



VS Pascal

SC26-4342-1

Installation and Customization for VM

Release 2





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Second Edition (December 1988)

This edition replaces and makes obsolete the previous edition, SC26-4342-0.

This edition applies to Release 2 of VS Pascal, Program Number 5668-767 (Compiler and Library) and 5668-717 (Library only), and to any subsequent releases until otherwise indicated in new editions or technical newsletters.

The changes for this edition are summarized in Appendix A, "Summary of Changes" on page 31. Specific changes are indicated by a vertical bar to the left of the change. These bars will be deleted at any republication of the page affected. Editorial changes that have no technical significance are not noted.

Changes are made periodically to this publication; before using this publication in connection with the operation of IBM systems, consult the latest *IBM System/370, 30xx, 4300, and 9370 Processors Bibliography*, GC20-0001, for the editions that are applicable and current.

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Preface


This book provides information for persons installing VS Pascal under Virtual Machine/System Product (VM/SP) or Virtual Machine/Extended Architecture (VM/XA). This book contains no definition of the VS Pascal programming language and its syntax. For information about this subject matter, see *VS Pascal Language Reference*.

Along with this manual, consult the Program Directory shipped with VS Pascal, which may contain updates to this book.



VS Pascal also runs under Multiple Virtual Storage/System Product (MVS/SP), Multiple Virtual Storage/Extended Architecture (MVS/XA), and Multiple Virtual Storage/Enterprise Systems Architecture (MVS/ESA). For information on installing VS Pascal under MVS/SP, MVS/XA, or MVS/ESA, see *VS Pascal Installation and Customization Guide for MVS*, SC26-4321-1.

Prerequisite Knowledge



This book is for system programmers and/or system administrators who are responsible for installing and maintaining VS Pascal under CMS. It assumes you are familiar with VM, Conversational Monitor System (CMS), and that you have a general knowledge of the structure and function of VS Pascal.

How This Book is Organized

This book is organized into the following chapters:

Chapter 1, “What You Need to Install VS Pascal” details requirements for VS Pascal installation.

Chapter 2, “Planning to Install and Customize VS Pascal” describes the decisions you must make before beginning to install and customize VS Pascal.



Chapter 3, “Installing VS Pascal under VM” describes how to install VS Pascal under VM.


Chapter 4, “Customizing VS Pascal after Installation” describes how to customize VS Pascal after installation, and how to run the installation verification procedure separately.

Chapter 5, “Installing and Customizing VS Pascal under VM/IS” describes how to install VS Pascal under Virtual Machine/Integrated System.

Appendix A, “Summary of Changes” summarizes the additions and enhancements VS Pascal Release 2 makes to VS Pascal Release 1.

Appendix B, “Installation Messages” describes the installation messages and installation verification procedure messages.

Appendix C, “Servicing VS Pascal” explains how to install the program service available for VS Pascal.



The **“Bibliography”** lists the VS Pascal publications and other relevant publications.








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Chapter 1. What You Need to Install VS Pascal

This chapter discusses the hardware and software required to install and execute VS Pascal. It also lists the contents of the IBM Software Distribution (ISD) tape. In addition to the information provided here, be sure to read the Program Directory shipped with the VS Pascal product. The Program Directory describes all the installation materials and provides any additional instructions you need due to the product release and modification level.

Hardware

VS Pascal runs on any processing unit supported by VM.



Operating System

VS Pascal and its generated object programs run under these operating systems:

- Virtual Machine/System Product (VM/SP) Version 1, Release 4 or later, with or without the High Performance Option (HPO).

Note: Use of VS Pascal's Double-Byte Character Set (DBCS) support requires VM/SP Version 1, Release 5 or later.

- Virtual Machine/Extended Architecture (VM/XA), Release 1 or later.

Note: Under CMS, VS Pascal and its generated programs require the OS simulation facility.



Virtual Storage

Under CMS, VS Pascal requires a minimum of 1 megabyte to compile a program. Complex programs may require more storage. The 1-megabyte storage is sufficient to compile both sample programs supplied with the IBM Software Distribution (ISD) tape.

To run a minimum compiled program, you need an 864-kilobyte CMS machine.



Tape Drive

To install VS Pascal, you need a magnetic tape drive compatible with the IBM Software Distribution (ISD) tape.

Disk Storage

You need a production minidisk to install VS Pascal and run the installation verification procedure (IVP). The production minidisk is used to run VS Pascal and is linked to by all VS Pascal users. It contains the production libraries installed from the ISD tape. If you have Pascal/VS or VS Pascal Release 1, use a different production disk for VS Pascal Release 2.

When installing, customizing, and servicing VS Pascal, you also need an unused device address in the range of 210 to 280, where a temporary minidisk is created.

See the Program Directory for the DASD sizes of the production and temporary minidisks.

The IBM Software Distribution (ISD) Tape

The various files on the ISD tape for the **VS Pascal Compiler and Library product (5668-767)** contain:

- Product identifier file and installation EXEC
- Memo to Users
- VS Pascal compiler modules; run-time and debugging TXTLIBs; product LOADLIBs; product MACLIB; compile, link-edit and execute EXECs; EXEC HELP files; and product message files
- Installation verification EXEC and sample programs
- Necessary files for service and customization.

The various files of the ISD tape for the **VS Pascal Library product (5668-717)** contain:

- Product identifier file and installation EXEC
- Memo to Users
- VS Pascal run-time TXTLIB; product LOADLIBs, link-edit and execute EXECs; EXEC HELP files; and product messages files
- Installation verification EXEC and compiled sample programs
- Necessary files for service and customization.



Chapter 2. Planning to Install and Customize VS Pascal

VS Pascal is available as two separate products. VS Pascal Compiler and Library (5668-767) is the complete licensed program containing the compiler, run-time library, and the debugging library. VS Pascal Library (5668-717) contains only the run-time library. This book contains installation instructions for both products.


Each licensed program is distributed as a single tape containing the necessary modules.

Installation is the process of adding the materials on the IBM Software Distribution (ISD) tape to your system. This process produces a fully operational VS Pascal product.

Customization is an optional process. It gives you the opportunity to change these operational features:


- The format used for dates
- The default language for generated text
- The uppercase and character translation tables
- Where in storage the VS Pascal compiler resides.

Where to Find More Installation Information



For specific information on space allocations and other details, see the Program Directory shipped with the ISD tape for VS Pascal. The Program Directory describes all the installation materials and gives installation instructions specific to the product release and modification level.

The DATETIME Procedure




During installation, you customize the VS Pascal DATETIME procedure to return the current date as day/month/year (European format) or month/day/year (U.S. format). The IBM-supplied default is the U.S. format.

You can also customize the DATETIME procedure after installation. For more information, see "Customizing the DATETIME Procedure after Installation" on page 11. For more information on the DATETIME procedure, see *VS Pascal Language Reference*.

The Default Language

The default language determines what language the compiler and run-time environment uses for error messages and other generated text.



VS Pascal provides National Language Support (NLS) for uppercase and mixed-case English and for Japanese. As shipped, uppercase English is the default language. During installation, you select a default language from the list of languages shipped with the product. The default remains uppercase English unless you specify another language.

The available languages are:

- Mixed-case English
- Uppercase English
- Japanese.

The message modules for the selected language are link-edited with the product.

At compile time and run time, you can select a language other than the default language by using the LANGUAGE option. VS Pascal loads this new language without affecting the default language.

You can also customize the default language after installation. For more information, see “Customizing the Default Language after Installation” on page 13.

The Uppercase and Character Translation Tables

You can customize the uppercase and character translation tables of the VS Pascal Compiler and Library product (5668-767).

Note: This customization applies only to the VS Pascal Compiler and Library only product (5668-767).

You customize these tables to allow for different national character coding standards, or to support devices equipped with characters different than those shipped with VS Pascal.

Note: To customize the uppercase and character translation tables, you must first install VS Pascal normally. You then rerun the installation EXEC, specifying uppercase and character translation table customization. See “Customizing the Uppercase and Character Translation Tables after Installation” on page 15 for details.

Extended Architecture (XA)

You can install VS Pascal for use in Virtual Machine/Extended Architecture (VM/XA) systems. The compiler can be installed above or below the the 16-megabyte line. Installing above the 16-megabyte line relieves some of the crowding in the 24-bit address space. However, VS Pascal runs slightly faster below the line. The IBM-supplied default is below the 16-megabyte line. The default remains in effect unless you specify otherwise.

Note: The XA option applies only to the VS Pascal Compiler and Library product (5668-767).

You can also change the XA option after installation. For more information, see “Customizing the XA Option after Installation” on page 21.

Chapter 3. Installing VS Pascal under VM

This chapter describes the installation process, and the installation steps. Read the entire chapter before attempting installation.

The Installation Process

The installation program you will use to install VS Pascal is an IBM-supplied EXEC that is on the IBM Software Distribution (ISD) tape. The EXEC prompts you for responses that control the installation process and copies the files that you need onto the production minidisk.

