



Wang Computer Systems

VS

Workstations

Wang's VS workstations provide an easy-to-use, interactive method of communicating with VS computer systems. The workstations allow the user to enter and update data, programs, and word processing documents; enter jobs for batch processing; queue files for printing; review the status of all devices attached to the system; and

perform the full range of data processing functions in a fast, effective manner. Workstation requirements depend on the needs of individual users, and Wang VS workstations are available in many models to meet these needs. The choice of workstation depends on what functions and design features the user wants.

All VS workstations support standard data processing functions. Workstation models tailored for combinations of data processing functions, word processing, telecommunications, keypunch-style data entry through VS KEYENTRY, local archiving, and typesetting are available. Many VS workstations also support 2780/3780 and 3270 emulation for telecommunications, which is discussed in more detail in the *VS Data Communications Data Sheet*.

VS Data Processing Workstations are available with several keyboard options for local data processing and KEYENTRY. Data processing workstations are also available for telecommunications from a remote site. **VS Combined Workstations** provide the full range of data processing and word processing capabilities, and are also available in models supporting typesetting. **VS Archiving Workstations** include an attached diskette drive for local archiving and retrieval of data processing or word processing files, and are available in both standard and combined versions.

VS Workstations

Each VS workstation consists of a large, easy-to-read Cathode Ray Tube (CRT) screen and a built-in typewriter-like keyboard. The screen features a glare-resistant matte finish, and displays characters in green, contrasting with a dark green background.

All VS workstation screens can display 24 lines of 80 characters. Each workstation supports all Wang character sets, and the entire ASCII character set, except braces, the tilde, and an underscore (which on Wang CRTs is treated as a Field Attribute Character).

All characters, both uppercase and lowercase, can be displayed by user or system programs in high or low intensity with optional blinking. A blinking *cursor* shows where the next character the user enters will be displayed, and can be moved by user programs. For data processing, the user can easily format the screen into discrete fields, each of which may be assigned specific attributes (such as numeric or alphanumeric, protected or modifiable).

Brightness and contrast controls, located to the right of the CRT, allow the user to adjust the display to the most comfortable levels. A clicker signals when a key is pressed, and a user-programmable audio alarm beeps when certain system- or user-defined conditions are encountered. Volume controls for the clicker and alarm, and an ON/OFF switch, are provided at the back of the workstation.

The clearly marked keyboard simplifies selection and performance of all VS functions. Three types of keyboard layout are available, tailored to suit particular user needs such as data entry and word processing. The *VS Standard Keyboard*, designed for general data processing purposes, is shown in Figure 2. One of the *VS Optional*

Workstation Features

Screen	Keyboard
12-inch diagonal display screen	Typewriter-like keyboard (available in three layout types)
24 lines, 80 characters per line	Cursor-positioning keys
Screen can be formatted into discrete fields in data processing mode	Character-insertion and -deletion keys
Manual controls for contrast and brightness	Numeric keypad with reversed keypad option
Bright and dim intensity for instant recognition of field modifiability	16 Program Function keys
Blinking cursor for next-character position, movable by user programs	Programmable audio alarm
Antiglare filter	

