IBM

**IBM 5218 A03/A04
Printer Driver Program
and Printer Sharing Device
Guide To Operations**

IBM Program License Agreement

YOU SHOULD CAREFULLY READ THE FOLLOWING TERMS AND CONDITIONS BEFORE
OPENING THIS DISKETTE PACKAGE. OPENING THIS DISKETTE PACKAGE INDICATES YOUR
ACCEPTANCE OF THESE TERMS AND CONDITIONS. IF YOU DO NOT AGREE WITH THEM,
YOU SHOULD PROMPTLY RETURN THE PACKAGE UNOPENED; AND YOUR MONEY WILL BE
REFUNDED.

IBM provides this program and licenses its use in the United States
and Puerto Rico. You assume responsibility for the selection of the
program to achieve your intended results, and for the installation, use
and results obtained from the program.

LICENSE

You may:

a. use the program on a single machine;

b. copy the program into any machine readable or printed form for
    backup or modification purposes in support of your use of the
    program on the single machine (Certain programs, however, may
    include mechanisms to limit or inhibit copying. They are marked
    "copy protected.");

c. modify the program and/or merge it into another program for
    your use on the single machine (Any portion of this program
    merged into another program will continue to be subject to the
    terms and conditions of this Agreement.); and,

d. transfer the program and license to another party if the other
    party agrees to accept the terms and conditions of this Agree-
    ment. If you transfer the program, you must at the same time
    either transfer all copies whether in printed or machine-readable
    form to the same party or destroy any copies not transferred;
    this includes all modifications and portions of the program con-
    tained or merged into other programs.

You must reproduce and include the copyright notice on any copy,
modification or portion merged into another program.

YOU MAY NOT USE, COPY, MODIFY, OR TRANSFER THE
PROGRAM, OR ANY COPY, MODIFICATION OR MERGED
PORTION, IN WHOLE OR IN PART, EXCEPT AS EXPRESSLY
PROVIDED FOR IN THIS LICENSE.

IF YOU TRANSFER POSSESSION OF ANY COPY, MODIFICA-
TION OR MERGED PORTION OF THE PROGRAM TO
ANOTHER PARTY, YOUR LICENSE IS AUTOMATICALLY
TERMINATED.

TERM

The license is effective until terminated. You may terminate it at any
other time by destroying the program together with all copies, modi-
fications and merged portions in any form. It will also terminate
upon conditions set forth elsewhere in this Agreement or if you fail
to comply with any term or condition of this Agreement. You agree
upon such termination to destroy the program together with all
copies, modifications and merged portions in any form.

LIMITED WARRANTY

THE PROGRAM IS PROVIDED "AS IS" WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUD-
ING, BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND
PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD
THE PROGRAM PROVE DEFECTIVE, YOU (AND NOT IBM)
ASSUME THE ENTIRE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

SOME STATES DO NOT ALLOW THE EXCLUSION OF IMPLIED
WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY
TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL
RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH
VARY FROM STATE TO STATE.

IBM does not warrant that the functions contained in the program
will meet your requirements or that the operation of the program will
be uninterrupted or error free.

However, IBM warrants the diskette(s) on which the program is fur-
nished, to be free from defects in materials and workmanship under
normal use for a period of ninety (90) days from the date of delivery
to you as evidenced by a copy of your receipt.

LIMITATIONS OF REMEDIES

IBM's entire liability and your exclusive remedy shall be:

1. the replacement of any diskette not meeting IBM's "Limited
    Warranty" and which is returned to IBM with a copy of your
    receipt, or
2. if IBM is unable to deliver a replacement diskette which is free
    of defects in materials or workmanship, you may terminate this
    Agreement by returning the program and your money will be
    refunded.

IN NO EVENT WILL IBM BE LIABLE TO YOU FOR ANY
DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS
OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES
ARISING OUT OF THE USE OR INABILITY TO USE SUCH
PROGRAM EVEN IF IBM HAS BEEN ADVISED OF THE POSSI-
BILITY OF SUCH DAMAGES, OR FOR ANY CLAIM BY ANY
OTHER PARTY.

SOME STATES DO NOT ALLOW THE LIMITATION OR
EXCLUSION OF LIABILITY FOR INCIDENTAL OR CONSE-
QUENTIAL DAMAGES SO THE ABOVE LIMITATION OR
EXCLUSION MAY NOT APPLY TO YOU.

GENERAL

You may not sublicense, assign or transfer the license or the program
except as expressly provided in this Agreement. Any attempt other-
wise to sublicense, assign or transfer any of the rights, duties or
obligations hereunder is void.

This Agreement will be governed by the laws of the State of Florida.

Should you have any questions concerning this Agreement, you may
contact IBM by writing to IBM Direct, One Culver Road, Dayton,
New Jersey 08818, Attention: Sales and Service, IBM Personal
Computer Support Products.

YOU ACKNOWLEDGE THAT YOU HAVE READ THIS AGREE-
MENT, UNDERSTAND IT AND AGREE TO BE BOUND BY ITS
TERMS AND CONDITIONS. YOU FURTHER AGREE THAT IT
IS THE COMPLETE AND EXCLUSIVE STATEMENT OF THE
AGREEMENT BETWEEN US WHICH SUPERCEDES ANY
PROPOSAL OR PRIOR AGREEMENT, ORAL OR WRITTEN,
AND ANY OTHER COMMUNICATIONS BETWEEN US RELAT-
ING TO THE SUBJECT MATTER OF THIS AGREEMENT.

IBM
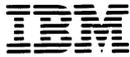
Personal Computer
Personal Series

IBM 5218 A03/A04
Printer Driver Program
and Printer Sharing Device
Guide To Operations

Third Edition (August 1984)

This major revision obsoletes G570-2063-1. Changes or additions to the text are indicated by a vertical line to the left of the change.

This edition applies to Release 1 of *IBM 5218 A03/A04 Printer Driver Program and Printer Sharing Device Guide To Operations* and to all subsequent releases and modifications until otherwise indicated in new editions or Technical Newsletters. Changes are made periodically to the information herein.

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM program product in this publication is not intended to state or imply that only IBM's program product may be used. Any functionally equivalent program may be used instead.

Publications are not stocked at the address given below. Requests for IBM publications should be made to your IBM representative or to the IBM branch office serving your locality.

A form for readers' comments is provided at the back of this publication. If the form has been removed, comments may be addressed to IBM Corporation, Department 997/998, 11400 Burnet Road, Austin, Texas 78758. IBM may use or distribute whatever information you supply in any way it believes appropriate without incurring any obligation to you.

Federal Communications Commission (FCC) Statement

Warning: This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

● reorient the receiving antenna,

● relocate the computer with respect to the receiver,

● move the computer away from the receiver,

● plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

How To Identify & Resolve Radio-TV Interference Problems.

This booklet is available from the US Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

Warning: This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

Preface

This guide explains the installation and operation of the IBM
5218 A03/A04 Printer Driver Program and the IBM 5218
Printer Sharing Device to users of the IBM Personal
Computer.

This guide does not explain the operation of the IBM
Personal Computer or the IBM 5218 A03/A04 Printer. For
these operating instructions, consult the manuals that were
shipped with these products. Although IBM 5218 A03/A04
Printer manuals use the term "IBM Displaywriter System,"
these manuals apply as well to use of the IBM 5218 A03/A04
Printer with the IBM Personal Computer; when using the
manuals under these circumstances, substitute "IBM
Personal Computer" for "IBM Displaywriter." When this
guide refers to the IBM 5218 Printer, it means only modes
A03 and A04.

Using This Manual

If you have a problem with any of the steps listed in this
manual, you should:

1. Try that step or sequence of steps again.
2. Go to the "Problem Determination Procedures" chapter
   of this manual.
3. Contact your place of purchase for help in solving your
   problem.