The installation steps for the VS Pascal Compiler and Library product (5668-767) are almost identical to the installation steps for the VS Pascal Library product (5668-717). When you must do something differently, depending on the product you are installing, the installation EXEC indicates your choices.

The following features simplify VS Pascal installation.

- The product tape contains pregenerated, executable modules. Installation is faster because you need not link-edit all the object decks.
- The installation EXEC automatically invokes the installation verification procedure (IVP) after installation is complete.
- The installation EXEC stores your responses to prompts in a configuration file. The installation EXEC “remembers” your responses to prompts, thus saving time if you need to re-run the installation EXEC to service or customize the product.

The Installation Steps

Install VS Pascal by:

1. Loading the tape
2. Installing VS Pascal
3. Verifying the output.

Step 1: Loading the Tape

To load the ISD tape, perform the following steps:

1. Attach the tape drive containing the VS Pascal ISD tape to virtual address 181.
2. Link the VS Pascal production minidisk in READ/WRITE mode and access it with a filemode other than A.
3. Issue the command:

```
VMFPLC2 LOAD * * filemode
```

where *filemode* is the filemode of the production minidisk. This loads the installation EXEC onto the production minidisk.

Note: Do not remove or rewind the tape at this time.

Step 2: Installing VS Pascal

This step invokes the installation EXEC, which performs the actual installation. The installation EXEC will prompt you to enter responses based upon the product you are installing, and how you want to configure the product.

Perform the following steps:

1. **To install the VS Pascal Compiler and Library product (5668-767)**, issue the command:

I5668767

To install the VS Pascal Library product (5668-717), issue the command:

I5668717

2. Enter a "1" or "YES" to begin installation, or "0" or "NO" to quit.

Note: To stop the installation process, respond to any prompt with "QUIT". If you need to see the informational message again before answering the input prompt, enter "?" to review the material.

3. To use the displayed linkage information, (user ID, minidisk address, and READ/WRITE password of the production minidisk) enter a "0", "NO", or press the ENTER key without specifying a value.

To change the displayed user ID, minidisk address, or the production minidisk password, enter "1" or "YES", and change the appropriate values.

If you are not the owner of (or are not linked to) the production minidisk, you can force a logoff of the user ID that owns the production minidisk. If you enter "1" or "YES", the installation EXEC forces off that user ID (if it is currently running disconnected in the system).

Note: If your user ID is not authorized to force a logoff, you will receive an error message.

4. Select a date format. As shipped, the default is the U.S. format. Keep the U.S. date format by entering "1", "U", "US", or by pressing the ENTER key without specifying a value.

To change the date format to the European format enter "2", "EUROPEAN", or an abbreviation such as "E".

5. Select a default language. As shipped, the default language for VS Pascal is uppercase English. If you do not choose another language, uppercase English remains the default.

To select another default language, you must enter either a numeric or a three-character identifier:

Enter	For Language
1 or UEN	Uppercase English
2 or ENG	Mixed-case English
3 or JPN	Japanese

To accept the IBM-supplied default, press ENTER without specifying an identifier.

6. The installation EXEC asks if you want to install the VS Pascal compiler above the 16-megabyte line.

Note: This option is available for VM/XA (Virtual Machine/Extended Architecture) systems only.

To install the VS Pascal compiler above the 16-megabyte line, enter a "1" or "YES". To install the VS Pascal compiler below the 16-megabyte line, enter a "0" or "NO", or press ENTER without specifying a new value.

Note: If you have full screen mode set on, the installation EXEC temporarily suspends full screen mode while executing. Full screen mode is set back on when the installation EXEC has completed. This is done to allow informational messages to be displayed on a timely basis.

Any error messages you get during the installation procedure are listed in Appendix B, "Installation Messages" on page 33.

Note: The ISD tape contains some TEXT files that are not required to use the product but are required for service and customizing. The installation EXEC loads these files with a file mode of *fm1*, where *fm* is the file mode character used to access the production minidisk. The installation EXEC loads the files needed to compile, link, and execute VS Pascal programs with a file mode of *fm2*. You can improve access time by accessing the production minidisk with the command:

```
ACCESS cuu fm/A * * fm2
```

where *fm* is the file mode you used to access the production minidisk and *cuu* is the virtual address of your production minidisk. This allows only the files needed to run the compiler to be included in the CMS resident directory.

Figure 1 on page 8 shows the output from installing the VS Pascal Compiler and Library product (5668-767). The output from installing the VS Pascal Library product (5668-717) is almost identical to Figure 1, and the differences are listed in the notes following Figure 1. The lines beginning with ===> indicate what you entered.

```
==> I5668767 (note 1)
*** I5668767 - VS Pascal (note 2)
*** Version 1 Release 2 Modification 0
*** Do you wish to install this product now?
*** Enter 1 (YES) or 0 (NO).
==> 1
*** Begin VS Pascal Installation Procedure ***
          Version 1 Release 2.0

This procedure will type out messages and request responses
from you to guide the installation process. If at any time
you want to quit, type "QUIT" as a response, and the procedure
will terminate immediately. If you need to see the information
message again before answering the input prompt, enter "?" to
re-view the material.

*** The product minidisk will be linked using the following
*** default values:
***
*** Userid = (your userid)
*** Minidisk address = <cuu>
*** Password = (link password of the production minidisk)
***
*** Change any of the above parameters?
*** Enter 1 (YES) or 0 (NO)
==> 1
*** Enter userid (or NULL for existing value):

*** Enter minidisk address (or NULL for existing value):
==> 192
*** Enter password (or NULL for existing value):

*** Installation of VS Pascal (5668-767) begins .... (note 2)

*** Loading product files to disk ...

*** Loading installation verification files ...

*** Loading service files ...

*** What date format do you want?
*** 1 (or US) for U.S. format (mm/dd/yy)
*** 2 (or EUROPEAN) for European format (dd/mm/yy)
*** null keeps the current format (US).
==> EUROPEAN

*** What default message language do you want?
*** 1 (or UEN) for uppercase English
*** 2 (or ENG) for mixed-case English
*** 3 (or JPN) for Japanese (Kanji)
*** null keeps the current default language (UEN).
==> ENG
```

Figure 1 (Part 1 of 2). Output from Installing VS Pascal Compiler and Library Product

```
*** Do you want to install the compiler above (note 3)
*** the 16 megabyte line?
*** 0 (NO) for below the line
*** 1 (YES) for above the line
*** null keeps the current location (BELOW).
==> 1
```

```
*** Customizing VS Pascal (5668-767) (note 2)
```

```
Customizing DATE ...
Customizing LANGUAGE ...
Customizing XA ... (note 3)
```

```
( The output from the installation verification procedure is )
( displayed here. See the Program Directory for an example of )
( the correct output. )
```

```
*** VS Pascal *****
*** Product installation is complete.
*****
```

Figure 1 (Part 2 of 2). Output from Installing VS Pascal Compiler and Library Product

Notes to Figure 1: How the output differs if you are installing the VS Pascal Library product (5668-717) only

1. Enter "I5668717" instead of "I5668767".
2. The message indicates VS Pascal Library.
3. These lines do not appear in your output.

Step 3: Verifying the Output

The installation EXEC automatically runs the installation verification procedure (IVP) after you finish installing VS Pascal. See the Program Directory for an example of the output from the IVP.



Chapter 4. Customizing VS Pascal after Installation

After VS Pascal has been installed, you can customize:

- The DATETIME procedure
- The default language
- The uppercase and character translation tables
- Where the compiler resides in relation to the 16-megabyte line.

This chapter explains how to change each option separately, and how to change a number of options at one time. It also explains how to run the installation verification procedure separately.

Customizing the DATETIME Procedure after Installation

You can change the format of output from the DATETIME procedure any time after you have installed VS Pascal. You can customize the DATETIME procedure to return the current date as day/month/year (European format) or month/day/year (U.S. format). For more information on the DATETIME procedure, see *VS Pascal Language Reference*.

Note: Make sure the production disk is not accessed with a filemode of "A" during customization.

1. **To customize the VS Pascal Compiler and Library product (5668-767)**, issue the following command to invoke the installation EXEC:

```
I5668767 DATE
```

To customize the VS Pascal Library product (5668-717), issue the following command to invoke the installation EXEC:

```
I5668717 DATE
```

Note: To stop the installation process, respond to any prompt with "QUIT". If you need to see the informational message again before answering the input prompt, enter "?" to review the material.

2. To use the displayed linkage information, enter a "0", "NO", or press the ENTER key without specifying a value.

To change any of the linkage information, enter "1" or "YES", and change the appropriate values.

Note: If you are not the owner of (or are not linked to) the production minidisk, the installation EXEC prompts you to determine whether to force a logoff of the user ID that owns the production minidisk. If you enter "1" or "YES", the installation EXEC forces off that user ID (if it is currently running disconnected in the system). If your user ID does is not authorized to force a logoff, you will receive an error message.

3. The installation EXEC prompts you for the U.S. or European date format. Enter "1" or "US" for U.S. date format, or "2" or "EUROPEAN" for European date format (you can also abbreviations such as "U" or "E"). If you press ENTER without specifying a new value, the installation EXEC leaves the existing default in effect.