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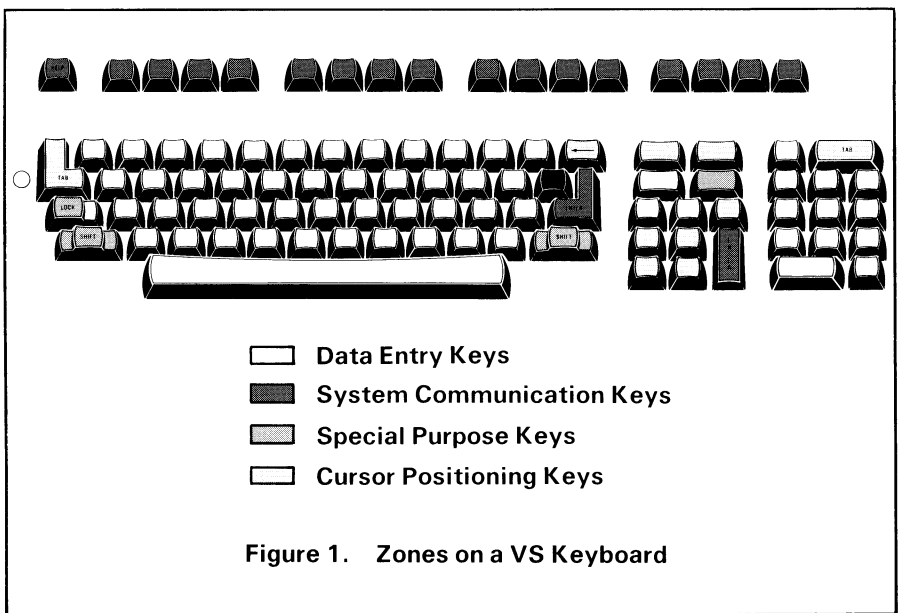


Figure 1. Zones on a VS Keyboard

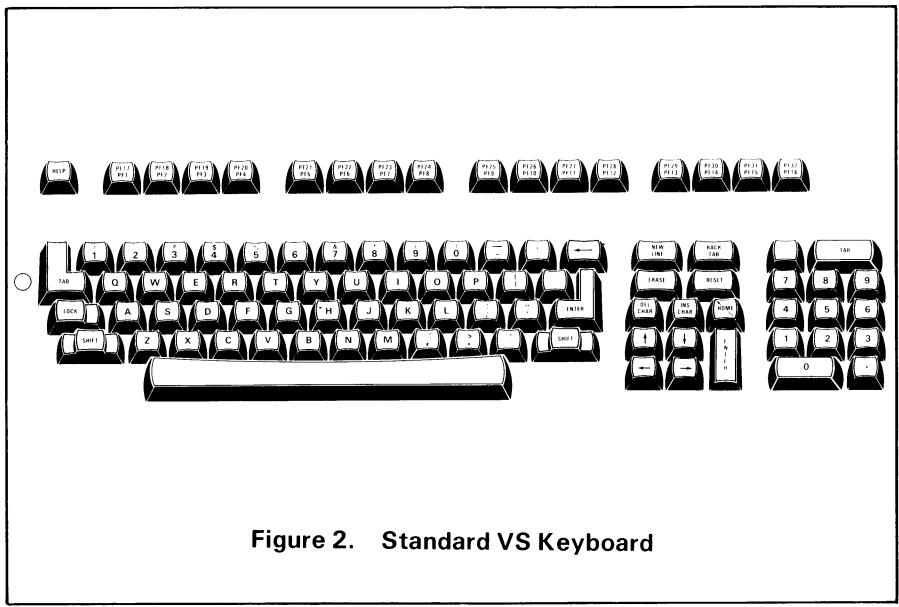


Figure 2. Standard VS Keyboard

Keypunch-emulating Keyboards, for data entry with keypunch-emulating keyboard and/or optional reversed numeric keypad, is shown in Figure 3. The *VS Combined Keyboard*, designed for both data processing and word processing purposes, is shown in Figure 4.

Each VS keyboard is divided into *zones*, containing groups of keys used for certain types of operations. Figure 1 shows the general layout of all VS keyboards. The function of a few keys in these zones may vary, depending on what type of workstation and keyboard are selected and whether the workstation is in data processing or word processing mode.

The *character entry zone*, set up like a standard typewriter keyboard, is used to enter alphabetic, numeric, and special characters into the display. Immediately to the left of the character entry keys are SHIFT, LOCK, and TAB keys, and a *SHIFT Lamp*, which lights when the keyboard is in the SHIFT position. The *character edit keys*, to the right of the character entry zone, allow easy editing of the contents of the display, with keys for such functions as INSERT, DELETE, and cursor positioning. The *numeric keypad* on the right of the keyboard provides a convenient means of entering numeric data.