This manual is divided into the following sections:

- Installation of the hardware
- Installation of the program
- Running the program
- Running the IBM 5218 Printer
- Problem determination
- Programming related information (refer to appendices).

To install the IBM 5218 Printer system properly we suggest that you follow this sequence:

1. Install the hardware:
   a. Install the IBM Asynchronous Communications Card configured for current loop operation and addressed as COM1 or COM2.
   b. Install the IBM 5218 Printer.
   c. Install the IBM 5218 Printer Sharing Device (if ordered).
   d. Connect the cables.
2. Install the program:
   a. Make a backup copy of the program diskette.
   b. Configure the IBM 5218 Printer Driver Program on the backup copy per the IBM Asynchronous Communications Card configuration COM1 or COM2. Refer to Appendix F, IBM 5218 Printer Driver Program Communications Adapter Configurator section, for instructions.
   c. Install the program on your application diskette (if it fits).
3. Run your application programs.

General Product Information

The IBM 5218 Printer Driver Program allows the attachment of the IBM 5218 Printer, Model A03 or A04, to the IBM Personal Computer. The IBM 5218 Printer Sharing Device allows from one to four IBM Personal Computers to share one IBM 5218 Printer, Model A03 or A04.

Overview

The IBM 5218 Printer Driver Program allows the IBM 5218 Printer, Model A03 or A04, to attach to an IBM Personal Computer. The IBM Personal Computer application programs can then use the IBM 5218 Printer as if it were attached through the parallel port of the IBM Personal Computer. The IBM 5218 Printer Driver Program can be customized to accept a printer identification of LPT1, LPT2, or LPT3. You may select an identification that does not exist in your hardware to allow the IBM 5218 Printer Driver

Program to work separately from the parallel printer adapters (LPT2 and LPT3 are available only with DOS 2.0 or 2.1).

When the IBM 5218 Printer Driver Program is loaded under IBM Personal Computer DOS 1.1, 2.0, or 2.1, it intercepts the parallel printer I/O interrupt calls that normally invoke the printer I/O routine of the IBM Personal Computer ROM resident Basic I/O System (BIOS). The IBM 5218 Printer Driver Program receives the ASCII controls and graphic characters across this interface, converts them to the required print image commands of the IBM 5218 Printer interface, and routes the IBM 5218 Printer commands through the Asynchronous Communication Adapter to the IBM 5218 Printer. The IBM 5218 Printer Driver Program receives the status from the IBM 5218 Printer and posts it to the using application or to the IBM Personal Computer DOS.

The IBM 5218 Printer Driver Program operates in two modes, non-sharing and sharing. In the non-sharing mode (one IBM Personal Computer and one IBM 5218 Printer) the printer communication is never released by the IBM Personal Computer.

In the sharing mode, when the IBM Printer Sharing Device is installed and the IBM 5218 Printer Driver Program receives data and a printer available indication is received from the printer sharing box, the IBM 5218 Printer Driver Program sends a print command. At the end of the document, the IBM 5218 Printer Driver Program releases the IBM 5218 Printer for use by another IBM Personal Computer.

The document boundaries are determined by the IBM 5218 Printer Driver Program in one of two ways. They are specified implicitly through the inactivity time-outs at either line or page boundaries or they can be explicitly specified by the data stream (refer to Begin Document and End Document codes in Appendix A, "Printer Control Codes," on page 45).

Device Number 4470, IBM 5218 Printer Driver Program

The IBM 5218 Printer Driver Program attaches the IBM 5218 Printer, Model A03 or A04, to a single IBM Personal Computer. It consists of a cable, a diskette that contains the IBM 5218 Printer Driver Programs, and the associated manual.

Device Number 4471, IBM 5218 Printer Sharing Device

The IBM 5218 Printer Sharing Device connects from one to four IBM Personal Computers to one IBM 5218 Printer. It consists of an electronic switching device and a connecting cable from the device switch box to the IBM 5218 Printer. For each IBM Personal Computer you also need device number 4470 or device number 4472, the IBM 5218 Printer Driver Program.

Note: If you use the IBM Tractor feed with the IBM Printer Sharing Device, you must use the vertical forms alignment procedure (refer to "Paper Alignment with the Tractor Feed Installed," on page 36) before you print each document.

Device Number 4472, IBM 5218 Printer Driver Program (Only)

This device provides only the IBM 5218 Printer Driver Program and related publications. Device number 4472 is the same as Device number 4470 without the cable and is intended for installations using their own custom length cable (refer to Appendix E, "Technical Reference," on page 73).

Hardware Prerequisite Requirements

To use the IBM 5218 Printer Driver Program or the IBM
Printer Sharing Device, you need the following hardware:

*   IBM 5218 Printer, Model A03 or A04.
*   IBM Personal Computer.
*   IBM Asynchronous Communications Card configured
    for current loop operation and addressed as COM1 or
    COM2.
*   Memory size - depends on the application programs that
    you run. The IBM 5218 Printer Driver Program reduces
    your available RAM by about 23K bytes.

Software Prerequisite Requirements

To use the IBM 5218 Printer Driver Program or the IBM
Printer Sharing Device, you need the following software:

*   IBM Personal Computer DOS Version 1.1, 2.0, or 2.1.
*   An application program.

Related Publications

IBM Displaywriter System 5218/5228 Printwheel Printer Problem Determination Guide, S544-2000

IBM Displaywriter System Printer Guide, S544-0861

IBM Personal Computer: Guide to Operations, 6025000

IBM Personal Computer: Guide to Operations, XT, 6936810

IBM Personal Computer: Disk Operating System, 1.1, 6024001

IBM Personal Computer: Disk Operating System, 2.0, 6024061

IBM Personal Computer: Disk Operating System, 2.1, 6024120

IBM Personal Computer: Hardware Maintenance and Service, 6025072

IBM 5218 and IBM 5228 Printwheel Printer Setup Procedures, GA23-1015.

Contents

Chapter 1. Installing Your Hardware

This chapter describes how to install your IBM 5218 Printer
so that from one to four of your IBM Personal Computers
can share it. It describes:

- IBM Asynchronous Communication Card Setup

- IBM 5218 Printer Driver Hardware Installation

- IBM 5218 Printer Sharing Device Installation.

We suggest that you reconfigure your IBM Asynchronous
Communication Card first and then install either your IBM
5218 Printer Driver Program hardware or your IBM 5218
Printer Sharing Device.

Notes:

1. *Your IBM Personal Computer should* **not** *have more than
   one Asynchronous Card configured for the same
   communications adapter address.*

2. *The IBM 5218 Printer Driver Program on the backup
   copy of the program diskette must be configured to match
   the IBM Asynchronous Communications Card
   configuration COM1 or COM2. Refer to Appendix F,
   "IBM 5218 Printer Driver Program Communications
   Adapter Configurator, " for instructions.*

IBM Asynchronous Communication Card Setup

The IBM 5218 Printer Driver Program requires that the IBM Asynchronous Communication Card in your IBM Personal Computer be configured for current loop operation and addressed as COM1 or COM2.

COM1 Configuration

To configure the card, refer to Figure 1 on page 4 and complete the following:

1. Lay the card on a table with the 25 pin external connector to the right and with the integrated circuit modules facing you.

   There should be two pluggable jumper modules on the card. One long jumper module is near the lower right corner of the card, just to the left of the 25 pin external connector. A short jumper module should be in the upper right corner of the card. If this short jumper is not present, the card is already COM1 configured.

2. Plug the long jumper module into its slot so that the small hole (or colored dot) on the module is in the lower right corner. Plug the short jumper module into its slot so that its small hole (or colored dot) is in the upper left corner. You must remove, rotate, and replace the modules if they were originally shipped with the dots reversed.