Any error messages you get during customization are listed in Appendix B, "Installation Messages" on page 33.

Output from the customization procedure: Figure 2 shows the output from customizing the DATETIME procedure. The output from installing the VS Pascal Library is almost identical to Figure 2, and the differences are listed in the notes following the figure. The lines that begin with ===> indicate what you enter.

```
==> I5668767 DATE (note 1)
*** Begin VS Pascal Customization Procedure ***
          Version 1 Release 2.0

This procedure will type out messages and request responses
from you to guide the customization process. If at any time
you want to quit, type "QUIT" as a response, and the procedure
will terminate immediately. If you need to see the information
message again before answering the input prompt, enter "?" to
re-view the material.

*** The product minidisk will be linked using the following
*** default values:
***
***      Userid = (your userid)
***      Minidisk address = <cuu>
***      Password = (link password of the production minidisk)
***
***      Change any of the above parameters?
***      Enter 1 (YES) or 0 (NO)
==> 1
*** Enter userid (or NULL for existing value):
==>
*** Enter minidisk address (or NULL for existing value):
==> 192
*** Enter password (or NULL for existing value):
==>

*** What date format do you want?
*** 1 (or US) for U.S. format (mm/dd/yy)
*** 2 (or EUROPEAN) for European format (dd/mm/yy)
*** null keeps the current format (US).
==> European

*** Customizing VS Pascal (5668-767) ... (note 2)

Customizing DATE ...

( The output from the installation verification procedure is )
( displayed here. See the Program Directory for an example of )
( the correct output. )

*** VS Pascal *****
*** Product customization is complete.
*** *****
```

Figure 2. Output from Customizing the DATETIME Procedure of the VS Pascal Compiler and Library Product

Notes to Figure 2: How the output differs when you are customizing the VS Pascal Library product (5668-717).

1. You enter "I5668717 DATE" instead of "I5668767 DATE".
2. The message indicates the VS Pascal Library.

After the installation EXEC has modified the library, it automatically invokes the installation verification procedure (IVP) to verify the product customization. The IVP issues a message stating whether the procedure was completed successfully or not. See the Program Directory for an example of the IVP output.

Customizing the Default Language after Installation

You can change the default language any time after you have installed VS Pascal. You can customize the default language to generate text in these languages:

- Uppercase English
- Mixed-case English
- Japanese.

Note: Make sure the production disk is not accessed with a filemode of "A" during customization.

1. **To customize the VS Pascal Compiler and Library product (5668-767)**, issue the following command to invoke the installation EXEC:

```
I5668767 LANGUAGE
```

To customize the VS Pascal Library product (5668-717), issue the following command to invoke the installation EXEC:

```
I5668717 LANGUAGE
```

2. To use the displayed linkage information, enter a "0", "NO", or press the ENTER key without specifying a value.

To change any of the linkage information, enter "1" or "YES", and change the appropriate values.

Note: If you are not the owner of (or are not linked to) the production minidisk, the installation EXEC prompts you to determine whether to force a logoff of the user ID that owns the production minidisk. If you enter "1" or "YES", the installation EXEC forces off that user ID (if it is currently running disconnected in the system). If your user ID does is not authorized to force a logoff, you will receive an error message.

3. The installation EXEC prompts you to select a language. Enter the number or identifier of the new default language.

Enter	For Language
1 or UEN	Uppercase English
2 or ENG	Mixed-case English
3 or JPN	Japanese

If you press ENTER without specifying a new value, the installation EXEC leaves the existing default in effect.

Any error messages you get during customization are listed in Appendix B, "Installation Messages" on page 33.

Output from the customization procedure: Figure 3 on page 14 shows the output from customizing the default language. The output from installing the VS Pascal Library is almost identical to Figure 3, and the differences are listed in the notes following the figure. The lines that begin with ==> indicate what you enter.

```

====> I5668767 LANGUAGE (note 1)
*** Begin VS Pascal Customization Procedure ***
          Version 1 Release 2.0

This procedure will type out messages and request responses
from you to guide the customization process. If at any time
you want to quit, type "QUIT" as a response, and the procedure
will terminate immediately. If you need to see the information
message again before answering the input prompt, enter "?" to
re-view the material.

*** The product minidisk will be linked using the following
*** default values:
***
***      Userid = (your userid)
***      Minidisk address = <cuu>
***      Password = (link password of the production minidisk)
***
***      Change any of the above parameters?
***      Enter 1 (YES) or 0 (NO)
====> 1
*** Enter userid (or NULL for existing value):
====>
*** Enter minidisk address (or NULL for existing value):
====> 192
*** Enter password (or NULL for existing value):
====>

*** What default message language do you want?
    1 (or UEN) for uppercase English
    2 (or ENG) for mixed-case English
    3 (or JPN) for Japanese (Kanji)
    null keeps the current default language (UEN).
====> ENG

*** Customizing VS Pascal (5668-767) ... (note 2)

Customizing LANGUAGE ...

      ( The output from the installation verification procedure is )
      ( displayed here. See the Program Directory for an example of )
      ( the correct output. )

*** VS Pascal *****
*** Product customization is complete.
*****

```

Figure 3. Output from Customizing the Default Language of the VS Pascal Compiler and Library Product

Notes to Figure 3: How the output differs when customizing the VS Pascal Library product (5668-717)

1. You enter "I5668717 LANGUAGE" instead of "I5668767 LANGUAGE".
2. The message indicates the VS Pascal Library.

After the installation EXEC has modified the library, it automatically invokes the installation verification procedure (IVP) to verify the product customization. The IVP issues a message stating whether the procedure was completed successfully or not. See the Program Directory for an example of the IVP output.

Customizing the Uppercase and Character Translation Tables after Installation

You must first have installed VS Pascal before customizing the uppercase and character translation tables.

Note: Customizing the uppercase and character translation tables applies only to the VS Pascal Compiler and Library product (5668-767).

Before customizing the VS Pascal Compiler and Library product (5668-767), you must:

1. Edit the file AMPXCAPS PASCAL as described below.
2. Save the file back on the production minidisk.

AMPXCAPS PASCAL contains 2 tables:

- The uppercase table (AMPXUCASE) which maps lowercase letters to their corresponding uppercase letters. For example:

```
AMPXUCASE ['a'] := 'A';
```

- The character translation table (AMPXCCLASS), which maps characters to character classes.

All character classes are defined in AMPXCAPS PASCAL. If applicable, their corresponding Graphic Character Global Identifiers (GCGIDs) are documented in the comment section next to each character class. The defined character classes are:

Class	Defines	GCGID
\$AMPERSAND	Ampersand	SM03
\$ARROW	At sign	SM05
\$ASTERISK	Asterisk	SM04
\$BAR	Vertical bar	SM13
\$COLON	Colon	SP13
\$COMMA	Comma	SP08
\$DASH	Hyphen	SP10
\$DIGIT	Digits from 0 to 9	
\$EOF	End-of-file	
\$EQUAL	Equal sign	SA04
\$GREATER	Greater than operator	SA05
\$ILLEGAL	Illegal character	
\$LBRACK	Left square bracket	SM06
\$LCURL	Left brace	SM14

Class	Defines	GCGID
\$LESS	Less than operator	SA03
\$LETTER	All the characters that can start a VS Pascal identifier	
\$LPARENT	Left parenthesis	SP06
\$NOT	Logical-not operator	SM66
\$PERCENT	Percent sign	SM02
\$PERIOD	Period	SP11
\$PLUS	Plus sign	SA01
\$QUOTE	Apostrophe	SP05
\$RBRACK	Right square bracket	SM08
\$RCURL	Right brace	SM11
\$RPARENT	Right parenthesis	SP07
\$SEMICOLON	Semicolon	SP14
\$SHIFTIN	Hex code '0F'	
\$SHIFTOUT	Hex code '0E'	
\$SLASH	Slash	SP12
\$UNDERSCORE	Underscore	SP09

Note: You can only customize the VALUE declarations for AMPXCCLASS and AMPXUCASE as described in the following sections.

Next to each character VALUE declaration in the translation table, the comment section specifies any possible changes. *If the comment section is left blank, the character cannot be changed.* For example,

VALUE Declaration	Comment Section
AMPXCCLASS [' '] := \$BAR;	(*Can be changed to *) (*\$LETTER, \$ILLEGAL, *) (*non SGCS character *)
AMPXCCLASS ['&'] := \$AMPERSAND;	(* *)

shows that the vertical bar is assigned character class of \$BAR, and can be changed into character classes \$LETTER, \$ILLEGAL, or non-SGCS (Syntactic Graphic Character Set) characters. The ampersand is assigned to a character class of \$AMPERSAND, and cannot be changed (indicated by the blank comment section).

The Customization Procedure

You can change the character translation table in several ways, you can:

Use a different code point for a character class: If you have a different code point for a certain character class, you can change the code point within the square brackets.

