1002	Unexpected BP PE, pattern B6DB      Address = DS:BX
1003	BP RAM data miscompare, pattern 6DB6 Address = DS:BX      Received = [DS:BX]
1004	Forced BP PE low byte not detected Address = DS:BX
1005	BP RAM data miscompare, pattern 6DB6, 2nd read Address = DS:BX      Received = [DS:BX]
12	RAM INTEGRITY TEST, BYTE OPERATIONS
1201	BP RAM data miscompare, pattern 6C low byte Address = DS:DI      Received = [DS:DI]
1202	Unexpected BP PE, pattern 6C, low byte Address = DS:DI
1203	BP RAM data miscompare, pattern DB, high byte Address = DS:DI      Received = [DS:DI]
1204	Forced BP PE not detected, pattern 3 high byte Address = DS:DI
1205	BP RAM data miscompare, pattern 3 low byte overwritten Address = DS:DI
1206	BPRAM data miscompare, pattern 3 high byte overwritten Address = DS:DI
14	RAM BLOCK MOVE OPERATIONS and NOISE SENSITIVITY TEST
1401	BP RAM data miscompare, word string move Address = ES:DI
1402	BP RAM data miscompare, byte string move Address = ES:DI
1403	BP RAM data miscompare, '0' in bank of '1's, low address Address = DS:BX      Expected = SI      Received = [DS:BX]
1404	BP RAM data miscompare, '0' in bank of '1's, high address Address = DS:BX      Expected = SI      Received = [DS:BX]

<u>TEST / EC #</u>	<u>Test Title / Error Code Description</u>
20	PARITY ERROR INTERRUPT TEST
2000	BP routine halted, unknown cause
2001	BP CODE RAM PE interrupt not detected
2002	BP DATA RAM PE interrupt not detected
22	WAIT STATE GENERATOR TEST
2200	BP routine halted, unknown cause
2201	BP CODE RAM wait states cannot be changed
2202	BP PROM, I/O wait states cannot be changed
24	Wait State Generator
2401	Changing BP CODE RAM wait states did not change CODE RAM access time.
2402	Changing BP PROM wait states did not change PROM access time
3C	MODEM LOOPBACK SELF TEST
3C01	8251, 8251 input line
3C02	8251, C/D or data line, clock, modem
3C03	I/O decode logic, inverter
3C04	8251, modem
3C05	8251
3C06	8251, buffer or modem
3C07	8251, buffer, modem
3C08	8251, buffer, modem
3C09	8251, buffer, modem
3C0A	8251, modem
3C0B	8251
3C0C	8251, modem
3C0D	8251
3C2C	Local/Remote switch or buffer
38	FLOPPY POWER-UP TEST
3801	DMA Status Reg not cleared after Master Clear
3802	Floppy DMA error on write/read of pattern 00000
3803	Floppy DMA error on write/read of pattern 0AAAA
3804	Floppy DMA error on write/read of pattern 05555
3805	Floppy DMA error on write/read of pattern 0FFFF
3806	Floppy Word Count Register error of pattern 00000
3807	Floppy Word Count Register error of pattern 0AAAA
3808	Floppy Word Count Register error of pattern 05555
3809	Floppy Word Count Register error of pattern 0FFFF
380A	FDC not ready for commands after reset
380B	FDC error on sense drive status command
380C	FDC error on recalibrate command
380D	Not at track 0 after recalibrate command
9820	Floppy drive not ready
9821	Error on seek to track 77
9822	Drive will not recalibrate

<u>TEST / EC #</u>	<u>Test Title / Error Code Description</u>
3E	Unexpected interrupt handler
3EXX	Unexpected BP interrupt. XX = interrupt type serviced.
3EFF	Unexpected BP interrupt. The interrupt type is unknown.
40	Load Bootstrap file
4000	Hung during bootstrap operation
4011	SMD Media error
4012	Disk controller error (SMD)
4014	Drive not ready (SMD)
4018	Program error / media error (SMD)
401C	Bad file load / checksum error (SMD)
4021	Media error (FLOPPY)
4022	Disk controller error (FLOPPY)
4024	Drive not ready (FLOPPY)
4028	Program error / media error (FLOPPY)
402C	Bad file load / checksum error (FLOPPY)
4031	Media error (QTM)
4032	Disk controller error (QTM)
4034	Drive not ready (QTM)
4038	Program error / media error (QTM)
403C	Bad file load / checksum error (QTM)
4090	Bad volume label read (SMD)
4091	SMD Media error
4092	Disk controller error (SMD)
4094	Drive not ready (SMD)
4098	Program error / media error (SMD)
409A	Non-bootstrap volume (SMD)
409C	Bad file load / checksum error (SMD)
40A0	Bad volume label read (FLOPPY)
40A1	Media error (FLOPPY)
40A2	Disk controller error (FLOPPY)
40A4	Drive not ready (FLOPPY)
40A8	Program error / media error (FLOPPY)
40AA	Non-bootstrap volume (FLOPPY)
40AC	Bad file load / checksum error (FLOPPY)
40B0	Bad volume label read (QTM)
40B1	Media error (QTM)
40B2	Disk controller error (QTM)
40B4	Drive not ready (QTM)
40B8	Program error / media error (QTM)
40BA	Non bootstrap volume (QTM)
40BC	Bad file load / checksum error (QTM)