Sixteen *Program Function (PF) keys*, located at the top of the keyboard, can be used in uppercase and lowercase to provide single-stroke access to 32 user- or

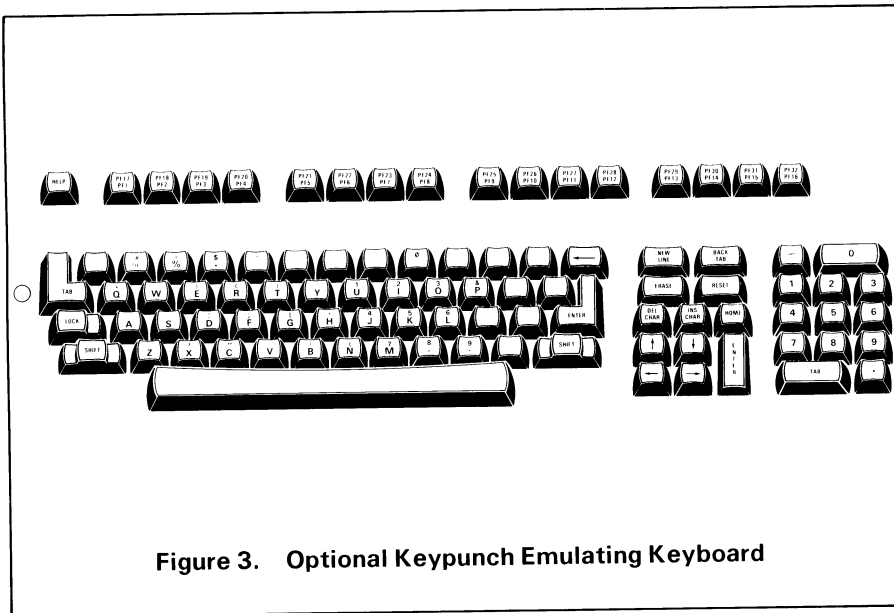


Figure 3. Optional Keypunch Emulating Keyboard

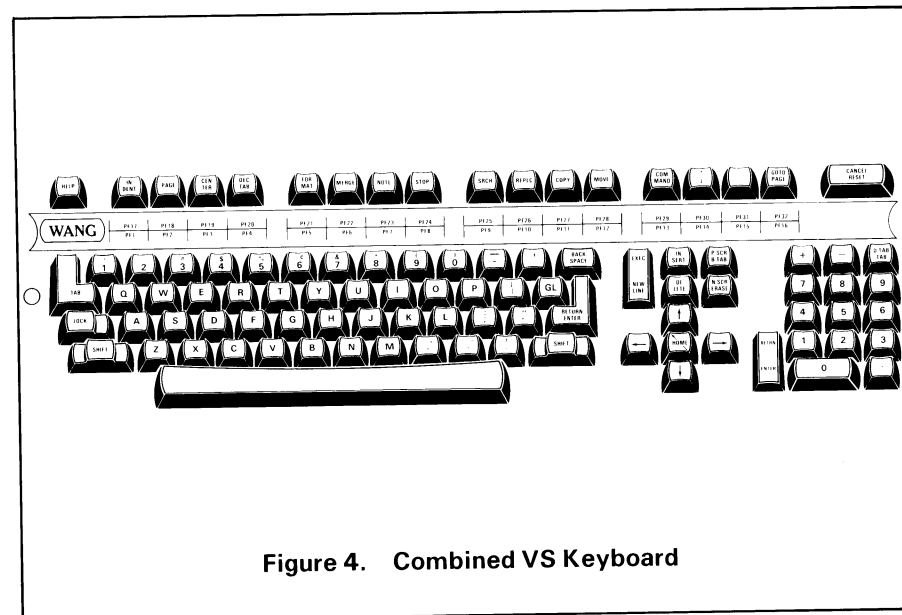


Figure 4. Combined VS Keyboard

system-defined functions. In data processing mode, the PF keys are user-programmable. In word processing mode on combined workstations, these 16 keys provide word processing functions such as CENTER, SEARCH, and COPY. The red *HELP* key allows the user to interrupt processing and access other VS functions. It is disabled during word processing and at the option of the user.