CAUTION

Remove and replace the modules carefully and slowly to avoid bent pins on the module.

3. Install the reconfigured card in your IBM Personal Computer. The instructions were included with the IBM Asynchronous Communication Card. If you no longer have these instructions, refer to the IBM Personal Computer *Guide To Operations* manual.

COM2 Configuration

To configure the card, refer to Figure 1 on page 4 and complete the following steps:

1. Lay the card on a table with the 25 pin external connector to the right and with the integrated circuit modules facing you.

   There should be two pluggable jumper modules on the card. One long jumper module is near the lower right corner of the card, just to the left of the 25 pin external connector. A short jumper module should be in the upper right corner of the card. If this short jumper module is not present, the card is COM1 configured and cannot be reconfigured as COM2.

2. Plug both jumper modules into their respective slots so that the small holes (or colored dots) on the modules are in the lower right corners. This requires that you remove, rotate, and replace the modules if they were originally shipped with the dots in the upper left corner.

   ### CAUTION
   Remove and replace the modules carefully and slowly to avoid bent pins on the module.

3. Install the reconfigured card in your IBM Personal Computer. The instructions were included with the IBM Asynchronous Communication Card. If you no longer have these instructions, refer to the IBM Personal Computer *Guide To Operations* manual.

**Module Position
for "Alternate Asynchronous
Adapter"** (COM 2)

**Module Position
for "Primary Asynchronous
Adapter"** (COM 1)

Front

**Option Retaining
Bracket**

**Pluggable
Modules**

**25-Pin
Connector**

**Configuration For
IBM 5218 Printer
Driver Program**

**Module Position for
RS232-C Interface**

**Module Position for
Current-Loop
Interface**
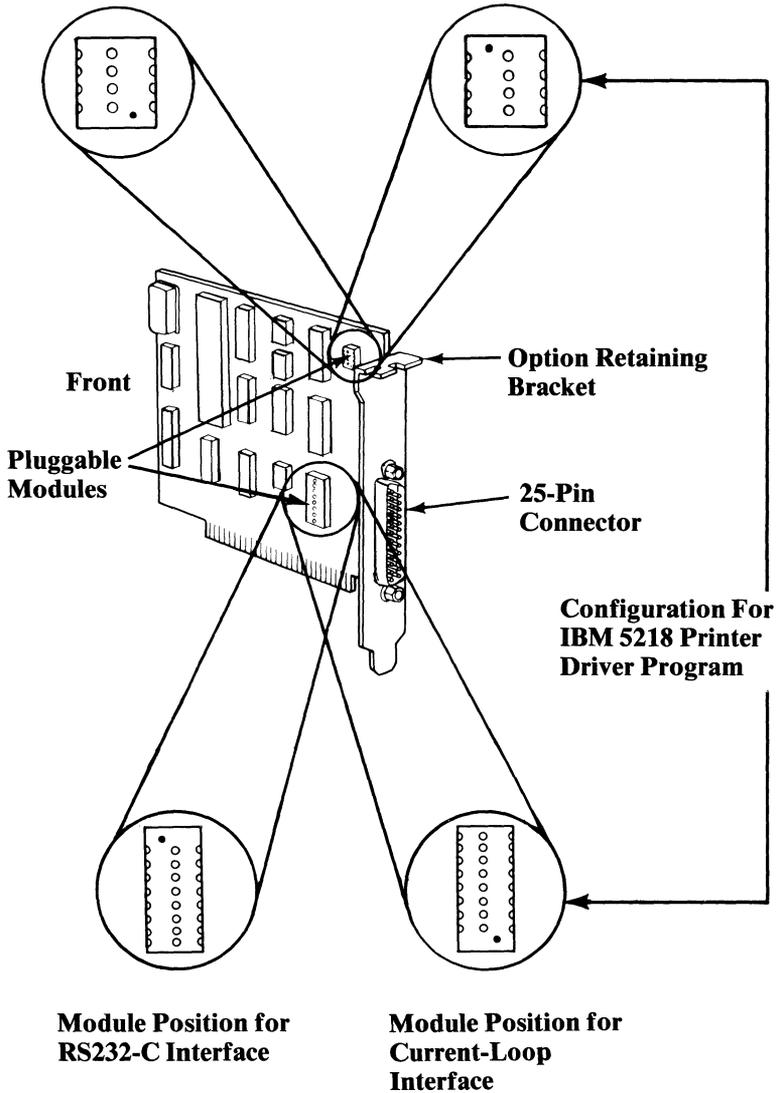
Figure 1. Configuring the IBM Asynchronous Communications Card

IBM 5218 Printer Driver Hardware Installation

This section describes how to connect the cable from your
IBM Personal Computer to your IBM 5218 Printer. If you
are installing the IBM 5218 Printer Sharing Device, refer to
IBM 5218 Printer Sharing Device Installation, page 6.

Connecting the IBM Personal Computer to the IBM 5218 Printer

To connect your IBM Personal Computer to your IBM 5218
Printer follow these instructions. See Figure 2 on page 6.

1. Make sure that the power is **OFF** on both the printer and
    the personal computer.

2. Find the IBM Asynchronous Communications Card on
    the back of the IBM Personal Computer and plug the
    matching 25 pin cable connector into it. If you have
    more than one IBM Asynchronous Communications
    Card, ensure that you plug the cable into the one
    configured for the IBM 5218 Printer.

3. Find the cable connector on the back of the printer and
    plug the 9 pin cable plug into it.

4. Make sure you tighten the screws on all cable
    connections.

5. You have completed installation of the hardware; now
    you can install the program. To do this go to Chapter 2,
    "Installing Your Program, " on page 9.
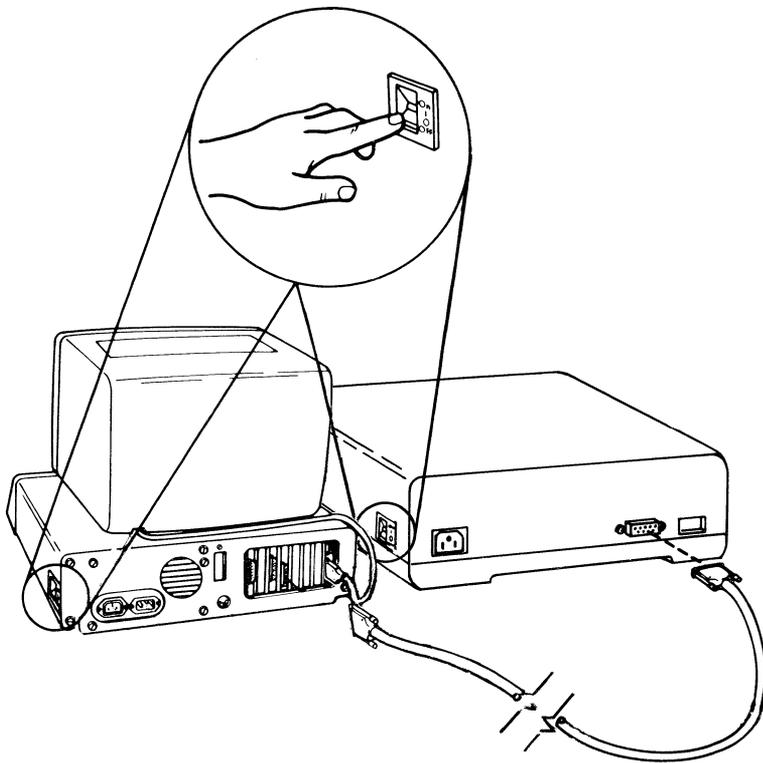
Figure 2. Direct Cable Installation — IBM Personal Computer to IBM 5218 Printer

IBM 5218 Printer Sharing Device Installation

To connect from one to four IBM Personal Computers to an
IBM 5218 Printer, follow these instructions. See Figure 3
on page 8.