<u>TEST / EC #</u>	<u>Test Title / Error Code Description</u>
41	BOOT STRAP LOADER
4110	Unlabeled Volume (VOL1 Missing) Volume Label
4111	Media error Volume Label
4112	Controller H/W error Volume Label
4114	Drive Not Ready Volume Label
4116	Program error (Divide) Volume Label
4118	Program error (Bad Data) Volume Label
4119	Media error Bit Map
411A	Controller H/W error Bit Map
411C	Drive Not Ready Bit Map
411E	Program error (Divide) Bit Map
4120	Program error (Bad Data) Bit Map
4121	Media error VTOC
4122	Controller H/W error VTOC
4124	Drive Not Ready VTOC
4126	Program error (Divide) VTOC
4128	Program error (Bad Data) VTOC
412A	FDX1 ID Does Not Match VTOC
412B	FDX2 ID Does Not Match VTOC
412C	FDR1 ID Does Not Match VTOC
4131	Media error Self Test Mon
4132	Controller H/W error Self Test Mon
4133	Checksum Does Not Match Self Test Mon
4134	Drive Not Ready Self Test Mon
4136	Program error (Divide) Self Test Mon
4138	Program error (Bad Data) Self Test Mon
413A	Library not found Self Test Mon
413B	File not found Self Test Mon
413C	FDR1 not found Self Test Mon
413E	Extents greater than 3 Self Test Mon
4141	Media error Diagnostic Monitor
4142	Controller H/W error Diagnostic Monitor
4143	Checksum Does Not Match Diagnostic Monitor
4144	Drive Not Ready Diagnostic Monitor
4146	Program error (Divide) Diagnostic Monitor
4148	Program error (Bad Data) Diagnostic Monitor
414A	Library not found Diagnostic Monitor
414B	File not found Diagnostic Monitor
414C	FDR1 not found Diagnostic Monitor
414E	Extents greater than 3 Diagnostic Monitor
4151	Media error System Loader
4152	Controller H/W error System Loader
4153	Checksum Does Not Match System Loader
4154	Drive Not Ready System Loader
4156	Program error (Divide) System Loader
4158	Program error (Bad Data) System Loader
415A	Library not found System Loader
415B	File not found System Loader
415C	FDR1 not found System Loader
415E	Extents greater than 3 System Loader
41E0	Floppy Status error
41F0	Invalid H/W Configuration
41FD	Bus Processor Code Ram Parity Error
41FE	Bus Processor Data Ram Parity Error
41FF	Unknown Interrupt on the Bus Processor