Serial Device Switch

The **Model SW16 VS Serial Device Switch** minimizes down-time: should one of two VS systems be temporarily out of service, workstations can be switched to the other system. The switches are designed to improve system availability at sites with more than one VS Central Processor.

The switch allows a user to switch up to 32 locally attached serial workstations (16 for each of two VS systems) between two Central Processors. Workstations are switched in sets of 4, so that 4, 8, 12, or 16 workstations can be switched, depending on user needs.

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Data Processing Workstations

VS data processing workstations include *Serial Workstations*, Models 2246S, 2246S-1, 2246S-2, and 2246S-3; and the *Remote Workstation*, Model 2246R.

Standard Keyboard

The full range of data processing functions is supported by the **Model 2246S Serial Workstation**, which also supports KEYENTRY, Wang's optional keypunch-emulating data entry software, discussed in the *VS KEYENTRY Data Sheet*. The 2246S has the standard VS data processing keyboard layout, shown in Figure 2. The 2246S can be cabled up to 2000 feet (609.6 meters) from the Central Processor and is available with all VS systems.

Keyboard Options

KEYENTRY and all VS data processing functions are supported by the **Model 2246S-1, -2, and -3 Serial Workstations**, which offer a

choice of keyboard layouts tailored for data entry applications.

These layouts differ from the standard keyboard in two zones. One option provides a reversed numeric keypad, like the keypad of a push-button telephone or a keypunch. (The standard numeric keypad layout resembles that of a pocket calculator.) Another option provides a character entry zone with numbers and special characters laid out like those on a keypunch machine, so that operators familiar with card punches can adjust to VS data entry with minimal retraining.

Figure 3 shows the keyboard layout for the 2246S-3, and illustrates both the reversed numeric keypad and the keypunch-style character entry zone. Keys shown as blank in the diagram are disabled: pressing the key causes the workstation alarm to sound.

The 2246S-1, 2246S-2, and 2246S-3 can be cabled up to 2000 feet (609.6 meters) from the

Central Processor and are available with all VS systems.

Remote Workstation

The Model 2246R Remote Workstation allows a user to access a VS system via telecommunications from geographically dispersed sites. This workstation has the standard keyboard layout and supports all VS data processing functions except KEYENTRY.

The 2246R functions as a stand-alone remote workstation and includes a built-in communications controller. More than one 2246R may be attached to a VS system, and the workstation is supported by all VS Central Processors. The *VS Data Communications Data Sheet* provides more detailed information on VS telecommunications capabilities. Each 2246R can support a directly connected printer, discussed in the *VS Printers Data Sheet*, at distances of up to 50 feet (15.2 meters).

Data Processing Workstation Functions

Function	Model 2246S	Model 2246S-1	Model 2246S-2	Model 2246S-3	Model 2246R
Keyboard Layout	Standard	Keypunch	Standard	Keypunch	Standard
Numeric Keypad Layout	Standard	Standard	Reversed	Reversed	Standard
DP Functions	All	All	All	All	All
KEYENTRY Support	Yes	Yes	Yes	Yes	No
Communications	2780/3780 3270 VSCOPY	2780/3780 3270 VSCOPY	2780/3780 3270 VSCOPY	2780/3780 3270 VSCOPY	2780/3780 VSCOPY