Note: The printer sharing switch box is designed to work in
a normal room environment within 1.8 meters (6 feet) of the
IBM 5218 Printer. You should ensure that you have access
to the switch box for problem determination and service.

1. Ensure that the power is **OFF** on the IBM 5218 Printer
    and the IBM Personal Computers.

2. Find the 9 pin cable connector on the back of the printer
    and plug the IBM 5218 Printer Sharing Device cable
    connector labeled "P" into it.

3. Plug the cable connector labeled "O" into the single
    cable slot on the IBM Printer Sharing Device switch box.

4. Find the four cable slots on the IBM 5218 Printer
    Sharing Device switch box. Plug the 9 pin cable
    connector for each IBM Personal Computer into the
    switch box. They may be plugged in any order.

5. Find the Asynchronous Communication Card connector
    on the back of each IBM Personal Computer and plug
    the 25 pin cable connector into it. If you have more
    than one IBM Asynchronous Communications Card in
    the IBM Personal Computer, ensure that you plug the
    cable into the card configured for the IBM 5218 Printer.

6. Ensure that you tighten the screws on all cable
    connections.

7. You have completed installing the hardware. Now you
    can install the program. To do this go to Chapter 2,
    "Installing Your Program, " on page 9.

To IBM Personal Computers
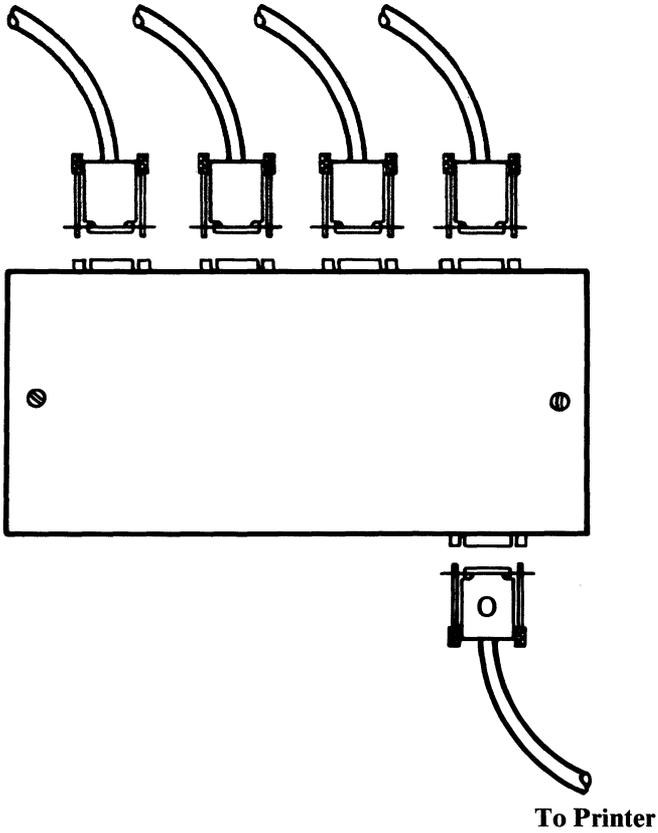
To Printer

Figure 3. **IBM 5218 Printer Sharing Device Cable Installation.** *Note:* The printer sharing box may be located on the floor or in any convenient position.

Chapter 2. Installing Your Program

Before using the IBM 5218 Printer Driver Program, you should follow the procedures in this section to prepare a backup (duplicate) copy of the IBM 5218 Printer Driver Program diskette. For ease of use, this section also describes how to load the IBM 5218 Printer Driver Program onto your application program diskette or on your fixed disk.

Preparing the IBM 5218 Printer Driver Program Diskette

In this section, you will:

- Make a backup (duplicate) copy of your IBM 5218 Printer Driver Program diskette
- Install the IBM 5218 Printer Driver Program on your applications program diskette (if there is room) or on your fixed disk.

The procedures are divided into the following:

- If your IBM Personal Computer has two diskette drives, follow the instructions under "Instructions for a Two-Drive System."
- If your IBM Personal Computer has only one diskette drive, follow the instructions under "Instructions for a One-Drive System."
- If your IBM Personal Computer has a fixed disk, make a backup copy of your IBM 5218 Printer Driver Program diskette and then follow the instructions titled "Installing an AUTOEXEC.BAT File on a Fixed-Disk System."

Your computer should be turned off before you start.

If you have problems with these procedures, try again, following the instructions very carefully. If you receive any error messages on the screen, in the United States contact your place of purchase for help in solving your problem.

You are now ready to begin.

Instructions for a Two-Drive System

If your computer has two drives, follow the procedures below. If your computer has one drive, follow the procedures titled "Instructions for a One-Drive System."

Making a Backup (Duplicate) Copy

To make a backup copy, follow these steps:

1. Insert the DOS diskette into drive A.

2. Turn on the computer and monitor (if the monitor is not an IBM Monochrome Display).

3. Enter the date and time if the instructions ask you to.

4. The following prompt appears on your screen:

    ```
    A>
    ```

    This is the DOS prompt for drive A.

5. Type

    ```
    FORMAT B:/S
    ```

    and press Enter

6. The following message appears:

    ```
    Insert new diskette for Drive B:
    Strike any key when ready
    ```

    Label a blank diskette, "Backup IBM 5218 Printer Driver Program." Insert this diskette into drive B.

7. Press any key. The following message appears on your screen:

```
Formatting...
```

In a few moments the following message appears:

```
Formatting...Format complete
System transferred
Format another (Y/N)?
```

8. Press N. The DOS prompt for drive A returns to the screen:

```
A>
```

9. Insert the your IBM 5218 Printer Driver Program diskette into drive A. Type:

```
Copy *.* B:
```

Press enter.

In a few moments the following message appear:

```
        X File(s) copied
```

Note: X should be some number other than 0.

10. The DOS prompt for drive A returns to the screen:

```
A>
```

11. You have created a backup copy of the original IBM 5218 Printer Driver Program diskette, with DOS copied onto it. **Store the original diskette in a safe place where it will not be damaged or lost.** You will not use this diskette again unless you lose or damage your backup copy. **Use your backup copy from now on.**

Instructions for a One-Drive System

If your computer has two drives, follow the procedures titled "Instructions for a Two-Drive System." If your computer has one drive, follow these procedures.

Making a Backup (Duplicate) Copy

To make a backup copy, follow these steps:

1. Insert the DOS diskette into the drive.

2. Turn on the computer and monitor (if the monitor is not an IBM Monochrome Display).

3. Enter the date and time if the instructions ask you to.

4. The following prompt appears on your screen:

   ```
   A>
   ```

   This is the DOS prompt for drive A.

5. Type

   ```
   FORMAT /S
   ```

   and press Enter.

6. The following message appears:

   ```
   Insert new diskette in drive A:
   Strike any key when ready
   ```

   Remove the DOS diskette. Label a blank diskette, "Backup IBM 5218 Printer Driver Program." Insert this diskette into the drive. Press any key.

7. The following message appears:

```
Formatting...
```

In a few moments the following message appears:

```
Formatting...Format complete
System transferred
Format another (Y/N)?
```

8. Press N. The DOS prompt returns to the screen:

```
A>
```

9. Insert the IBM 5218 Printer Driver Program diskette into the drive. Type:

```
COPY *.* B:
```

Press enter.

10. You will be prompted to switch diskettes frequently during this process. Make sure that you insert the proper diskette into the drive. **When the prompt asks for Drive A, insert the IBM 5218 Printer Driver Program diskette. When the prompt asks for Drive B, make sure you insert your diskette labled "Backup IBM 5218 Printer Driver Program."**

11. The following message appears on your screen:

```
X file(s) copied
```

X should be a number other than 0.