<u>TEST / EC #</u>	<u>Test Title / Error Code Description</u>
42	SELF TEST MONITOR
4210	Unlabeled Volume (VOL1 Missing) Volume Label
4211	Media error Volume Label
4212	Controller H/W error Volume Label
4214	Drive Not Ready Volume Label
4216	Program error (Divide) Volume Label
4218	Program error (Bad Data) Volume Label
4219	Media error Bit Map
421A	Controller H/W error Bit Map
421C	Drive Not Ready Bit Map
421E	Program error (Divide) Bit Map
4220	Program error (Bad Data) Bit Map
4221	Media error VTOC
4222	Controller H/W error VTOC
4224	Drive Not Ready VTOC
4226	Program error (Divide) VTOC
4228	Program error (Bad Data) VTOC
422A	FDX1 ID Does Not Match VTOC
422B	FDX2 ID Does Not Match VTOC
422C	FDR1 ID Does Not Match VTOC
4231	Media error W. S. File
4232	Controller H/W error W. S. File
4233	Checksum Does Not Match W. S. File
4234	Drive Not Ready W. S. File
4236	Program error (Divide) W. S. File
4238	Program error (Bad Data) W. S. File
423A	Library not found W. S. File
423B	File not found W. S. File
423C	FDR1 not found W. S. File
423E	Extents greater than 3 W. S. File
4241	Media error @ST0500@ in @DIAGST@
4242	Controller H/W error @ST0500@ in @DIAGST@
4243	Checksum Does Not Match @ST0500@ in @DIAGST@
4244	Drive Not Ready @ST0500@ in @DIAGST@
4246	Program error (Divide) @ST0500@ in @DIAGST@
4248	Program error (Bad Data) @ST0500@ in @DIAGST@
424A	Library not found @ST0500@ in @DIAGST@
424B	File not found @ST0500@ in @DIAGST@
424C	FDR1 not found @ST0500@ in @DIAGST@
424E	Extents greater than 3 @ST0500@ in @DIAGST@
4251	Media error @BT0500@ in @DIAGST@
4252	Controller H/W error @BT0500@ in @DIAGST@
4253	Checksum Does Not Match @BT0500@ in @DIAGST@
4254	Drive Not Ready @BT0500@ in @DIAGST@
4256	Program error (Divide) @BT0500@ in @DIAGST@
4258	Program error (Bad Data) @BT0500@ in @DIAGST@
425A	Library not found @BT0500@ in @DIAGST@
425B	File not found @BT0500@ in @DIAGST@
425C	FDR1 not found @BT0500@ in @DIAGST@
425E	Extents greater than 3 @BT0500@ in @DIAGST@

<u>TEST / EC #</u>	<u>Test Title / Error Code Description</u>	
42	SELF TEST MONITOR	
4261	Media error	@CT0500@ in @DIAGST@
4262	Controller H/W error	@CT0500@ in @DIAGST@
4263	Checksum Does Not Match	@CT0500@ in @DIAGST@
4264	Drive Not Ready	@CT0500@ in @DIAGST@
4266	Program error (Divide)	@CT0500@ in @DIAGST@
4268	Program error (Bad Data)	@CT0500@ in @DIAGST@
426A	Library not found	@CT0500@ in @DIAGST@
426B	File not found	@CT0500@ in @DIAGST@
426C	FDR1 not found	@CT0500@ in @DIAGST@
426E	Extents greater than 3	@CT0500@ in @DIAGST@
4271	Media error	@CT0800@ in @DIAGST@
4272	Controller H/W error	@CT0800@ in @DIAGST@
4273	Checksum Does Not Match	@CT0800@ in @DIAGST@
4274	Drive Not Ready	@CT0800@ in @DIAGST@
4276	Program error (Divide)	@CT0800@ in @DIAGST@
4278	Program error (Bad Data)	@CT0800@ in @DIAGST@
427A	Library not found	@CT0800@ in @DIAGST@
427B	File not found	@CT0800@ in @DIAGST@
427C	FDR1 not found	@CT0800@ in @DIAGST@
427E	Extents greater than 3	@CT0800@ in @DIAGST@
4281	Media error	@CT0B00@ in @DIAGST@
4282	Controller H/W error	@CT0B00@ in @DIAGST@
4283	Checksum Does Not Match	@CT0B00@ in @DIAGST@
4284	Drive Not Ready	@CT0B00@ in @DIAGST@
4286	Program error (Divide)	@CT0B00@ in @DIAGST@
4288	Program error (Bad Data)	@CT0B00@ in @DIAGST@
428A	Library not found	@CT0B00@ in @DIAGST@
428B	File not found	@CT0B00@ in @DIAGST@
428C	FDR1 not found	@CT0B00@ in @DIAGST@
428E	Extents greater than 3	@CT0B00@ in @DIAGST@
4291	Media error	@MT0500@ in @DIAGST@
4292	Controller H/W error	@MT0500@ in @DIAGST@
4293	Checksum Does Not Match	@MT0500@ in @DIAGST@
4294	Drive Not Ready	@MT0500@ in @DIAGST@
4296	Program error (Divide)	@MT0500@ in @DIAGST@
4298	Program error (Bad Data)	@MT0500@ in @DIAGST@
429A	Library not found	@MT0500@ in @DIAGST@
429B	File not found	@MT0500@ in @DIAGST@
429C	FDR1 not found	@MT0500@ in @DIAGST@
429E	Extents greater than 3	@MT0500@ in @DIAGST@
42A1	Media error	@BT0800@ in @DIAGST@
42A2	Controller H/W error	@BT0800@ in @DIAGST@
42A3	Checksum Does Not Match	@BT0800@ in @DIAGST@
42A4	Drive Not Ready	@BT0800@ in @DIAGST@
42A6	Program error (Divide)	@BT0800@ in @DIAGST@
42A8	Program error (Bad Data)	@BT0800@ in @DIAGST@
42AA	Library not found	@BT0800@ in @DIAGST@
42AB	File not found	@BT0800@ in @DIAGST@
42AC	FDR1 not found	@BT0800@ in @DIAGST@
42AE	Extents greater than 3	@BT0800@ in @DIAGST@