Data Processing Workstation Specifications

	Model 2246S	Models 2246S-1, S-2, S-3	Model 2246R
General			
Workstation type	Serial	Serial	Remote
Keyboard layout	Standard	Standard or keypunch	Standard
Numeric keypad	Standard	Standard or reversed	Standard
Memory Size	16K RAM	16K RAM	32K RAM
Line speeds (2246R only)			9600 bits/sec Built-in communications controller with RS-232 plug Built-in interface to support one printer
Physical			
Height	13 in. (33 cm)	13 in. (33 cm)	13 in. (33 cm)
Width	19.5 in. (49.5 cm)	19.5 in. (49.5 cm)	19.5 in. (49.5 cm)
Depth	19.5 in. (49.5 cm)	19.5 in. (49.5 cm)	19.5 in. (49.5 cm)
Weight	40 lb (18 kg)	40 lb (18 kg)	40 lb (18 kg)
Heat Output	427 Btu/hr (108 Kcal/hr)	427 Btu/hr (108 Kcal/hr)	427 Btu/hr (108 Kcal/hr)
Environmental			
Power	2.5 amps @ 115VAC ($\pm 10\%$), 1.5 amps @ 230VAC ($\pm 10\%$), 50/60 Hz, 250 watts	2.5 amps @ 115VAC ($\pm 10\%$), 1.5 amps @ 230VAC ($\pm 10\%$), 50/60 Hz, 250 watts	2.5 amps @ 115VAC ($\pm 10\%$), 1.5 amps @ 230VAC ($\pm 10\%$), 50/60 Hz, 250 watts
Temperature	50° to 80° F (10° to 27° C)	50° to 80° F (10° to 27° C)	50° to 80° F (10° to 27° C)
Relative Humidity	35% to 65% (noncondensing)	35% to 65% (noncondensing)	35% to 65% (noncondensing)
Max. Cable Length	2000 ft (609.6 m) to CP	2000 ft (609.6 m) to CP	50 ft (15.2 m) to modem 2000 ft (609.6 m) to Modem Sharing Unit Requires suitable modem (not supplied by Wang)

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Combined Workstations

For users who need both data processing and word processing capabilities, VS combined workstations offer the full range of VS data processing and word processing functions. In word processing mode, the user at a combined workstation can enter, edit, file, and print word processing documents, using functions and screen prompts like those of Wang's Office Information System (OIS) and Word Processing System. VS systems equipped with combined workstations provide an integrated data processing and word processing information system, discussed in the *VS Integrated Information System Data Sheet*. Combined workstations are available with all VS systems.

To accommodate word processing functions, the keyboard of combined workstations differs slightly from the standard layout. The keyboard provides 24 special operational keys, along with typewriter keys, cursor control keys, and a numeric keypad. In data processing mode, 32 PF key values may be programmed, while 9 other keys can perform such VS functions as RESET and HELP. The combined keyboard is shown in Figure 4.

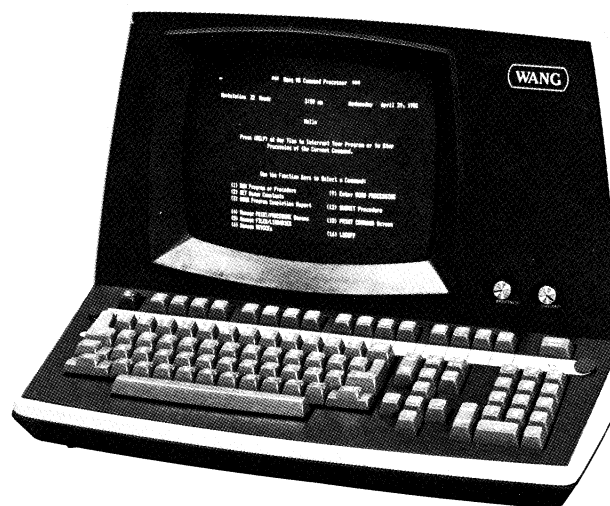
All the standard data processing and word processing functions available with the VS are supported by the **Model 2246C Combined Workstation**. In data processing mode, the user can perform all VS data processing functions. In word processing mode, the user can perform all VS word processing functions, as on any combined workstation.

The **Model 2256C Combined Workstation** is similar to the 2246C, except that it has additional

memory, which permits the user to perform an extensive range of OIS functions. For typesetting with hyphenation and justification software, the 2256C workstation allows the user to preview and manipulate typesetter line-ending decisions and make other copy-fitting decisions. The *VS/OIS 5548z Typesetter Data Sheet* explains typesetting on a Wang VS/OIS in more detail. Both the 2246C and the 2256C workstations can be cabled up to 2000 feet (609.6 meters) from the Central Processor.