For example, the VS Pascal compiler uses the “@” character as pointer notation (it is assigned to a character class of \$ARROW). If you want to use a different character to denote the pointer notation:

1. Find the line in AMPXCAPS PASCAL that assigns the character “@” to a character class \$ARROW.
2. Change character “@” to the character representing the code point you want to use. For example, if the code point you want to use for pointer notation is 'B0'X (hexadecimal), the change looks like:

```
AMPXCCLASS ['B0'XC] := $ARROW;
```

The symbol 'XC' denotes the character representation of hexadecimal 'B0'.

Use a different character class for a code point: If you want the VS Pascal compiler to treat certain code points differently, you can change the character classes of those code points.

For example, if you do not want the VS Pascal compiler recognize the character “¬”, and you want it flagged as an illegal character, you can:

1. Find the assignment statement of “¬” in AMPXCAPS.
2. Check the comment section to see if character “¬” can be changed.

The assignment statement for the “¬” character is:

```
AMPXCCLASS ['¬'] := $NOT;          (*Can be changed to      *)
                                   (*$LETTER, $ILLEGAL,        *)
                                   (*non SGCS character        *)
```

3. The comment section indicates that the character class of “¬” can be changed to \$LETTER, \$ILLEGAL, or non-SGCS character. To make the VS Pascal compiler flag “¬” as an illegal character, change the character class from \$NOT to \$ILLEGAL.

Add a new code point: To make the compiler recognize a new code point, put the new code point into the table.

For example, to use an “ä” ('43'X) as a valid character in an identifier:

1. Go to the VALUE declaration of AMPXCCLASS.
2. Enter the definition of “ä” into the character translation table. You can do this with the code:

```
AMPXCCLASS ['43'XC] := $LETTER; (*lowercase a umlaut *)
AMPXCCLASS ['63'XC] := $LETTER; (*uppercase a umlaut *)
```

3. Go to the VALUE declaration of AMPXUCASE.
4. Change the uppercase table code to:

```
AMPXUCASE ['43'XC] := '63'XC; (*map lowercase a umlaut to uppercase*)
AMPXUCASE ['63'XC] := '63'XC; (*map uppercase a umlaut to itself *)
```

Delete a code point: To delete code points, delete the assignment statements, or change the character classes to \$ILLEGAL.

The following table shows the character classes which need not have associated characters. VS Pascal provides alternative representations for these classes. You can use the alternatives listed for any code point you delete. Note, however, that some code points have special uses.

Class	Alternatives	Cautions
\$ARROW	->	Causes flagging of pointer references when the compile-time option LANGLVL(ANSI83) is specified.
\$SHIFTIN		DBCS literals will not work.
\$SHIFTOUT		DBCS literals will not work.
\$LCURL	(*	Removes a standard Pascal character.
\$RCURL	*)	Removes a standard Pascal character.
\$LBRACK	(.	Removes a standard Pascal character.
\$RBRACK	.)	Removes a standard Pascal character.
\$AMPERSAND	AND (for "&") > < (for "&&")	
\$BAR	OR (for " ") + (for " ")	
\$NOT	NOT (for "¬") < > (for "¬=")	

Note: For the compiler to work properly, you must:

1. Change the character classes only to those specified in the comment section.
2. Use each of the character classes at least once, except those that have alternative representations as specified above.

Recovering the Original File After an Error

If you discover that you incorrectly customized the tables, recover the file AMPXCAPS PASCAL by issuing the command:

```
COPYFILE AMPXCAPS DEFAULT fm = PASCAL = (REP
```

where *fm* is the file mode of the VS Pascal production minidisk.

- If you have not yet invoked the installation EXEC, you can edit the file AMPXCAPS PASCAL again and then invoke the installation EXEC.
- If you have already invoked the installation EXEC, you might be able to recover without reinstalling the product by invoking the installation EXEC with the CODEPAGE option.

Note: If you have already invoked the installation EXEC, you might not be able to recover without reinstalling VS Pascal. Whether you can recover depends on the error in AMPXCAPS PASCAL. Try to recover without reinstalling VS Pascal by:

1. Recovering the file AMPXCAPS PASCAL.
2. Invoking the installation EXEC with CODEPAGE option.

If there are errors during the customization process, then you have to reinstall VS Pascal.

Running the Installation EXEC

After saving the edited AMPXCAPS PASCAL file on the the product disk, customize the VS Pascal Compiler and Library product (5668-767) by invoking the installation EXEC with "CODEPAGE" specified.

Note: Make sure the production disk is not accessed with a filemode of "A" during customization.

1. **To customize the VS Pascal Compiler and Library product (5668-767)**, issue the following command to invoke the installation EXEC:

```
I5668767 CODEPAGE
```

2. To use the displayed linkage information, enter a "0", "NO", or press the ENTER key without specifying a value.

To change any of the linkage information, enter "1" or "YES", and change the appropriate values.

Note: If you are not the owner of (or are not linked to) the product disk, the installation EXEC prompts you to determine whether to force a logoff of the user ID that owns the product minidisk. If you enter "1" or "YES", the system the installation EXEC forces off that user ID (if it is currently running disconnected in the system). If your user ID does is not authorized to force a logoff, you will receive an error message.

3. The installation EXEC asks if you want to customize the uppercase and character translation tables. To use the standard uppercase and character translation tables, enter "0", "NO", or press ENTER without specifying a value. To customize the uppercase and character translation tables, enter "1" or "YES".

Any error messages you get during customization are listed in Appendix B, "Installation Messages" on page 33.

Output from the customization procedure: Figure 4 on page 20 shows the output from customizing the uppercase and character translation tables. The lines that begin with ==> indicate what you enter.

```

===> I5668767 CODEPAGE
*** Begin VS Pascal Customization Procedure ***
        Version 1 Release 2.0

This procedure will type out messages and request responses
from you to guide the customization process.  If at any time
you want to quit, type "QUIT" as a response, and the procedure
will terminate immediately.  If you need to see the information
message again before answering the input prompt, enter "?" to
re-view the material.

***   The product minidisk will be linked using the following
***   default values:
***
***   Userid = (your userid)
***   Minidisk address = <cuu>
***   Password = (link password of the production minidisk)
***
***   Change any of the above parameters?
***   Enter 1 (YES) or 0 (NO)
==> 1
*** Enter userid (or NULL for existing value):
===>
*** Enter minidisk address (or NULL for existing value):
===> 192
*** Enter password (or NULL for existing value):
===>

*** Do you want to customize the uppercase and compiler
*** character translation tables?
***   0 (or NO) keeps the default tables
***   1 (or YES) customizes the tables
***   null keeps the current tables.
===> 1

*** Customizing VS Pascal (5668-767) ...

Customizing uppercase and character translation tables ...

( The output from the installation verification procedure is )
( displayed here. See the Program Directory for an example of )
( the correct output. )

*** VS Pascal *****
*** Product customization is complete.
*****

```

Figure 4. Output from Customizing the Uppercase and Character Translation Tables of the VS Pascal Compiler and Library Product

After the installation EXEC has modified the tables, it automatically invokes the installation verification procedure (IVP) to verify the product customization. The IVP issues a message stating whether the procedure was completed successfully or not. See the Program Directory for an example of the IVP output.

Customizing the XA Option after Installation

You can change the location of the VS Pascal compiler any time after you have installed the VS Pascal Compiler and Library product (5668-767).

Note: Make sure the production disk is not accessed with a filemode of "A" during customization.

1. **To change the location of the VS Pascal Compiler**, issue the following command to invoke the installation EXEC:

```
I5668767 XA
```

2. To use the displayed linkage information, enter a "0", "NO", or press the ENTER key without specifying a value.

To change any of the linkage information, enter "1" or "YES", and change the appropriate values.

Note: If you are not the owner of (or are not linked to) the product disk, the installation EXEC prompts you to determine whether to force a logoff of the user ID that owns the product minidisk. If you enter "1" or "YES", the installation EXEC forces off that user ID (if it is currently running disconnected in the system). If your user ID does is not authorized to force a logoff, you will receive an error message.

3. The Installation EXEC asks if you want to install the VS Pascal compiler above the 16-megabyte line. To use the default value shown, press the ENTER key without specifying a value. To install the VS Pascal compiler above the 16-megabyte line, enter "1", or "YES". To install the VS Pascal compiler below the 16-megabyte line or enter a "0", or "NO".

Any error messages you get during customization are listed in Appendix B, "Installation Messages" on page 33.