<u>TEST / EC #</u>	<u>Test Title / Error Code Description</u>	
42	SELF TEST MONITOR	
42E2	SIO Time Out	
42E3	SIO Failure	
42E4	SIO Overrun	
42E5	SIO Data Ram Parity Error	
42E6	SIO Serial Parity Error	
42E7	Workstation Powered Off	
42E8	Workstation Coaxial Parity Error	
42E9	Workstation Memory Parity Error	
42EA	Workstation Has No Code	
42EB	Workstation Invalid Status	
42E0	Floppy Status Error	
42F0	Invalid Hardware Configuration	
43	SELF TEST MONITOR	
4371	Media error	Overlay @CM0800@
4372	Controller H/W error	Overlay @CM0800@
4373	Checksum Does Not Match	Overlay @CM0800@
4374	Drive Not Ready	Overlay @CM0800@
4376	Program error (Divide)	Overlay @CM0800@
4378	Program error (Bad Data)	Overlay @CM0800@
437A	Library not found	Overlay @CM0800@
437B	File not found	Overlay @CM0800@
437C	FDR1 not found	Overlay @CM0800@
437E	Extents greater than 3	Overlay @CM0800@
4381	Media error	Overlay @CM0B00@
4382	Controller H/W error	Overlay @CM0B00@
4383	Checksum Does Not Match	Overlay @CM0B00@
4384	Drive Not Ready	Overlay @CM0B00@
4386	Program error (Divide)	Overlay @CM0B00@
4388	Program error (Bad Data)	Overlay @CM0B00@
438A	Library not found	Overlay @CM0B00@
438B	File not found	Overlay @CM0B00@
438C	FDR1 not found	Overlay @CM0B00@
438E	Extents greater than 3	Overlay @CM0B00@
4391	Media error	Overlay @MM0500@
4392	Controller H/W error	Overlay @MM0500@
4393	Checksum Does Not Match	Overlay @MM0500@
4394	Drive Not Ready	Overlay @MM0500@
4396	Program error (Divide)	Overlay @MM0500@
4398	Program error (Bad Data)	Overlay @MM0500@
439A	Library not found	Overlay @MM0500@
439B	File not found	Overlay @MM0500@
439C	FDR1 not found	Overlay @MM0500@
439E	Extents greater than 3	Overlay @MM0500@

<u>TEST / EC #</u>	<u>Test Title / Error Code Description</u>
44	SYSTEM LOADER
4410	Unlabeled Volume (VOL1 Missing) Volume Label
4411	Media error Volume Label
4412	Controller H/W error Volume Label
4414	Drive Not Ready Volume Label
4416	Programming error (Divide) Volume Label
4418	Program error (Bad Data) Volume Label
4419	Media error Bit Map
441A	Controller H/W error Bit Map
441C	Drive Not Ready Bit Map
441E	Program error (Divide) Bit Map
4420	Program error (Bad Data) Bit Map
4421	Media error VTOC
4422	Controller H/W error VTOC
4424	Drive Not Ready VTOC
4426	Program error (Divide) VTOC
4428	Program error (Bad Data) VTOC
442A	FDX1 ID Does Not Match VTOC
442B	FDX2 ID Does Not Match VTOC
442C	FDR1 ID Does Not Match VTOC
4431	Media error W. S. 0 File
4432	Controller H/W error W. S. 0 File
4433	Checksum Does Not Match W. S. 0 File
4434	Drive Not Ready W. S. 0 File
4436	Program error (Divide) W. S. 0 File
4438	Program error (Bad Data) W. S. 0 File
443A	Library not found W. S. 0 File
443B	File not found W. S. 0 File
443C	FDR1 not found W. S. 0 File
443E	Extents greater than 3 W. S. 0 File
4441	Media error B. P. File
4442	Controller H/W error B. P. File
4443	Checksum Does Not Match B. P. File
4444	Drive Not Ready B. P. File
4446	Program error (Divide) B. P. File
4448	Program error (Bad Data) B. P. File
444A	Library not found B. P. File
444B	File not found B. P. File
444C	FDR1 not found B. P. File
444E	Extents greater than 3 B. P. File
4451	Media error C. M. File
4452	Controller H/W error C. M. File
4453	Checksum Does Not Match C. M. File
4454	Drive Not Ready C. M. File
4456	Program error (Divide) C. M. File
4458	Program error (Bad Data) C. M. File
445A	Library not found C. M. File
445B	File not found C. M. File
445C	FDR1 not found C. M. File
445E	Extents greater than 3 C. M. File