The DOS prompt returns to the screen:

```
A>
```

12. You have created a backup copy of the original IBM 5218 Printer Driver Program diskette with DOS on it. **Store the original diskette in a safe place where it will not be lost or damaged.** You will not be using this diskette again unless you lose or damage your backup copy. **Use the backup diskette from now on.**

Compatible Software Program Products

There are many application programs that are compatible with the IBM 5218 Printer Driver Program. For the most current information contact your local IBM Sales Office or call IBM DIRECT at 1-800-IBM-2468 (United States) and ask for the Systems Products Department.

Copying the IBM 5218 Printer Driver Program Onto Your Application Program Diskette.

If you want the IBM 5218 Printer Driver Program to be automatically loaded with your application program, you need to copy the IBM 5218 Printer Driver Program onto each application program diskette. To start the printer driver, you need to use an AUTOEXEC.BAT file. This is a file that DOS runs when you Initial Program Load (IPL) your application program diskette. In order for the AUTOEXEC.BAT file to run, DOS must be resident on your application program diskette. Your IBM 5218 Printer Driver Program diskette already contains an AUTOEXEC.BAT file. To add the IBM 5218 Printer Driver Program to an existing AUTOEXEC.BAT file on an application program diskette, follow the instructions for a one-drive, a two-drive, or a fixed-disk system as appropriate.

If you are using DOS 2.0 or 2.1, refer to "Using DOS Commands" on page 81 and consider including the Mode command in the AUTOEXEC.BAT file.

Note: Be sure that you are working with a backup copy of your application program diskette, not the original.

If your application program is write protected, you need to remove the write protect tab.

Any application program which first requires loading into memory can **not** use the "Installing an AUTOEXEC.BAT File" procedures in Chapter 2. The user must manually create the AUTOEXEC.BAT file. Consult the application program manual for instructions. The IBM 3278/79 Emulation Control Program and the IBM 3270 Personal Computer Control Program are examples of such application programs.

1. Insert the IBM 5218 Printer Driver Program diskette into drive A and the application program diskette into drive B.

2. Type:

    ```
    COPY A:PD5218.* B:
    ```

    and press Enter.

3. The message

    ```
    1 File(s) copied
    ```

    confirms that the file was copied successfully.

    If the message on the screen shows that the diskette is full, there is not enough room on your application diskette to hold the IBM 5218 Printer Driver Program. You will have to load your IBM 5218 Printer Driver Program each time before loading your application program. Refer to Chapter 3, "Running Your Program," on page 23.

    If the diskette was full, ignore the rest of this section.

4. Type:

    ```
    AUTOBAT1
    ```

    and press Enter.

5. The following message will appear on your screen:

```
************************************************

THIS PROCEDURE WILL AUTOMATICALLY CHANGE AN EXISTING AUTOEXEC.BAT FILE ON AN
APPLICATION PROGRAM DISKETTE (OR CREATE ONE IF IT DID NOT PREVIOUSLY EXIST).

BEFORE CONTINUING WITH THIS PROCEDURE, PLEASE ENSURE THAT THE
IBM 5218 PRINTER DRIVER PROGRAM DISKETTE IS INSTALLED IN DRIVE A AND FOR:

A TWO-DRIVE SYSTEM:
    THE APPLICATION DISKETTE IS INSTALLED IN DRIVE B.

A ONE-DRIVE SYSTEM:
    WHEN THE COMPUTER PROMPTS FOR A DISKETTE TO BE INSERTED FOR DRIVE A
    MAKE SURE THAT YOU INSERT THE IBM 5218 PRINTER DRIVER PROGRAM, AND
    WHEN IT PROMPTS FOR A DISKETTE FOR DRIVE B MAKE SURE THAT YOU INSERT
    THE APPLICATION PROGRAM DISKETTE.

THE PRESENT AUTOEXEC.BAT WILL BE SAVED AS AUTOEXEC.BAK ON THE
APPLICATION PROGRAM DISKETTE.

IF YOU DO NOT WANT TO CONTINUE PRESS CTRL-BREAK



************************************************
```

A>PAUSE
Strike any key when ready . . .

6. If you want to continue, press any key.

7. After a few moments the following will appear on the screen:

REM: THE AUTOEXEC.BAT FILE HAS BEEN CHANGED OR
REM: CREATED ON THE APPLICATION DISKETTE
A>

8. You have added the necessary printer driver programs to your application program diskette. When you load your application program, it will automatically load your printer driver programs.

9. If you are using DOS 2.0 or 2.1, refer to "Using DOS Commands" on page 81 and consider including the Mode command in the AUTOEXEC.BAT file.

1. Insert the IBM 5218 Printer Driver Program diskette into the drive and type:

    `COPY A:PD5218.* B:`

    and press Enter.

2. When the prompt for drive B appears, remove the IBM 5218 Printer Driver Program diskette and insert the application program diskette into the drive and press any key.

3. The message:

    `1 File(s) copied`

    confirms that the file was copied successfully.

    If the message on the screen shows that the diskette is full, there is not enough room on your application diskette to hold the IBM 5218 Printer Driver Program. You will have to load your IBM 5218 Printer Driver Program each time before loading your application program. See   Chapter 3,"Running Your Program," on page 23.

    If the diskette was full, ignore the rest of this section.

4. Ensure that the IBM Printer Driver Program diskette is in the drive. Type:

    `AUTOBAT1`

    and press Enter.

5. The following will appear on your screen:

```
*************************************************

THIS PROCEDURE WILL AUTOMATICALLY CHANGE AN EXISTING AUTOEXEC.BAT FILE ON AN
APPLICATION PROGRAM DISKETTE (OR CREATE ONE IF IT DID NOT PREVIOUSLY EXIST).

BEFORE CONTINUING WITH THIS PROCEDURE, PLEASE ENSURE THAT THE
IBM 5218 PRINTER DRIVER PROGRAM DISKETTE IS INSTALLED IN DRIVE A AND FOR:

A TWO-DRIVE SYSTEM:
     THE APPLICATION DISKETTE IS INSTALLED IN DRIVE B.

A ONE-DRIVE SYSTEM:
     WHEN THE COMPUTER PROMPTS FOR A DISKETTE TO BE INSERTED FOR DRIVE A
     MAKE SURE THAT YOU INSERT THE IBM 5218 PRINTER DRIVER PROGRAM, AND
     WHEN IT PROMPTS FOR A DISKETTE FOR DRIVE B MAKE SURE THAT YOU INSERT
     THE APPLICATION PROGRAM DISKETTE.

THE PRESENT AUTOEXEC.BAT WILL BE SAVED AS AUTOEXEC.BAK ON THE
APPLICATION PROGRAM DISKETTE.

IF YOU DO NOT WANT TO CONTINUE PRESS CTRL-BREAK


*************************************************
```

A>PAUSE
Strike any key when ready . . .

6. If you want to continue press any key.

7. You will be prompted to switch diskettes frequently
during this process. Make sure that you insert the
proper diskette into the drive. **When the prompt asks for
Drive A, insert the IBM 5218 Printer Driver Program
diskette. When the prompt asks for Drive B, make sure
you insert your application program diskette.**

8. After a few moments the following will appear on the screen:

```
REM:  THE AUTOEXEC.BAT FILE HAS BEEN CHANGED OR
REM:  CREATED ON THE APPLICATION DISKETTE.
A>
```

Remove the application program diskette.

You have added the necessary printer driver programs to your application program diskette. When you load your application program, it will automatically load your printer driver programs.

9. If you are using DOS 2.0 or 2.1, refer to "Using DOS Commands" on page 83 and consider including the Mode command in the Autoexec.bat file.