Output from the customization procedure: Figure 5 on page 22 shows the output from customizing the XA option. The lines that begin with ==> indicate what you enter.

```

==> I5668767 XA
*** Begin VS Pascal Customization Procedure ***
          Version 1 Release 2.0

This procedure will type out messages and request responses
from you to guide the customization process. If at any time
you want to quit, type "QUIT" as a response, and the procedure
will terminate immediately. If you need to see the information
message again before answering the input prompt, enter "?" to
re-view the material.

*** The product minidisk will be linked using the following
*** default values:
***
***      Userid = (your userid)
***      Minidisk address = <cuu>
***      Password = (link password of the production minidisk)
***
***      Change any of the above parameters?
***      Enter 1 (YES) or 0 (NO)
==> 1
*** Enter userid (or NULL for existing value):
==>
*** Enter minidisk address (or NULL for existing value):
==> 192
*** Enter password (or NULL for existing value):
==>

*** Do you want to install the compiler above
*** the 16 megabyte line?
*** 0 (or NO) for below the line
*** 1 (or YES) for above the line
*** null keeps the current location (BELOW).
==> 1

*** Customizing VS Pascal (5668-767)

Customizing XA ...

      ( The output from the installation verification procedure is )
      ( displayed here. See the Program Directory for an example of )
      ( the correct output. )

*** VS Pascal *****
*** Product customization is complete.
*** *****

```

Figure 5. Output from Customizing the XA Option of the VS Pascal Compiler and Library

After the installation EXEC has installed the compiler above the 16-megabyte line, it automatically invokes the installation verification procedure (IVP) to verify the product customization. The IVP issues a message stating whether the procedure was completed successfully or not. See the Program Directory for an example of the IVP output.

Customizing Several Options in One Procedure

You can change any grouping of options at one time, including:

- The format of the DATETIME routine
- The default Language
- The uppercase and character translation tables
- The location of the VS Pascal compiler in relation to the 16-megabyte line.

This example shows you how to combine all options at one time.

Note: Make sure the production minidisk is not accessed with a filemode of "A" during customization.

1. **To customize the VS Pascal Compiler and Library product (5668-767)**, issue the following command to invoke the installation EXEC:

```
I5668767 DATE LANGUAGE CODEPAGE XA
```

To customize the VS Pascal Library product (5668-717), issue the following command to invoke the installation EXEC:

```
I5668717 DATE LANGUAGE
```

Note: The XA and CODEPAGE options apply only to the VS Pascal Compiler and Library product (5668-767).

2. To use the displayed linkage information, enter a "0", "NO", or press the ENTER key without specifying a value.

To change any of the linkage information, enter "1" or "YES", and change the appropriate values.

Note: If you are not the owner of (or are not linked to) the production minidisk, the installation EXEC prompts you to determine whether to force a logoff of the user ID that owns the production minidisk. If you enter "1" or "YES", the installation EXEC forces off that user ID (if it is currently running disconnected in the system). If your user ID does is not authorized to force a logoff, you will receive an error message.

3. The installation EXEC prompts you for the "US" or "EUROPEAN" date format. Enter "1" or "US" for U.S. date format (month/day/year), or "2" or "EUROPEAN" for an European date format (day/month/year). You can also use an abbreviation such as "U" or "E". If you press ENTER without specifying a new value, the installation EXEC leaves the existing default in effect.
4. The installation EXEC prompts you to select a language. Respond by entering the number or the three-character identifier of the new default language.

Enter	For Language
1 or UEN	Uppercase English
2 or ENG	Mixed-case English
3 or JPN	Japanese

If you press ENTER, the installation EXEC leaves the existing default in effect.

5. The installation EXEC asks if you want to customize the uppercase and character translation tables.

To use the standard uppercase and character translation tables, enter "0", "NO", or press the ENTER key without specifying a new value. To customize the uppercase and character translation tables, enter "1" or "YES"

Note: The CODEPAGE option applies only to the VS Pascal Compiler and Library product.

“Customizing the Uppercase and Character Translation Tables after Installation” on page 15 explains how to customize the uppercase and character translation tables.

6. The installation EXEC asks if you want to install the VS Pascal compiler above the 16-megabyte line. To use the default value shown, press the ENTER key without specifying a new value. To install the VS Pascal above the 16-megabyte line, enter “1” or “YES”. To install the VS Pascal compiler below the 16-megabyte line (the default), enter a “0” or “NO”.

Note: The XA option applies to the VS Pascal Compiler and Library product (5668-767).

Any error messages you get during customization are listed in Appendix B, “Installation Messages” on page 33.

Figure 6 shows the portion of the output from customizing the options. The lines beginning with ==> indicate what you enter. The output from installing the VS Pascal Library is almost identical to Figure 6, and the differences are listed in the notes following the figure.

```
==> I5668767 DATE LANGUAGE CODEPAGE XA (note 1)
*** Begin VS Pascal Customization Procedure ***
        Version 1 Release 2.0

This procedure will type out messages and request responses
from you to guide the customization process.  If at any time
you want to quit, type "QUIT" as a response, and the procedure
will terminate immediately.  If you need to see the information
message again before answering the input prompt, enter "?" to
re-view the material.

***   The product minidisk will be linked using the following
***   default values:
***
***   Userid = (your userid)
***   Minidisk address = <cuu>
***   Password = (link password of the production minidisk)
***
***   Change any of the above parameters?
***   Enter 1 (YES) or 0 (NO)
==> 1
*** Enter userid (or NULL for existing value):
==>
*** Enter minidisk address (or NULL for existing value):
==> 192
*** Enter password (or NULL for existing value):
==>
```

Figure 6 (Part 1 of 2). Output from Customizing Several Options in One Procedure of the VS Pascal Compiler and Library Product

```

*** What date format do you want?
*** 1 (or US) for U.S. format (mm/dd/yy)
*** 2 (or EUROPEAN) for European format (dd/mm/yy)
*** null keeps the current format (US).
==> EUROPEAN

*** What default message language do you want?
*** 1 (or UEN) for uppercase English
*** 2 (or ENG) for mixed-case English
*** 3 (or JPN) for Japanese (Kanji)
*** null keeps the current default language (UEN).
==> ENG

*** Do you want to customize the uppercase and compiler (note 2)
*** character translation tables?
*** 0 (or NO) keeps the default table
*** 1 (or YES) customizes the tables
*** null keeps the current tables.
==> 1

*** Do you want to install the compiler above (note 2)
*** the 16 megabyte line?
*** 0 (or NO) for below the line
*** 1 (or YES) for above the line
*** null keeps the current location (BELOW).
==> 1

*** Customizing VS Pascal (5668-767) (note 3)

Customizing DATE ...
Customizing LANGUAGE ...
Customizing uppercase and character translation tables ... (note 2)
Customizing XA ... (note 2)

( The output from the installation verification procedure is )
( displayed here. See the Program Directory for an example of )
( the correct output. )

*** VS Pascal *****
*** Product customization is complete.
*** *****

```

Figure 6 (Part 2 of 2). Output from Customizing Several Options in One Procedure of the VS Pascal Compiler and Library Product

Notes to Figure 6: How the output differs when you are customizing the VS Pascal Library product (5668-717)

1. You enter "I5668717 DATE LANGUAGE" instead of "I5668767 DATE LANGUAGE CODEPAGE XA".
2. These lines do not appear in your output.
3. The message indicates VS Pascal Library product.

After the installation EXEC has modified the library, it automatically invokes the installation verification procedure (IVP) to verify the product customization. The IVP issues a message stating whether the procedure was completed successfully or not. See the Program Directory for an example of the IVP output.

Running the Installation Verification Procedure Separately

The installation EXEC automatically runs the installation verification procedure (IVP) after VS Pascal has been installed or customized. Occasionally, you might have to run the IVP separately, such as when you install VS Pascal service tape. See Appendix C, "Servicing VS Pascal" on page 41 for more information.

To run the IVP separately:

To verify the **VS Pascal Compiler and Library product (5668-767)**, issue the command:

```
V5668767
```

To verify the **VS Pascal Library product (5668-717)**, issue the command:

```
V5668717
```

See the Program Directory for an example of the IVP output.

Chapter 5. Installing and Customizing VS Pascal under VM/IS

Installing and customizing VS Pascal under VM/IS are two separate steps, unlike installing under VM/CMS.

When you install VS Pascal under VM/IS the product is installed using the IBM-supplied defaults. That is, the VS Pascal Compiler and Library product (5668-767) is installed with:

- U.S. date format
- Uppercase English as the default language
- Standard uppercase and character translation tables
- The compiler below the 16-megabyte line

and the VS Pascal Library product (5668-717) is installed with:

- U.S. date format
- Uppercase English as the default language.

You can customize VS Pascal under VM/IS using the same procedure as customizing VS Pascal under VM/CMS. See Chapter 4, "Customizing VS Pascal after Installation" on page 11 for more information, and the exact procedures.

Installing VS Pascal under VM/IS

Install VS Pascal under Virtual Machine/Integrated System by invoking the installation tool INSTFPP, which invokes the VS Pascal installation EXEC.

INSTFPP does the following:

1. Defines temporary MAINT 001 minidisk and formats it as the C-disk.
2. Defines temporary MAINT 002 minidisk and formats it as the A-disk.
3. Accesses MAINT 319 minidisk as the P-disk.
4. Loads the Product Identifier File, the product installation EXEC, and the product Memo to Users from the VS Pascal IBM Software Distribution (ISD) tape onto MAINT's 001 temporary C-disk. Once this is done, the ISD tape is positioned at the beginning of the third tape file of the product.
5. Copies the Memo to Users from the temporary C minidisk to the MAINT 319 minidisk.
6. Reads the first record of the Product Identifier File. This record contains the product description.
7. Issues a prompt asking if the installer wishes to print the Program Product's Memo to Users.