<u>TEST / EC #</u>	<u>Test Title / Error Code Description</u>
44	SYSTEM LOADER
4461	Media error CP uCode File
4462	Controller H/W error CP uCode File
4463	Checksum Does Not Match CP uCode File
4464	Drive Not Ready CP uCode File
4466	Program error (Divide) CP uCode File
4468	Program error (Bad Data) CP uCode File
446A	Library not found CP uCode File
446B	File not found CP uCode File
446C	FDR1 not found CP uCode File
446E	Extents greater than 3 CP uCode File
44E0	DMA Time Out
44E1	DMA Failure
44E2	SIO Time Out
44E3	SIO Failure
44E4	SIO Overrun
44E5	SIO Data Ram Parity Error
44E6	SIO Serial Parity Error
44E7	Workstation Powered Off
44E8	Workstation Coaxial Parity Error
44E9	Workstation Memory Parity Error
44EA	Workstation Has No Code
44EB	Workstation Invalid Status
44EC	CPU Failure

<u>TEST / EC #</u>	<u>Test Title / Error Code Description</u>
45	DIAGNOSTIC MONITOR
4510	Unlabeled Volume (VOL1 Missing) Volume Label
4511	Media error Volume Label
4512	Controller H/W error Volume Label
4514	Drive Not Ready Volume Label
4416	Programming error (Divide) Volume Label
4518	Program error (Bad Data) Volume Label
4519	Media error Bit Map
451A	Controller H/W error Bit Map
451C	Drive Not Ready Bit Map
451E	Program error (Divide) Bit Map
4520	Program error (Bad Data) Bit Map
4521	Media error VTOC
4522	Controller H/W error VTOC
4524	Drive Not Ready VTOC
4526	Program error (Divide) VTOC
4528	Program error (Bad Data) VTOC
452A	FDX1 ID Does Not Match VTOC
452B	FDX2 ID Does Not Match VTOC
452C	FDR1 ID Does Not Match VTOC
4531	Media error W. S. 0 File
4532	Controller H/W error W. S. 0 File
4533	Checksum Does Not Match W. S. 0 File
4534	Drive Not Ready W. S. 0 File
4536	Program error (Divide) W. S. 0 File
4538	Program error (Bad Data) W. S. 0 File
453A	Library not found W. S. 0 File
453B	File not found W. S. 0 File
453C	FDR1 not found W. S. 0 File
453E	Extents greater than 3 W. S. 0 File
4541	Media error Test Table File
4542	Controller H/W error Test Table File
4543	Checksum Does Not Match Test Table File
4544	Drive Not Ready Test Table File
4546	Program error (Divide) Test Table File
4548	Program error (Bad Data) Test Table File
454A	Library not found Test Table File
454B	File not found Test Table File
454C	FDR1 not found Test Table File
454E	Extents greater than 3 Test Table File
45E0	DMA Time Out
45E1	DMA Failure
45E2	SIO Failure
45E3	SIO Time Out
45E4	W.S. Failure
45E5	W.S. Failed Start
45E6	W.S. Failed Load
45E7	W.S. Failed Restart
45E8	Invalid Burn-in Table