Installing an AUTOEXEC.BAT File with a Fixed-Disk System

1. Insert the IBM 5218 Printer Driver Program diskette into the drive and type:

    `COPY A:PD5218.* C:`

    and press Enter.

2. The message:

    `1 File(s) copied`

    confirms that the file was copied successfully.

    If the message on the screen shows that the root partition of the fixed disk is full, there is not enough room in that partition to hold the IBM 5218 Printer Driver Program. You will have to load your IBM 5218 Printer Driver Program each time before loading your application program, or you need to install it in a different partition of the fixed disk.

    If the disk or partition was full, ignore the rest of this section.

3. Type:

    `A:AUTOBAT2`

    and press Enter.

4. The following will appear on your screen:

```
*************************************************

    THIS PROCEDURE WILL AUTOMATICALLY CHANGE AN EXISTING AUTOEXEC.BAT FILE ON A
    FIXED DISK DRIVE (OR CREATE ONE IF IT DID NOT PREVIOUSLY EXIST).

    BEFORE CONTINUING WITH THIS PROCEDURE, PLEASE ENSURE THAT THE 5218 PRINTER
    DRIVER PROGRAM DISKETTE IS INSTALLED IN DRIVE A, AND THAT YOU WISH TO CHANGE
    (OR CREATE) AN AUTOEXEC.BAT FILE IN THE ROOT DIRECTORY ON THE FIXED DISK THAT
    DOS WAS STARTED FROM (DRIVE C).

    ADDITIONAL INFORMATION ABOUT FIXED-DISK DRIVE OPERATION IS IN THE
    DOS 2.0 or 2.1 MANUAL.

    THE PRESENT AUTOEXEC.BAT WILL BE SAVED AS AUTOEXEC.BAK ON THE FIXED DISK.
    IF YOU DO NOT WANT TO CONTINUE PRESS CTRL-BREAK


*************************************************
```

A>PAUSE
Strike any key when ready...

5. If you want to continue, press any key.

6. After a few moments the following will appear on the screen:

REM: THE AUTOEXEC.BAT FILE HAS BEEN CHANGED OR
REM: CREATED ON THE FIXED DISK.
A>

Remove the diskette.

You have added the necessary printer driver programs to your fixed disk. When you start your system it will automatically load your printer driver programs.

7. If you are using DOS 2.0 or 2.1, refer to "Using DOS Commands" on page 81 and consider including the Mode command in the AUTOEXEC.BAT file.

Chapter 3. Running Your Program

This chapter describes how to run your program. Use your backup copy of the IBM 5218 Printer Driver Program diskette.

Running the IBM 5218 Printer Driver Program

1. Insert the IBM 5218 Printer Driver Program diskette into drive A, and turn on the IBM Personal Computer or press ALT-CTRL-DEL, or type PD5218 (Filespec).

2. When the DOS prompt A> appears, remove the IBM 5218 Printer Driver Program diskette from drive A.

3. Insert your application program diskette into drive A.

4. Type your application program name.

Running Your Program Using an AUTOEXEC.BAT File

With an Application Program Diskette

If you copied the IBM 5218 Printer Driver Program onto your application program diskette and changed your AUTOEXEC.BAT file, you should:

1. Insert your application diskette into the drive

2. Turn on your IBM Personal Computer or press ALT-CTRL-DEL

3. Begin using your application.

With a Fixed-Disk System

If you copied the IBM 5218 Printer Driver Program onto your fixed disk and changed your AUTOEXEC.BAT file, you should:

1. Turn on your IBM Personal Computer or press ALT-CTRL-DEL

2. Begin using your application.

Running Your Program Using the IBM 5218 Printer Sharing Device

If your system includes this device, you do not have to do anything special when you want to use it. You only need to load the IBM 5218 Printer Driver Program.

Changing the IBM 5218 Printer Driver Program Defaults

A customization menu comes with the IBM 5218 Printer Driver Program. It allows you to change the defaults for the printer driver (such as lines per page and pitch). See "Initial Program Load Defaults" in Appendix C of this manual and Appendix F for specific application program operational differences.

Note: Your application program may use some different defaults than those selected in the Customization Program. These defaults are sent before the text is sent to print.

Using the Customization Program

To customize the IBM 5218 Printer Driver Program you should:

1. Create a customization file.
2. Copy your customized file onto your application program diskette
3. Edit your AUTOEXEC.BAT file to add the customization menu filename at the end of the program name. (For example, your AUTOEXEC.BAT file might look like "PD5218.COM FILESPEC.")

If you do not have the IBM 5218 Printer Driver Program on your application diskette, you should:

Edit your AUTOEXEC.BAT file on your IBM 5218 Printer Driver Program to include the filename at the end of the program name. (For example, your AUTOEXEC.BAT might look like "PD5218.COM FILESPEC.")

Customization Menu

Two screens make up the customization menu. The first screen identifies the program and the version. The second screen lists the different parameters that you can change.

Using the Customization Menu

Use the following procedures to create the customization file.

Using Your Customization Menu with a Two-Drive System

1. Insert your IBM 5218 Printer Driver Program diskette into drive A.
2. Type:

   A:CDVR

   Press Enter.

   When the first Customization Menu appears, follow the instructions on your screen. A detailed explanation of the functions follows this section.

Using Your Customization Menu with a One-Drive System

1. Insert your IBM 5218 Printer Driver Program diskette into the drive. Type:

   A:CDVR

   Press Enter.

2. When the first Customization menu appears, follow the instructions on the screen. A detailed description of the functions follows this section.

Functions Used With the Customization Menu

The "F" keys located on the left side of the IBM Personal Computer keyboard control most of the functions you need to customize your program. The keys you will use and their function are described below:

F1 — This key moves or "advances" the cursor to the next parameter that can be selected. You can advance in a forward direction only; however, when you get to the last parameter and press the F1 key again, the cursor returns to the first parameter.

F2 — This key moves or "scrolls" the cursor to the next value within the parameter you are addressing. This key advances in a forward direction only; however, when the cursor is on the last value and the F2 key is pressed, the cursor moves back to the first value.

F3 — This key ends the menu and saves the values that are on the menu, if there are no errors.

F4 — This key ends the menu and does not save the values.

Two other functions appear on the bottom of the customization menu. They are:

* — This symbol shows a "free key field." This means that you can enter values for the parameters within a given range. The ranges are listed in a following chart.

MSG# — If an invalid parameter is entered and the F3 key is pressed, an error message is displayed on the message line. An invalid parameter can be reentered by backspacing and retyping the desired values.

Customization Menu Screen One

```
┌──────────────────────────────────────────────────────────────┐
│                  ┌─────────────────────────────────────┐      │
│                  │ IBM 5218 Printer Driver Program      │      │
│                  │                                      │      │
│                  │        Customization Menu            │      │
│                  │                                      │      │
│                  │          Version 1.0                 │      │
│                  └─────────────────────────────────────┘      │
│                                                                │
│  Filespec:_____                                           │
│                                                                │
│                                                                │
│                                                                │
│  F3     Go to the next menu                                    │
│  F4     End this program                                       │
│                                                                │
│  MSG#   Error messages appear here                             │
│                                                                │
└──────────────────────────────────────────────────────────────┘
```

Customization Menu Screen Two

```
                    Change Printer Driver Defaults


    Filespec:_____        LPT:_____
    Pitch:_____           Lines per Inch:_____
    Lines per Page:_____         Auto Line Feed:_____
    Vertical Units:_____         Character Set:_____
    Paper Source Drawer:____         Communications:_____
    Shared Printer:_____
    Inactivity Time-out              Inactivity Time-out
              (Page):_____                   (Non-page):_____

    F1      ADVANCE to next menu parameter
    F2      SCROLL to next parameter value
    F3      End this menu and save the values
    F4      End this menu and do not save the values

    "*"     Shows a free key field
    MSG#    Error messages appear here.
```