If you answer "YES", INSTFPP prints the memo.

If you answer "NO", INSTFPP continues with step 8.

8. Issues a prompt asking if the you want to install the VS Pascal.

If you answer "NO", the installation is terminated.

If you answer "YES", INSTFPP executes the VS Pascal installation EXEC and checks the return code passed back from the installation EXEC.

After the VS Pascal installation EXEC has been invoked:

- You can stop the installation process by responding “QUIT” to any prompt. If you want to see the informational message again before answering the input, enter “?” to review the material.
- To use the displayed linkage information, (user ID, minidisk address, and READ/WRITE password of the product minidisk) enter a “0”, “NO”, or press the ENTER key without specifying a value.

To change the displayed user ID, minidisk address, or product minidisk password enter a “1” or “YES”. You are then prompted to enter the new values.

If you are not the owner of (or not linked to) the product disk, you can force a logoff of the user ID that owns the product minidisk. If you enter a “1” or “YES”, the installation EXEC forces off that user ID (if it is currently running disconnected in the system).

Note: If your user ID is not authorized to force a logoff, you will receive an error message.

Upon exit, the installation EXEC passes a return code to INSTFPP. INSTFPP updates the PROD LEVEL file. This file records the status of the installation according to the return code it receives.

Figure 7 on page 29 shows the output from installing under VM/IS. The lines that begin with ===> indicate what you enter.

```

*** Begin VS Pascal Installation Procedure ***
        Version 1 Release 2.0

This procedure will type out messages and request responses
from you to guide the installation process.  If at any time
you want to quit, type "QUIT" as a response, and the procedure
will terminate immediately.  If you need to see the information
message again before answering the input prompt, enter "?" to
re-view the material.

***   The product minidisk will be linked using the following
***   default values:
***
***   Userid = MAINT
***   Minidisk address = 19E
***   Password = MMAINT
***
***   Do you want to change any of the above parameters?
***   Enter 1 (YES) or 0 (NO).
====> 0

*** Installation of VS Pascal (5668-767) begins ....

*** Loading product files to disk ...

*** Loading installation verification files ...

*** Loading service files ...

        ( The output from the installation verification procedure is   )
        ( displayed here.  See the Program Directory for an example of   )
        ( the correct output.                                           )

*** VS Pascal *****
***   Product installation is complete.
*** *****

```

Figure 7. Output from Installing VS Pascal Under VM/IS

Customizing VS Pascal under VM/IS

The customization procedure for VM/IS is the same as that for VM/CMS.

To Customize	See Page
Date format	11
Default language	13
Uppercase and character translation tables	15
Location of VS Pascal compiler	21
Several options in one procedure	23

Note: If you are installing the VS Pascal Library product (5668-717), you can customize only the date format and the default language.



Appendix A. Summary of Changes

VS Pascal Release 2 provides additions and enhancements to VS Pascal Release 1 in the following areas:

- **System Flexibility**

VS Pascal now:

- *Runs under VM/Extended Architecture (VM/XA).*
- *Runs under MVS/Enterprise Systems Architecture (MVS/ESA).*

- **Transient Run-Time**

Users now have the option to:

- *Create modules which are self-contained, or which can dynamically access run-time routines.* The transient run-time library will help free up resources in large-scale, modular systems that must serve multiple users. Transient run-time reduces the size of load modules and makes it unnecessary for each user to maintain a copy of the run-time library.

- **National Language Support**

Release 2 also:

- *Allows customization of character translation and uppercase tables at installation.* This eases compiler recognition of tokens and characters due to national programming standards, and allows creation of uppercase rules.
- *Provides three languages from which sites choose a default language during installation.* At both run-time and compile-time, users can override the default language with another language. Currently, VS Pascal provides mixed-case English, uppercase English, and Japanese.



Appendix B. Installation Messages

The following messages might be appear during the installation of VS Pascal. An explanation of each message with a user response is provided. The error messages for the installation verification procedure (IVP) are listed in “IVP Error Messages” on page 39.

VS Pascal Installation Error Messages

These messages appear during installation of the VS Pascal Compiler and Library product (5668-767) or during installation of the VS Pascal Library product (5668-717).

111 ***** VS Pascal or VS Pascal Library *******
 ***** User requested termination.**

Explanation: During installation, the user answered “QUIT” when asked to select an installation option.

User Response: Determine which option, if any, is desired and rerun the installation EXEC.

200 ***** VS Pascal or VS Pascal Library *******
 ***** *name* is required for product installation.**
 ***** Installation is terminated.**

Explanation: The *name* command returned a negative return code. The most likely cause would be that the named command could not be found.

User Response: Check to see if the Y-disk (19E) has been released; if so, reaccess it. Otherwise, check with your local system support personnel. After fixing the problem, begin the installation process again.

205 ***** VS Pascal or VS Pascal Library *******
 ***** *name* failed with return code = *rc***
 ***** Installation is terminated.**

Explanation: The *name* command unexpectedly failed.

User Response: As indicated, this is an unexpected failure and you will have to determine the cause. Consult the appropriate manuals to determine why the command might have failed.

210 ***** VS Pascal or VS Pascal Library *******
***** CP FORCE command failed to force a logoff <userid >**
***** Check userid class privileges.**
***** Installation is terminated.**

Explanation: The product disk specified is not in read/write mode. Attempt to force a logoff fails.

User Response: Ensure that the production disk is in read/write mode, or check userid class privilege. Invoke the installation EXEC again.

215 ***** VS Pascal or VS Pascal Library *******
***** Error linking to *diskcuu* as *devaddr*.**
***** Return code = *rc* from CP LINK command.**
***** Installation is terminated.**

Explanation: The LINK command failed with return code *rc* trying to link to disk *diskcuu* as *devaddr*.

User Response: Determine why the LINK command failed. The most probable cause for failure is an incorrect password. See the appropriate CP Command Reference for your VM system for specific command error codes and conditions. After correcting the problem, rerun the installation procedure.

220 ***** VS Pascal or VS Pascal Library *******
***** Tape at device address 181 is not the ISD product tape**
***** for this product.**
***** Installation is terminated.**

Explanation: A scan of the tape at device 181 was done to determine if the VS Pascal product tape was mounted at 181. This error indicates that the tape on device 181 was not recognized as an ISD product tape for VS Pascal.

User Response: Mount the ISD product tape for VS Pascal on tape drive 181 and start the installation process over.

225 ***** VS Pascal or VS Pascal Library *******
***** Error occurred while trying to *function* tape.**
***** Return code = *rc* from the CMS VMFPLC2 command.**
***** Installation is terminated.**

Explanation: A tape error occurred while trying to perform the function specified by *function*.

User Response: Define more disk space or correct the tape error and reexecute the EXEC. See the appropriate CP Command Reference for your VM system for a more specific explanation of VMFPLC2 errors (see the TAPE command).

230 *** VS Pascal or VS Pascal Library *****
 *** Error occurred while loading files from installation
 *** tape to disk.
 *** Installation is terminated.

Explanation: The disk is full or a tape error has occurred.

User Response: Define more disk space or correct the tape error and reexecute the EXEC. See the appropriate CP Command Reference for your VM system for a specific explanation of VMFPLC2 errors (see the TAPE command).

235 *** VS Pascal or VS Pascal Library *****
 *** A normally non-terminating error occurred during
 *** installation with the NOPROMPT option specified.
 *** Installation is terminated.

Explanation: An error that normally does not terminate the installation EXEC occurred with the NOPROMPT option specified.

User Response: Restart the Installation EXEC without the NOPROMPT option.

240 *** VS Pascal or VS Pascal Library *****
 *** Error occurred copying the product files.
 *** Return code = *rc*.
 *** Installation is terminated.

Explanation: When VS Pascal is customized or serviced, product files are copied back and forth between a temporary disk and the "product" disk. This error can be caused by a file not existing or the product disk not having enough space to hold the files.

User Response: Determine which file does not exist and find out why it was not generated. See the appropriate CP Command Reference for your VM system for specific command error codes and conditions. For disk space problems, increase the space allocated for the production disk. The installation process must then be rerun.

245 *** VS Pascal or VS Pascal Library *****
 *** Error occurred updating the product <type> library,
 *** (*name*).
 *** Return code = *rc*.
 *** Installation is terminated.

Explanation: When the library is customized or serviced, certain TXTLIBs and LOADLIBs must be modified. This error can be caused by a file not existing or by the failure of the TXTLIB or LKED commands.

User Response: Determine which file does not exist and find out why it was not generated. See the appropriate CP Command Reference for your VM system for the specific command error codes and conditions. The installation process must then be rerun.

250 *** VS Pascal or VS Pascal Library *****
*** Error occurred while re-generating the compiler.
*** Return code = *rc*.
*** Installation is terminated.

Explanation: When the product is customized or serviced, certain phases of the product must be regenerated. This error can be caused by a file not existing or by the failure of the LOAD or GENMOD commands.