<u>TEST / EC #</u>	<u>Test Title / Error Code Description</u>	
46	Diagnostic Monitor	
46X1	Media error	Test File X
46X2	Controller H/W error	Test File X
46X3	Checksum Does Not Match	Test File X
46X4	Drive Not Ready	Test File X
46X6	Program error (Divide)	Test File X
46X8	Program error (Bad Data)	Test File X
46XA	Library not found	Test File X
46XB	File not found	Test File X
46XC	FDR1 not found	Test File X
46XE	Extents greater than 3	Test File X
47	Diagnostic Monitor	
47X1	Media error	File X + 15
47X2	Controller H/W error	File X + 15
47X3	Checksum Does Not Match	File X + 15
47X4	Drive Not Ready	File X + 15
47X6	Program error (Divide)	File X + 15
47X8	Program error (Bad Data)	File X + 15
47XA	Library not found	File X + 15
47XB	File not found	File X + 15
47XC	FDR1 not found	File X + 15
47XE	Extents greater than 3	File X + 15
48	Diagnostic Monitor	
48X1	Media error	Overlay X
48X2	Controller H/W error	Overlay X
48X3	Checksum Does Not Match	Overlay X
48X4	Drive Not Ready	Overlay X
48X6	Program error (Divide)	Overlay X
48X8	Program error (Bad Data)	Overlay X
48XA	Library not found	Overlay X
48XB	File not found	Overlay X
48XC	FDR1 not found	Overlay X
48XE	Extents greater than 3	Overlay X
49	Diagnostic Monitor	
49X1	Media error	Overlay X + 15
49X2	Controller H/W error	Overlay X + 15
49X3	Checksum Does Not Match	Overlay X + 15
49X4	Drive Not Ready	Overlay X + 15
49X6	Program error (Divide)	Overlay X + 15
49X8	Program error (Bad Data)	Overlay X + 15
49XA	Library not found	Overlay X + 15
49XB	File not found	Overlay X + 15
49XC	FDR1 not found	Overlay X + 15
49XE	Extents greater than 3	Overlay X + 15

<u>TEST / EC #</u>	<u>Test Title / Error Code Description</u>
4B	CPU Memory Self Test @CT0500@
4B00	CPU failed Self Test, Run CPU diagnostics
4B01	CPU Instruction Counter cannot be set to zero.
4B02	Data error on write/read of control memory.
4B03	Data error on read/write/read sequence of control memory.
4B04	CPU hardware status register error. Bit2 not reset after setting CPU into 'STEP' mode.
4B05	CPU hardware status register error. Bit2 not set after setting CPU into 'RUN' mode.
4B06	CPU hardware status register error. Bit2 not reset after setting CPU into 'STEP' mode from 'RUN' mode.
4B07	CPU hardware status register error. Bit3 not reset after disabling CPU address comparator.
4B08	CPU hardware status register error. Bit3 not set after enabling CPU address comparator.
4B09	CPU hardware status register error. Bit4 not set after enabling CPU address comparator and setting compare address equal to MIC.
4B0A	CPU hardware status register error. Bit4 not reset after enabling CPU address comparator and setting compare address not equal to MIC.
4B0B	CPU hardware status register error. Bit3, 4, or 5 not reset after disabling CPU address comparator.
4B0C	CPU hardware status register error. Bit3, 4, or 5 not reset after disabling CPU address comparator, with compare address set equal to MIC.
4B0D	CPU hardware status register error. Bit3 or 4 not set after enabling CPU address comparator, with compare address set equal to MIC.
4B0E	Sync Interrupt not detected
4B0F	CPU hardware status register error. Bit3 or 4 not reset after disabling CPU address comparator, with compare address set equal to MIC.
4B10	CPU hardware status register error. CPU 'CIO 7' status bit set after execution of a NOP instruction.
4B11	CPU 'HALTED' interrupt not detected on a step in 'STEP' mode.
4B12	CPU hardware status register error. CPU 'CIO 7' status bit not set after execution of a CIO 7 instruction.
4B13	CPU 'HALTED' interrupt not detected when a CIO 7 instruction executed.
4B14	CPU hardware status register error. CPU 'CIO 7' status bit not reset after execution of a NOP instruction.
4B15	CPU 'HALTED' interrupt not detected when a NOP instruction executed.
4B16	CPU 'SYNC' interrupt not detected.
4B17	CPU hardware status register error. Bit 7 not set or bit 3 not reset after setting 'NANO STEP' mode.
4B18	Incorrect MIC after executing ENABLE IO3.
4B19	Incorrect MIC after executing CLEAR IO3.