Combined Workstation Functions

Function	Model 2246C	Model 2256C
Keyboard Layout	Combined	Combined
Numeric Keypad Layout	Standard	Standard
Word Processing	Yes	Yes
Data Processing and KEYENTRY	Yes	Yes
Typesetter	No	Yes
Hyphenation and Justification	No	Yes
Communications	2780/3780 3270 VSCOPY	2780/3780 3270 VSCOPY



Combined Workstation Specifications

	Model 2246C	Model 2256C
General		
Keyboard layout	Combined	Combined
Numeric keypad	Standard	Standard
Memory Size	32K RAM	64K RAM
Physical		
Height	13 in. (33 cm)	13 in. (33 cm)
Width	19.5 in. (49.5 cm)	19.5 in. (49.5 cm)
Depth	19.5 in. (49.5 cm)	19.5 in. (49.5 cm)
Weight	40 lb (18 kg)	40 lb (18 kg)
Heat Output	427 Btu/hr (108 Kcal/hr)	427 Btu/hr (108 Kcal/hr)
Environmental		
Power	2.5 amps @ 115VAC ($\pm 10\%$), 1.5 amps @ 230VAC ($\pm 10\%$), 50/60 Hz, 250 watts	2.5 amps @ 115VAC ($\pm 10\%$), 1.5 amps @ 230VAC ($\pm 10\%$), 50/60 Hz, 250 watts
Temperature	50° to 80° F (10° to 27° C)	50° to 80° F (10° to 27° C)
Relative Humidity	35% to 65% (noncondensing)	35% to 65% (noncondensing)
Max. Cable Length	2000 ft (609.6 m) to CP	2000 ft (609.6 m) to CP

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Archiving Workstations

All VS Archiving Workstations include a cable-connected diskette drive, supplied with an 8-foot cable for attachment to the workstation. (The maximum cable length from workstation to diskette drive is 25 feet.) Archiving workstations support all VS data processing functions except KEYENTRY, and can be cabled up to 2000 feet (609.6 meters) from the Central Processor. Archiving workstations are available with all VS systems.

Models 2266C-1 and 2266C-3 Combined Archiving Workstations provide both data and word processing capabilities with

the combined keyboard. **Models 2266S-1, 2266S-2, and 2266S-3 Serial Archiving Workstations** provide VS data processing capabilities with the standard data processing keyboard. **Models 2276C-1 and 2276C-3 Combined Archiving Workstations** provide both data and word processing capabilities with the combined keyboard and include the additional memory necessary for support of a typesetter and advanced OIS functions, including hyphenation and justification.

The 2266C-1, the 2266S-1, and the 2276C-1 support hard-sectored diskettes. The 2266S-2 supports soft-sectored diskettes. The

2266C-3, the 2266S-3, and the 2276C-3 support both hard- and soft-sectored diskettes. The table of Archiving Workstation Functions summarizes the functions supported by each model.

For data processing, a diskette mounted in the archiving workstation diskette drive is accessible from any workstation on the VS system. In this mode, diskette input/output operations may be initiated and controlled by the user at the archiving workstation or by a user program. For word processing and also for 3270 emulation, the archiving workstation diskette drive is dedicated to the attached workstation.

Archiving Workstation Functions

Function	Model 2266C-1	Model 2266C-3	Model 2266S-1	Model 2266S-2	Model 2266S-3	Model 2276C-1	Model 2276C-3
Combined Keyboard	X	X				X	X
Standard Keyboard			X	X	X		
Data Processing and DP File Backup	X	X	X	X	X	X	X
Word Processing and WP Archiving	X	X				X	X
Typesetter						X	X
Hyphenation and Justification						X	X
Communications*	X	X	X	X	X	X	X
Diskette Compatibility							
IBM Formatted		X		X	X		X
Wang OIS/WP	X	X				X	X
Wang 2200VP/MVP	X	X	X		X	X	X
Wang 2200LVP/SVP		X		X	X		X

* Supports 2780/3780 and 3270 emulation, with appropriate software.