User Response: Determine which file does not exist and find out why it was not generated. See the appropriate CP Command Reference for your VM system for specific command error codes and conditions. The installation process must be rerun.

255 *** VS Pascal or VS Pascal Library *****
*** Error occurred while trying to get a temporary disk
*** (*name*). Return code = *rc*.
*** Installation is terminated.

Explanation: This error occurs when a temporary disk can not be obtained for a variety of reasons (*name*): no device address available, a CP DEFINE error, or a CMS FORMAT error.

User Response: If a device address is not available, then one needs to be freed up (in the range 210-280). For a DEFINE error, consult the CP Command Reference manual. For a FORMAT error, see the appropriate CP Command Reference for your VM system.

260 *** VS Pascal or VS Pascal Library *****
*** No maintenance files exist for this product.
*** Service is terminated.

Explanation: When invoked with the PTF option the installation EXEC expects to find all service files on the PTF tape. This error indicates that none were found.

User Response: Ensure that the PTF or PUT tape being used is a VS Pascal service tape. Correct the error and reexecute the service procedure.

265 *** VS Pascal or VS Pascal Library *****
*** Problem occurred while performing the LISTFILE
*** command on the Product Identifier File.
*** Return code = *rc* from the CMS LISTFILE command.
*** Installation is terminated.

Explanation: The Product Identifier File is not found.

User Response: Check and make sure that the Product Identifier File exists.

270 *** VS Pascal or VS Pascal library *****
*** The number of tape files as specified by the
*** Product Identifier File is non-numeric.
*** Installation is terminated.

Explanation: The installation exec determines number of tape files dynamically from the Product Identifier File. The last digit of the Product Identifier File type specified the number of tape files.

User Response: Check and make sure that the last digit of the Product Identifier File is a digit.

275 *** VS Pascal or VS Pascal Library *****
*** Error compiling module *name*.
*** Return code = *rc*.
*** Installation is terminated.

Explanation: Errors occur when trying to compile or assemble the customized source modules.

User Response: Make sure the correct customized source modules are used. (There may be another version of the customized source modules on another disk.)

280 *** VS Pascal *****
*** The compiler cannot be installed above the 16-megabyte
*** line in VM/SP environment.
*** Installation is terminated.

Explanation: The error occurs when trying to install the compiler above the 16-megabyte line in a VM/SP environment.

User Response: Install the compiler below the line or run the installation exec in a VM/XA environment.

285 *** VS Pascal or VS Pascal Library *****
*** Error formatting <userid> <cuu> minidisk
*** Return code = *rc*.
*** Installation is terminated.

Explanation: This error occurs when the production minidisk cannot be formatted.

User Response: Determine why the FORMAT command failed. See *Virtual Machine/System Product CP Command Reference for General Users* for specific command error codes and conditions. After correcting the problem, rerun the installation procedure.

666 ***** VS Pascal or VS Pascal Library *******
***** Tape drive 181 is not available.**
***** Installation is terminated.**

Explanation: Tape drive (device address 181) was not attached to the user's virtual machine.

User Response: Correct the problem and start the installation again.

888 ***** VS Pascal or VS Pascal Library *******
***** All necessary files have been loaded from tape, but**
***** verification must be done manually.**
***** Installation is terminated.**

Explanation: Product installation completed successfully. However, the verification procedure was not executed during the installation procedure. This is caused when the EXEC that does the verification process could not be found.

User Response: See if the file (V5668767 or V5668717 EXEC) is on the installation tape. If it is, load it and start the installation process again. If it is not on the tape, then report the problem to the IBM Support Center.

999 ***** VS Pascal or VS Pascal Library *******
***** All necessary files have been loaded from the tape,**
***** but verification failed.**
***** Installation is terminated.**

Explanation: An error occurred during the execution of the verification procedure.

User Response: Ensure that all files have been generated correctly; run the installation verification procedure as described in "Running the Installation Verification Procedure Separately" on page 26.

999 ***** VS Pascal or VS Pascal Library *******
***** Fatal error during installation.**
***** Return code = rc.**
***** Installation is terminated.**

Explanation: A failure occurred during the execution of the installation procedure with return code *rc*. This error should only occur if the EXEC was incorrectly modified.

User Response: If the EXEC has not been modified (that is, it is identical to the version on the installation tape), then report the problem to the IBM Support Center.

IVP Error Messages

The following error messages might appear during the installation verification procedure.

300 ***** VS Pascal or VS Pascal Library *******
 ***** File *name* not found.**
 ***** File is required for product verification.**
 ***** Verification is terminated.**

Explanation: This error is caused by the file *name* not existing.

User Response: Ensure that all files have been loaded and generated correctly; run the installation verification procedure as described in "Running the Installation Verification Procedure Separately" on page 26.

305 ***** VS Pascal or VS Pascal Library *******
 ***** The compilation of the sample program failed.**
 ***** Verification is terminated.**

Explanation: An error occurred during the compilation of the sample program.

User Response: Ensure that all files have been generated correctly; run the installation verification procedure as described in "Running the Installation Verification Procedure Separately" on page 26.

310 ***** VS Pascal or VS Pascal Library *******
 ***** The execution of the sample program failed.**
 ***** Verification is terminated.**

Explanation: An error occurred during the execution of the sample program.

User Response: Ensure that all files have been generated correctly; run the installation verification procedure as described in "Running the Installation Verification Procedure Separately" on page 26.

999 ***** VS Pascal or VS Pascal Library *******
 ***** Fatal error during installation verification.**
 ***** Return code = *rc***
 ***** Installation is terminated.**

Explanation: A failure occurred during the execution of the verification procedure with return code *rc*. This error should only occur if the EXEC was incorrectly modified.

User Response: If the EXEC has not been modified (that is, it is identical to the version on the installation tape), then report the problem to the IBM Support Center.



Appendix C. Servicing VS Pascal

IBM provides corrective and preventive service for product defects and support for resolving program problems through Central Service, including the IBM Support Center. For details of these facilities and a list of all the products supported, refer to *Programming System General Information Manual*, G229-2228.

When you encounter a failure in the product, follow the steps outlined in the *VS Pascal Diagnosis Guide and Reference* to determine if an authorized programming analysis report (APAR) is required, or if a program temporary fix (PTF) can be requested.

An APAR is resolved by Central Service with either an explanation, or a new corrective service program temporary fix (PTF) for the defect. A PTF is a replacement part that is installed in the product to correct the defect. Collections of new PTFs for products are provided to all customers as preventive service program update tapes (PUTs).

Installing VS Pascal PTFs

IBM distributes corrective service on a program temporary fix (PTF) to a specific customer. A PTF contains a correction for a single known problem in a particular product. As soon as a new problem is identified and the solution is established, a PTF is created and made available on a corrective service tape.

Enclosed with each corrective service tape is a Memo to Users, which contains a list of the tape's contents and a cover letter for each PTF on the tape.

VS Pascal corrective service tapes do not include service EXECs, but you can use the installation EXEC with the "PTF" option to install the corrective service PTFs.

Notes:

Disregard the PTF service procedure included in file 1 of the service tape.

Two tapes are used in this procedure, the corrective service tape and a "scratch" tape. This is necessary because the installation EXEC is written for tape load operations.

To use the installation EXEC, use the following procedure:

1. Copy your current VS Pascal production disk to another disk (the temporary production minidisk). This ensures that you have a working version of the current product in case something goes wrong when applying the service. Make sure one of these two minidisks is not accessed while you are installing the corrective service PTFs. Access the temporary production minidisk as your target disk, with a file mode of "B".
2. Choose a second disk for use as a staging disk to contain the incoming corrective service files. The installation EXEC later accesses this disk with a file mode of "A".
3. Access the disk containing the installation EXEC with a file mode of "C".
4. Mount the corrective service tape at virtual address 181.

5. Position the corrective service tape to the beginning of the first VS Pascal service file. Use the command:

```
VMFPLC2 SCAN fn ft (EOT
```

to position the tape, where *fn* is 5668767 for the Compiler and Library product or 5668717 for the Library only product, and *ft* is 010101.

Note: Do not use VMSEV to install this tape. The tape is not in VM PUT format.

6. Manually load the files from the tape using the command:

```
VMFPLC2 LOAD * * A (EOF 2
```

7. **To invoke the renaming EXEC for the VS Pascal Compiler and Library product,** issue the command:

```
5668767
```

To invoke the renaming EXEC for the VS Pascal Library product only, issue the command:

```
5668717
```

The renaming EXEC changes the file types of the desired corrective service PTFs to the file types required by the installation EXEC.

Note: This is necessary because the tape files have the PTF number included in the file type; for example, AMPOTRAN TXT*nnnn* (where *nnnn* is the PTF number).

The renaming EXEC changes the file type to the format used by the installation EXEC; for example, TXT*nnnn* is changed to TEXT. Each PTF you order will have a unique renaming EXEC.

8. Rename or erase the renaming EXEC on the "A" disk.
9. If there is more than one VS Pascal corrective service PTF on the tape, repeat steps 5 through 8 for each PTF.