<u>TEST / EC #</u>	<u>Test Title / Error Code Description</u>
4B	CPU Memory Self Test @CT0500@
4B1A	CPU IO3 status bit not cleared by CLEAR IO3 instruction.
4B1B	BP IO3 status bit not set by CLEAR IO3 instruction.
4B1C	Incorrect MIC after executing CLEAR IO4 instruction.
4B1D	CPU IO4 bit not cleared by CLEAR IO4 instruction.
4B1E	Incorrect MIC after executing CLEAR IO4b instruction.
4B1F	BP IO4b status bit not set after executing CLEAR IO4b instruction.
4B20	Incorrect MIC after executing MOVE IO4b to IO4.
4B21	CPU IO4 status bit not clear after moving IO4b to IO4.
4B22	Incorrect MIC after executing MOVE IO4b to IO4.
4B23	BP IO3 Status bit not reset after SET IO3 instruction.
4B24	BP IO4b status bit not reset after SET IO4b instruction.
4B25	CPU IO4 not set after SET IO4b, and MOVE IO4b TO IO4 instructions executed.
4B26	CPU IO3 status bit not set after SET IO3 instruction executed.
4B27	Incorrect MIC after CLEAR IO3 instruction executed.
4B28	CPU IO3 status bit not reset after CLEAR IO3 instruction executed.
4B29	BP IO3 status bit not set after executing CLEAR IO3 instruction
4B2A	IO3 Interrupt not detected when IO3 cleared.
4B2B	Incorrect MIC after executing CLEAR IO4b instruction.
4B2C	BP IO4b status bit not set after executing CLEAR IO4b instruction.
4B2D	IO4b Interrupt not detected when IO4b cleared.
4B2E	Incorrect MIC after executing CLEAR IO4b instruction.
4B2F	CPU IO4 status bit cleared after executing CLEAR IO4b instruction.
4B30	Incorrect MIC after executing DISABLE IO3.
4B31	CPU IO3 status bit not clear when setting IO3 after disabling IO3.
4B32	Incorrect MIC after executing ENABLE IO3.
4B33	CPU IO3 bit not set after enabling IO3.
4B34	CPU NANO code error.
4C	CPU Operational Self Test @CT0800@
4C00	CPU failed Self Test, Run CPU diagnostics
4C10	Time out
4C20	CPU detected error
4D	CPU Integrity Self Test @CT0B00@
4D00	CPU failed Self Test, Run CPU diagnostics
4D10	Time out
4D20	CPU detected error
4E	Main Memory Self Test @MT0500@
4E00	Main Memory failure, Run Main Memory diagnostics
4E10	Time out
4E20	CPU detected Main Memory error

<u>TEST / EC #</u>	<u>Test Title / Error Code Description</u>
4F	BP DMA Self Test @BT0800@
4F00	BP DMA Failure, Run BP DMA diagnostics
4F10	Time out
4F20	DMA error
60	Quantum Self Test
A810	No Quantum Id On System
9522	Quantum not Ready Timeout
6014	Quantum Recalibrate Seek Complete 0 Interrupt Timeout
6016	Quantum Stepper Seek Complete 0 Interrupt Timeout
6118	Quantum Track 0 status missing
62	Quantum Read Routine 2 Sectors
6202	No Quantum Id on system
6204	Quantum Drive 0 not Ready
6206	Quantum Seek Complete 0 Interrupt Timeout
6208	Quantum Programming Error # of Blocks too big
620A	Quantum Read Completion Interrupt Timeout
620C	Quantum DA Status Error
62D0	Quantum Programming Error Block # too Big
62E0	Quantum Attempt Error Correction Interrupt Timeout
62E1	Quantum ECC Done Status Bit missing
62F0	Quantum Seek Complete 0 Interrupt Timeout on recalibrate
62F1	Quantum Track 0 status missing after Recalibrate
63	Quantum Read Routine 9 Sectors
6302	No Quantum Id on system
6304	Quantum Drive 0 not Ready
6306	Quantum Seek Complete 0 Interrupt Timeout
6308	Quantum Programming Error # of Blocks too big
630A	Quantum Read Completion Interrupt Timeout
630C	Quantum DA Status Error
63D0	Quantum Programming Error Block # too Big
63E0	Quantum Attempt Error Correction Interrupt Timeout
63E1	Quantum ECC Done Status Bit missing
63F0	Quantum Seek Complete 0 Interrupt Timeout on recalibrate
63F1	Quantum Track 0 status missing after Recalibrate
71	SIO Address Latch
7101	Address Latch Failure
71FD	Unexpected Interrupt
71FE	Unexpected SIO Interrupt