A word processing operator at an archiving workstation with a combined keyboard can locally file, or *archive*, a document to or from a hard-sectored diskette in the attached diskette drive. Data processing files can be backed up onto hard- or soft-sectored diskettes, and software can be transferred between systems via the archiving workstation.

Hard-Sectored Diskettes

Hard-sectored diskettes, which have sixteen 256-byte sectors per track, are the standard single-

sided, single-density 308-kilobyte diskettes used by the 2270V Diskette Drive on the VS and by the 2270A Diskette Drive on Wang's 2200 VP and MVP. Data processing files on hard-sectored diskettes can thus be exchanged between these systems.

Hard-sectored diskettes are also used by Wang's Office Information System and Word Processing System, so that documents can be exchanged between VS systems, OIS, and Word Processing Systems. Hard-sectored diskettes are the standard, white-label Wang

diskettes and are available from Wang Laboratories, Inc. (part number 177-0063).

Soft-Sectored Diskettes

Soft-sectored diskettes are available from Wang in two physical versions: single-sided, single-density with a maximum capacity of 243K bytes, and double-sided, double-density with a maximum capacity of 1.26M bytes. Soft-sectored diskettes are supported by four models of archiving workstations: the 2266C-3, the 2266S-2, the 2266S-3, and the 2276C-3.

Archiving Workstation Specifications

	Models 2266S-1, S-2, S-3	Models 2266C-1, -3	Models 2276C-1, -3
General			
Keyboard layout	Standard	Combined	Combined
Numeric keypad	Standard	Standard	Standard
Memory Size	48K RAM	48K RAM	64K RAM
Physical			
Height	13.5 in. (34.3 cm)	13.5 in. (34.3 cm)	13.5 in. (34.3 cm)
Width	19.8 in. (50.3 cm)	19.8 in. (50.3 cm)	19.8 in. (50.3 cm)
Depth	20.5 in. (52.1 cm)	20.5 in. (52.1 cm)	20.5 in. (52.1 cm)
Weight	42.0 lb (18.9 kg)	42.0 lb (18.9 kg)	42.0 lb (18.9 kg)
Heat Output	102.0 Btu/hr (25.7 Kcal/hr)	102.0 Btu/hr (25.7 Kcal/hr)	102.0 Btu/hr (25.7 Kcal/hr)
Environmental			
Power	0.25 amps @ 115VAC ($\pm 10\%$), 0.125 amps @ 230VAC ($\pm 10\%$), 50/60 Hz, 250 watts	0.25 amps @ 115VAC ($\pm 10\%$), 0.125 amps @ 230VAC ($\pm 10\%$), 50/60 Hz, 250 watts	0.25 amps @ 115VAC ($\pm 10\%$), 0.125 amps @ 230VAC ($\pm 10\%$), 50/60 Hz, 250 watts
Temperature	50° to 80° F (10° to 27° C)	50° to 80° F (10° to 27° C)	50° to 80° F (10° to 27° C)
Relative Humidity	35% to 65% (noncondensing)	35% to 65% (noncondensing)	35% to 65% (noncondensing)
Max. Cable Length	25.0 ft (7.6 m) to archive diskette drive	25.0 ft (7.6 m) to archive diskette drive	25.0 ft (7.6 m) to archive diskette drive

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Soft-sectored, single-sided, single-density diskettes (part number 177-0074) are also available from Wang Laboratories, Inc., and have a green label. IBMCOPY, a VS system utility for use with these diskettes at the appropriate

archiving workstation, enables acceptance and creation of diskettes in IBM formats. IBMCOPY thus provides media compatibility with IBM 3741 diskettes and other IBM formats, and provides for optional

translation between ASCII and EBCDIC for file transfer between Wang VS and IBM systems.

Soft-sectored, single-sided, double-density diskettes may be used for data processing back-up.