Parameter	Values (Options)	Notes
Filespec	* (Free key field)	This is a DOS-compatible diskette filename. If it does not exist, the program will create it.
LPT	1 (Default) 2 3	This is the DOS device name that the printer driver will recognize.
Pitch	10 (Default) 12 15 PSM	This is the pitch of the printer driver in characters per inch.
Lines per inch	6 (Default) 8	
Lines per Page	* (Free key field) Value from 1 to 255	This determines the number of lines per page. If nothing is entered in this field, a 28 cm (11 inch) page length is selected.
Auto Line Feed	No (Default) Yes	This determines if a line feed is automatically inserted after a carrier return.
Vertical Units	0.53 mm (1/48 inch) (Default) 0.35 mm (1/72 inch)	Word Processing compatible IBM Graphics Printer compatible

Figure 4 (Part 1 of 3). Description of Customization Menu Screen

Parameter	Values (Options)	Notes
Character Set	US(Default) DW *(Free key)	DisplayWrite 2 Option Custom = Printwheel download
Paper Source Drawer	Bottom (Default) Top Envelope	This parameter determines which automatic sheet feed drawer to use.
Communications	Normal (Default)	
Shared Printer	Yes (Default) No	This parameter asks if the printer sharing device is used. If YES is selected, the printer driver ends communications to the printer between documents. If NO is selected, the printer driver maintains communications with the printer. *Note:* The printer operates correctly in either mode if you do not have the printer sharing device attached.

Figure 4 (Part 2 of 3). Description of Customization Menu Screen

Parameter	Values (Options)	Notes
Inactivity Time-out (page)	2 (Default) * (Free key field)	This parameter is specified in seconds. When a document ends at the bottom of a page, it shows the amount of inactivity time before the printer is released for sharing with another IBM Personal Computer. This value is used when implicit scheduling of the printer sharing device is selected.
Inactivity Time-out (Non-Page)	30 (Default) * (Free key field)	This parameter is specified in seconds. When the document ends other than at the bottom of the page, it shows the amount of inactivity time before the printer is released for sharing with another IBM Personal Computer. This value is used when implicit scheduling of the printer sharing device is selected.

Figure 4 (Part 3 of 3). Description of Customization Menu Screen

Chapter 4. Running Your IBM 5218 Printer

This chapter contains information about your IBM 5218
Printer that is not contained in other publications. See the
preface of this manual for other related publications.

Operating Differences

This section contains information about your IBM 5218
Printer that is different when you use the IBM 5218 Printer
Driver Program.

Removing Paper From the IBM 5218 Printer

If you need to remove your last printed page before it
automatically ejects, you should:

If the **ON LINE** and **READY** lights are **ON**
* Press the **LOAD** button.
If the **ON LINE** light is **ON** and **READY** light is **OFF**
* Press the **START** button
* Then press the **LOAD** button.
If the **ON LINE** light is **OFF** and you are configured for
printer sharing, you should:
* Press the **STOP** button
* Index the paper out of the printer.
If the **ON LINE** light is **OFF** and you are configured for
non-sharing, you should:
* Send, from your IBM Personal Computer, a form
  feed or enough line feeds to eject the page from the
  printer. (A form feed file is provided and may be
  copied to the printer if your application program
  does not have this capability.) If you use any other
  method of moving the paper, the printer drive
  software will lose track of the paper position, and
  your next printed material may not be properly
  aligned.

Load Paper Light On

If the **LOAD PAPER** light is **ON** and the **PRINTER EXCEPTION** light is **OFF,** your program is requesting that you to manually load a sheet of paper into the printer. When the **SET UP** light is **ON,** you should rotate the manual insertion gate forward to the original position.

Paper Alignment with the Tractor Feed Installed

If you are:

*   Using the IBM 5218 Printer Driver Program
*   Have the Tractor Feed installed on your IBM 5218 Printer

You should be aware that there are some procedures you should follow to prevent possible problems.

If you use the IBM Tractor feed with the IBM 5218 Printer Driver Program configured for a shared printer, you must use these procedures before each document you want to print.

To prevent potential problems, when you align your forms you should:

1. Press the **STOP** button
2. Press the **LOAD** button
3. Align the perforation on the form with the top edge of the card guide (use an up index of one complete line as your last step).
4. Press the **START** button.

Note: If these steps are not followed, you may have a forms alignment problem. These steps should be followed any time you realign your forms (such as, after a jam is cleared, when new forms are installed, or when you remove the forms from the printer).

Change Font Light On

When the **CHANGE FONT** light is **ON** and a number is
displayed in the two digit display, you should install the
proper printwheel and press the **START** button. The
following table shows the displayed value and the printwheel
requested:

DISPLAYED VALUE	PRINTWHEEL
01	U S ASCII (Character Set 103)
06	U S ASCII (Character Set 103)
07	Downloaded Printwheel

If nothing is displayed or a number other than 01, 06, or 07
is displayed, consult your application to determine which
printwheel you should install.

When you IPL your IBM Personal Computer, the IBM 5218
Printer Driver Program assumes that the correct printwheel is
installed on the IBM 5218 Printer.

Precautions

The following precautions may prevent you from having a
problem printing from your IBM 5218 Printer.

Reverse Line Feed

Excessive reverse line feeds may cause a problem. When
reverse feeding, the paper may contact the paper feed path
causing it to bend or tear. Therefore, you should limit
reverse line feeding to 2.1 mm (0.084 inches).

It is also possible to reverse feed the paper below the paper
bail on the printer and cause a jam when the paper is driven
forward again. For this reason, you should not reverse feed
the paper below the paper bails.

Top Left Corner Printing

If you try to print in the top left corner of a cut sheet, the corner of the paper may catch on the printer card guide. To prevent this, the IBM 5218 Printer Driver Program will not allow printing near the top 8.4 mm (0.33 inch) of cut sheet paper. Thus, if you try to print on the top line at 6 lines per inch or the top two lines at 8 lines per inch, the text moves down to about 8.4 mm (0.33 inch) from the top of the page.

Opening and Closing the IBM 5218 Printer Cover

Whenever you open or close the printer cover, you must press **CANCEL** after closing the printer cover. If this is not done, the next operator will have to press **START** on the printer before printing can begin.

Compatible Printwheels

There are several printwheels that are compatible with the IBM 5218 Printer Driver Program. The printwheel you select should be ASCII and chosen from the folowing:

Typestyle	Pitch
IBM Courier	10, 12, and 15
IBM Letter Gothic	12
IBM Artisan	10
IBM Gothic 15	15
IBM Prestige Elite	12

For help in ordering supplies, contact your local IBM Sales office or call IBM direct at 1-800-IBM-2468.

Lost Printing

To avoid a printer reset, a page eject, or the loss of some printed data near the end of a document, ensure that printing is finished before you exit the application program. Also refer to "Using the DOS MODE Command with PD5218" on page 81.

Chapter 5. Problem Determination Procedures

If you have a problem printing on the IBM 5218 Printer, you need to determine whether the problem is in the personal computer, the program, the printer, the printer sharing device, the cable, or perhaps with some operating procedure. To make this determination, you will need to refer to the appropriate manuals for the IBM Personal Computer and the IBM 5218 Printer and the following procedure.

1. Is there an obvious problem with the printer, such as a:

   - paper jam
   - number displayed on the printer two digit display
   - light on **(PAPER, RIBBON)?**

   No. Go to step 2.