<u>TEST / EC #</u>	<u>Test Title / Error Code Description</u>
72	SIO Write/Read Byte
7201	Write Byte Completion Interrupt Failure
7202	Read Byte Completion Interrupt Failure
7203	Data Compare Failure
7204	Status Error
7205	SMAR Ripple Failure
72FD	Unexpected Interrupt
72FE	Unexpected SIO Interrupt
72FF	Get Control of Workstation Failure
73	SIO Write/Read 256
7301	Write 256 Completion Interrupt Failure
7302	Read 256 Completion Interrupt Failure
7303	Data Compare Error
7304	Status Error
7305	SMAR Ripple Failure
73FD	Unexpected Interrupt
73FE	Unexpected SIO Interrupt
73FF	Get Control of Workstation Failure
76	SIO Give Status
7601	Give Status Completion Interrupt Failure
7602	Data Compare Failure
7603	Status Error
76FD	Unexpected Interrupt
76FE	Unexpected SIO Interrupt
76FF	Get Control of Workstation Failure
90	SIO Give Status
9011	Workstation Powered Off Status
9015	Coax Parity, parity or not running status
90FD	Unexpected Interrupt
90FE	Unexpected SIO Interrupt
A4	SIO ID Test
A401	Device ID Not Found
A4	SIO SMAR Test
A402	SMAR Register Failure
A4FD	Unexpected Interrupt
A4FE	Unexpected SIO Interrupt

APPENDIX G  
REMOTE DIAGNOSTICS PROCEDURES

The remote diagnostics feature lets Wang customer engineers detect faults occurring on the circuit board level, and then isolate faults occurring on the circuit or chip level. Customer engineers execute diagnostics tests (which reside on the customer's disk) from a Technical Assistance Center (TAC). Three modes of remote diagnostics are available: those for power-up (IPL) failures, those for non-IPL failures, and those for routine maintenance. Remote diagnostic procedures vary slightly for each mode, and are subject to change without notice. These procedures are as follows.

Power-Up (IPL) Failure

Customer Action:

1. Customer phones TAC (voice).
3. Customer IPLs in Remote mode and switches modem to Data (data).
7. Customer disconnects when modem carrier indicator is out.

TAC Action:

2. TAC acknowledges call and instructs customer to turn key to Remote position.
4. TAC loads VS25 REM package and switches modem to Data (data).
5. TAC receives 'SHOUT' contents (2K bytes of non-volatile RAM bearing diagnostic information).
6. TAC terminates remote session.

Non-IPL Failure

Customer Action:

1. Customer phones TAC (voice).

3. Customer IPLs in REMOTE mode and switches modem to Data (data).

TAC Action:

2. TAC acknowledges call and instructs customer to turn key to Remote position and re-IPL.

4. TAC loads VS25 REM package and switches modem to Data (data).

5. TAC establishes TC link with option to load diagnostics monitor or request a dump of the 2K non-volatile RAM.

6. TAC analyzes errors of received data.

7. TAC runs appropriate diagnostics package to diagnose failing module.

8. TAC echoes message to customer console that remote session is terminating and customer engineer is being dispatched with ORU.

9. TAC terminates remote session.

## Maintenance Mode

### Customer Action:

2. Customer IPLs in REMOTE mode and switches modem to Data (data).

7. Customer disconnects when modem carrier indicator is out.

### TAC Action:

1. TAC calls and notifies customer that a remote session is being initiated for maintenance reasons.

3. TAC loads VS25 REM package and switches modem to Data (data).

4. TAC establishes TC link and performs maintenance, e.g., requests to dump non-volatile RAM to obtain latest customer information.

5. TAC echoes message to customer console that remote session is terminating and customer engineer is being dispatched with ORU.

6. TAC terminates remote session.



# Customer Comment Form

Title \_\_\_\_\_ **VS25 BULLETIN**

Publications Number \_\_\_\_\_ **800-3108**

Help Us Help You . . .

We've worked hard to make this document useful, readable, and technically accurate. Did we succeed? Only you can tell us! Your comments and suggestions will help us improve our technical communications. Please take a few minutes to let us know how you feel.

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Were there any terms or concepts that were not defined properly?  Y  N If so, what were they? \_\_\_\_\_

After reading this document do you feel that you will be able to operate the equipment/software?  Yes  No  
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\_\_\_\_\_

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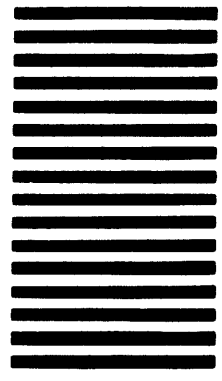


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