Each PTF has files with file types indicating the proper file type (for the renaming EXEC) and the PTF number. As each PTF is taken off the tape and its files renamed, certain files may need to be replaced or erased. Ensure that the renaming EXEC takes the PTFs from the tape in the correct sequence and properly replaces or erases the files.

When all PTFs are taken off the tape, all files that are used by the installation EXEC should have the proper file types. The installation EXEC should now be able to process these files and incorporate them into the product.

10. Mount the scratch tape at virtual address 181 if you have not already done so, and dump all the files from the "A" disk to the scratch tape using the command:

```
VMFPLC2 DUMP * * A
```

Note: Remember that the corrective service tape is not in VM PUT format.

11. Release the staging disk "A".

12. **To invoke the installation EXEC for the Compiler and Library product**, issue the command:

I5668767 PTF

To invoke the installation EXEC for the Library only product, issue the command:

I5668717 PTF

Note: To stop the installation process, respond to any prompt with "QUIT". If you need to see the informational message again before answering the input prompt, enter "?" to review the material.

13. To use the displayed linkage information, enter a "0", "NO", or press the ENTER key without specifying a value.

To change any of the linkage information, enter "1" or "YES", and change the appropriate values.

Note: If you are not the owner of (or are not linked to) the production minidisk, the installation EXEC prompts to determine whether to force a logoff of the user ID that owns the production minidisk. If you enter "1" or "YES", the installation EXEC forces off that user ID (if it is currently running disconnected in the system).

The installation EXEC:

1. Defines a temporary disk "A"
2. Loads the renamed text files and other service files onto the "A" disk.
3. Installs the service from the "A" disk to the temporary product disk.

If an error occurs, an error message is issued and the PTF installation procedure terminates.

After the installation EXEC has applied service for the PTF tape, it automatically invokes the installation verification procedure (IVP) to verify the service installation. You will be given a message stating whether the IVP completed successfully or not. See the Program Directory for an example of the output from the IVP.

Figure 8 on page 44 shows the output from installing a PTF. The lines beginning with ==> indicate what you entered.

```
==> I5668767 PTF
*** Begin VS Pascal Maintenance Procedure ***
      Version 1 Release 2.0

This procedure will type out messages and request responses
from you to guide the maintenance process.  If at any time
you want to quit, type "QUIT" as a response, and the procedure
will terminate immediately.  If you need to see the information
message again before answering the input prompt, enter "?" to
re-view the material.

***   The product minidisk will be linked using the following
***   default values:
***
***   Userid = (your userid)
***   Minidisk address = <cuu>
***   Password = (link password of the production minidisk)
***
***   Do you want to change any of the above parameters?
***   Enter 1 (YES) or 0 (NO).
==> 1

*** Enter userid (or NULL for existing value):
==>
*** Enter minidisk address (or NULL for existing value):
==> 192
*** Enter password (or NULL for existing value):
==>

*** Servicing VS Pascal (5668-767) ...

*** Moving product files from temporary work disk to product disk ...

      ( The output from the installation verification procedure is   )
      ( displayed here.  See the Program Directory for an example of )
      ( the correct output.                                         )

*** VS Pascal *****
*** Product maintenance is complete.
*****
```

Figure 8. Output from Installing a PTF

Installing VS Pascal Service from a PUT Tape

IBM distributes preventive service on Program Update tapes (PUTs) to all customers on a regular basis.

The service tape contains all the service EXECs necessary for installation, and the installation EXEC is located on your existing production disk.

To apply the VS Pascal fixes distributed on the service tape, perform the following steps:

1. Copy your current VS Pascal production disk to another disk. This ensures that you have a working version of the current product in case something goes wrong when applying the service. Make sure that one of the two production disks is not accessed while installing the PUT tape. Access the other disk as your target disk, with a file mode of "E".

2. Choose a second disk to contain the VMSERV EXEC. Access this disk with a file mode of "C".

3. Mount the PUT tape at virtual address 181.

4. Issue the command

```
VMFPLC2 LOAD * * C
```

to load the VMSERV EXEC onto the "C" disk.

5. Issue:

```
VMSERV
```

The VMSERV EXEC asks you if you want to print the memo to users. Answer YES. The EXEC issues the print command and then terminates.

6. When you have finished reading the memo to users, issue the command:

```
VMSERV
```

Answer "NO" to the memo to users prompt.

7. The VMSERV EXEC then asks if you want to install the service. Answer YES to this prompt. VMSERV then loads the first service EXEC, advances the tape to the beginning of the first service file, and invokes the service EXEC to install the first service file. The service EXEC defines a temporary minidisk and accesses it with the file mode of "A". The service EXEC then loads the service file(s) onto the A disk and calls the installation EXEC to install the service.

8. To use the displayed linkage information, enter a "0", "NO" or press the enter key without specifying a value.

To change any of the linkage information, enter "1", or "YES", and change the appropriate values.

Notes:

- a. To stop the installation process, respond to any prompt with "QUIT". If you need to see the informational message again before answering the input prompt, enter "?" to review the material.

- b. If you are not the owner of (or are not linked to) the production minidisk, the installation EXEC prompts you to determine whether to force a logoff of the user ID that owns the production minidisk. If you enter "1" or "YES", the installation exec forces off that user ID (if it is currently running disconnected in the system).

After the installation EXEC has applied service for the PUT tape, it will automatically invoke the installation verification procedure (IVP) to verify the service installation. You will be given a message which states whether the IVP completed successfully or not. See the Program Directory for a similar example of the IVP output.

When all the VS Pascal service has been applied, VMSERV will apply service for the remaining products on the tape or allow you to exit.

Output from Applying VS Pascal Service: Figure 9 shows the output from installing a PUT. The lines beginning with ===> indicate what you entered.

```
===> I5668767 PUT
*** Begin VS Pascal Maintenance Procedure ***
          Version 1 Release 2.0

This procedure will type out messages and request responses
from you to guide the maintenance process. If at any time
you want to quit, type "QUIT" as a response, and the procedure
will terminate immediately. If you need to see the information
message again before answering the input prompt, enter "?" to
re-view the material.

*** The product minidisk will be linked using the following
*** default values:
***
***      Userid = (your userid)
***      Minidisk address = <cuu>
***      Password = (link password of the production minidisk)
***
***      Do you want to change any of the above parameters?
***      Enter 1 (YES) or 0 (NO).
===> 1
*** Enter userid (or NULL for existing value):
===>
*** Enter minidisk address (or NULL for existing value):
===> 192
*** Enter password (or NULL for existing value):
===>

*** Servicing VS Pascal (5668-767) ...

*** Moving product files from temporary work disk to product disk ...

( The output from the installation verification procedure is )
( displayed here. See the Program Directory for an example of )
( the correct output. )

*** VS Pascal *****
*** Product maintenance is complete.
*****
```

Figure 9. Output from Installing a PUT

Bibliography

VS Pascal Publications

These books provide additional information about VS Pascal.

Evaluation

- *VS Pascal General Information*, GC26-4318, provides an overview of VS Pascal.
- *VS Pascal Licensed Program Specifications*, GC26-4317, contains warranty information for VS Pascal.

Application Programming

- *VS Pascal Application Programming Guide*, SC26-4319, explains how to compile, execute, and debug VS Pascal programs.
- *VS Pascal Language Reference*, SC26-4320, provides a detailed explanation of the VS Pascal programming language and its syntax.
- *VS Pascal Reference Summary*, SX26-3760, provides quick-reference charts of VS Pascal language rules and processing/debugging options.

Installation

- *VS Pascal Installation and Customization for MVS*, SC26-4321, explains how to install VS Pascal under MVS/SP, MVS/XA and MVS/ESA.

Diagnosis

- *VS Pascal Diagnosis Guide and Reference*, LY27-9525, explains how to diagnose, report, and

request information on VS Pascal-related problems.

Relevant Publications

Virtual Machine/System Product Planning Guide and Reference, SC19-6201.

Virtual Machine/System Product Installation Guide, SC24-5237.

Virtual Machine/System Product System Messages and Codes, SC19-6204.

Virtual Machine/System Product CMS Command Reference, SC19-6209.

Virtual Machine/System Product CP Command Reference for General Users, GC19-6211.

VM/XA System Product Planning, GC23-0378.

VM/XA System Product Installation and Service, SC23-0364.

VM/XA System Product Systems Messages and Codes Reference, SC23-0376.

VM/XA System Product CMS Command Reference, SC23-0354.

VM/XA System Product CP Command Reference, SC23-0358.

Programming System General Information Manual, G229-2228.



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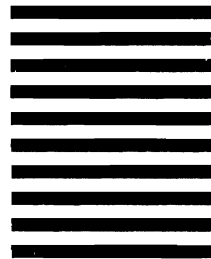


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Diagnosis Guide and Reference	LY27-9525
General Information	GC26-4318
Installation and Customization for MVS	SC26-4321
Installation and Customization for VM	SC26-4342
Language Reference	SC26-4320

Supplementary Publications

Licensed Program Specifications	GC26-4317
Reference Summary	SX26-3760

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