Archiving Diskette Drive Specifications

	Hard-Sectored Drive	Soft-Sectored Drive	Hard/Soft-Sectored Drive
General			
Supported by Archiving Workstation Models:	2266S-1, 2266C-1, 2276C-1	2266S-2	2266S-3, 2266C-3, 2276C-3
Diskette Type	Hard-sectored	Soft-sectored	Hard- and soft-sectored
Storage Capacity	308K bytes	1260K bytes	1260K bytes (soft) 308K bytes (hard)
Performance			
Rotational Speed	360 rpm	360 rpm	360 rpm
Average Access Time	200.3 msec	200.3 msec	200.3 msec
Average Latency Time	83 msec	83 msec	83 msec
Track-to-track Head Positioning Time	3 msec	3 msec	3 msec
Data Transfer Rate	31K bytes/sec	31K bytes/sec	31K bytes/sec
Physical			
Height	13.3 in. (33.8 cm)	13.3 in. (33.8 cm)	13.3 in. (33.8 cm)
Width	16.5 in. (41.9 cm)	16.5 in. (41.9 cm)	16.5 in. (41.9 cm)
Depth	22.0 in. (55.9 cm)	22.0 in. (55.9 cm)	22.0 in. (55.9 cm)
Weight	65.0 lb (29.3 kg)	65.0 lb (29.3 kg)	65.0 lb (29.3 kg)
Heat Dissipation	710 Btu/hr (180 Kcal/hr)	710 Btu/hr (180 Kcal/hr)	710 Btu/hr (180 Kcal/hr)
Environmental			
Power	1.75 amps @ 115VAC ($\pm 10\%$), 0.875 amps @ 230VAC ($\pm 10\%$), 50/60 Hz, 250 watts	1.75 amps @ 115VAC ($\pm 10\%$), 0.875 amps @ 230VAC ($\pm 10\%$), 50/60 Hz, 250 watts	1.75 amps @ 115VAC ($\pm 10\%$), 0.875 amps @ 230VAC ($\pm 10\%$), 50/60 Hz, 250 watts
Temperature	50° to 80° F (10° to 27° C)	50° to 80° F (10° to 27° C)	50° to 80° F (10° to 27° C)
Relative Humidity	35% to 65% (noncondensing)	35% to 65% (noncondensing)	35% to 65% (noncondensing)
Max. Cable Length	2000 ft (609.6 m) to CP	2000 ft (609.6 m) to CP	2000 ft (609.6 m) to CP

Any diskette used in single-sided, double-density format must be certified for use in this mode. These diskettes are not currently available from Wang.

Soft-sectored, double-sided, double-density diskettes (part number 177-0070) have a red label. Wang double-sided, double-density diskettes are used for data processing backup. Data processing files created on double-sided, double-density

diskettes can be exchanged with Wang's 2200 LVP and with the 2200 SVP using COPY2200, a VS system utility.

Summary

VS workstations meet a wide variety of user needs, both for function and convenience. The VS Workstation Summary chart shows the keyboard layout and functions supported by each workstation. All VS workstations sup-

port standard data processing functions, and the table illustrates which workstations support word processing, KEYENTRY, local archiving, and typesetting. More detailed functional options for each archiving workstation are summarized in the table of Archiving Workstation Functions. The number of workstations supported by each central processor model is discussed in the *VS Processors Data Sheet*.

VS Workstation Summary Chart

Function	Model	Models	Model	Model	Model	Models	Models	Models
	2246S	2246S-1, S-2, and S-3	2246R	2246C	2256C	2266S-1, S-2, and S-3	2266C-1 and C-3	2276C-1 and C-3
Keyboard Layout	Standard	3 Options	Standard	Combined	Combined	Standard	Combined	Combined
Data Processing	X	X	X	X	X	X	X	X
Word Processing				X	X		X	X
Communications	X ²	X ²	X ¹	X ²	X ²	X ³	X ³	X ³
KEYENTRY Software	X	X		X	X	X	X	X
Archive Drive						X	X	X
Typeset Support					X			X

¹ Supports 2780/3780 emulation, with appropriate software.

² Supports 2780/3780 and 3270 emulation, with appropriate software.

³ Supports 2780/3780 and 3270 emulation, with appropriate software. Archive diskette drive is dedicated to attached workstation for 3270 emulation.

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