   Yes. See "Precautions" on page 37 and then go to the *IBM Displaywriter System 5218/5228 Printwheel Printer Problem Determination Guide.*

2. Insert the IBM 5218 Printer Driver Program diskette into drive A and press Ctrl-Alt-Del. When the DOS prompt A> appears, type:

   `SMPL.BAT`

   and press Enter.

   Did the following sample document print correctly?

START OF PRINT TEST:

```
aenortmicpsudghblyf.kj,wVz-vGqUxF;B_Z:H=P')"R?L!
5042618X73*k$9#W%/^,+Y`.@MQ(&O]J[A\I̅|E~D<T>C}N{S
My(My(My(My(My(My(My(My(My(My(My(My(My(My(My(
RLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRL
```

```
"A  B  C  D  E  F  G  H  I  J  K  L  M  N  O  P  Q  R  S  T"
A  B  C  D  E  F  G  H  I  J  K  L  M  N  O  P  Q  R  S  T  U
   B  C        E  F  G  H        J  K  L  M        O  P  Q  R        T  U
B  C           F  G  H           K  L  M           P  Q  R           U  V
   C              G  H              L  M              Q  R              V
C                 H                 M                 R                 W
   d              h  i              m  n              r  s              w
d  e              h  i  j           m  n  o           r  s  t           w  x
   e  f           h  i  j  k        m  n  o  p        r  s  t           w  x
e  f  g  h  i  j  k  l  m  n  o  p  q  r  s  t  u  v  w  x  z
   *  !  @  #  $  %  ^  &  *  (  )  *  +  ^  {  :  +  #  ,  ?
*  !  @        $  %  ^  &        (  )  *  +        {  :  +  #        ?  *
   !  @           %  ^  &           )  *  +           :  +  #           *
!  @              %  ^  &           *  +              +  #              !
   @              &                 +                 #
1  2              6  7              }  1              ,  -              1
   2  3           6  7  8           }  1  0           ,-/           1
2  3  4        6  7  8  9        }  1  0  =     ,  -  /  0        1  2
   3  4  5  6  7  8  9  0  }  1  0  =  ;  ,  -  /  0  ,  1  2
3  4  5  6  7  8  9  0  }  1  0  =  ;  ,  -  /  0  ,  1  2  3
```

```
aenortmicpsudghblyf.kj,wVz-vGqUxF;B_Z:H+P')"R?L!
5042618x73*k$9#W%/^,+Y`.@MQ(&O]J{A\I̅|E~D<T>C}N{S
My(My(My(My(My(My(My(My(My(My(My(My(My(My(My(
RLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRLRL
```

END OF PRINT TEST.

No. Go to step 6.

Yes. It is likely that the IBM 5218 Printer Driver
Program was not loaded before you loaded your
application program. Try running your application
again.

   or

The application program does not go through DOS. The
IBM 5218 Printer Driver Program requires that
application programs use DOS or the ROM-resident
BIOS routines to print. Go to step 3.

3. Verify that the IBM 5218 Printer Driver Program, PD5218.COM, is on your application program diskette or fixed disk. Insert your application program diskette into Drive A. Type:

```
DIR A:
```

or for a fixed-disk system type:

```
DIR C:
```

Is one of your files?

```
PD5218.COM
```

No. Repeat the sections in this guide for preparing your diskettes.

Yes. Go to step 4.

4. Does your application program diskette contain the AUTOEXEC.BAT file? To verify, type:

```
DIR A:
```

or for a fixed-disk system type:

```
DIR C:
```

Is one of your files?

```
AUTOEXEC.BAT
```

No. Repeat the sections in this guide for preparing your diskettes and adding to the AUTOEXEC.BAT file.

Yes. Go to step 5.

5. Verify that the AUTOEXEC.BAT file contains PD5218.COM. Type:

```
TYPE AUTOEXEC.BAT
```

Does the AUTOEXEC.BAT contain the following file?

```
PD5218.COM
```

No. Repeat the sections in the guide for adding to the AUTOEXEC.BAT file.

Yes. Try running your application again. If your application still does not run, contact your application program supplier.

6. Clear any paper that might be jammed in the IBM 5218 Printer. If you are using manual paper loading, load a sheet of paper into the printer. Press the **PRINT TEST** button on the printer. Your print test may be different from the one shown below, depending on which printwheel you have on your machine. However, your print test is correct if all 96 characters print.

```
abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789
                  ,`~}<>^]\|"=':.?_%,#/-[;)*$&!+(.{@

0000 0088 F405 0500 0000 0000 016E 0300
```

Did the print test work correctly?

No. Go to the *IBM Displaywriter System 5218/5228 Printwheel Printer Problem Determination Guide.*

Yes. Go to step 7.

7. Refer to the *IBM Personal Computer Guide to Operations* and run Problem Determination to verify if the IBM Personal Computer and the IBM Asynchronous Communications Card are working.

   Note: The IBM Asynchronous Communications Card may require a separate diagnostics package to verify. The pluggable modules on the IBM Asynchronous Communications Card must be positioned for an RS232-C interface and COM1 when running Problem Determination. Refer to "COM1 Configuration" on page 2 for instructions on the proper module position. An enhanced diagnostic procedure for the IBM Asynchronous Communications Card is in Appendix E, "Technical Reference," page 73.

   Did the Problem Determination Procedures complete without a failure?.

   No. Follow your organization's procedures to have your IBM Personal Computer serviced.

   Yes. Go to step 8.

8. If the IBM Personal Computer and the IBM 5218 Printer appear to be operating correctly, the problem may be in the cable or in the IBM 5218 Printer Sharing Device switch box.

   Is your system using the IBM 5218 Printer Sharing Device?

   No. Go to step 10.

   Yes. Go to step 9.

9. You can test your printer cable if you bypass the printer sharing device. To bypass the IBM 5218 Printer Sharing Device switch box, disconnect your IBM Personal Computer and your IBM 5218 Printer from the IBM 5218 Printer Sharing Device. Connect your IBM Personal Computer directly to the IBM 5218 Printer. Try running your application again.

Did your job print correctly?

No. Go to step 10.

Yes. Follow your organization's procedures to have the 5218 Printer Sharing Device serviced, by calling the IBM Service Exchange/Communication Center toll free number 1-800-428-2569. (Service personnel: use Major unit 310, Minor unit 99.)

10. Check the 19.7 foot (6 meter) cable for continuity (see Appendix E, "Technical Reference" on page 73 for a cabling diagram) or replace the cable. If the continuity check fails, repair or replace the cable. You can order replacement cables by calling IBM Direct toll free at 1-800-IBM-2468 and ask for the Systems Products Department. Try running your application again.

Did your job print correctly?

No. Follow your organization's procedures to have your IBM 5218 Printer checked.

Yes. The cable was defective.

Procedure for Obtaining Service and Supplies

Service

IBM warrants this product to be in good working order for a period of 90 days from the date of purchase from IBM or an IBM authorized dealer (see Limited Warranty on the inside front cover of this manual).

Service beyond the warranty period can be obtained from an IBM Service/Exchange Center or from an IBM authorized dealer selling this product. For details, call the IBM Service/Exchange Communication Center (toll free) at 1-800-428-2569 or contact your IBM authorized dealer.

Supplies

Supplies may be obtained from your local IBM Product Center or from your IBM authorized dealer. For additional information on supplies call IBM Direct (toll free) at 1-800-IBM-2468 or contact your IBM authorized dealer.

Appendix A. Printer Control Codes

Summary Tables

Figure 5 summarizes the single byte controls that the IBM 5218 Printer Driver Program uses. Figure 6 on page 46 summarizes the Escape Sequence Functions.

CONTROL CODE	HEX	DECIMAL	FUNCTION
NUL	00	0	NULL
BS	08	8	BACKSPACE
HT	09	9	HORIZONTAL TAB
LF	0A	10	LINE FEED
VT	0B	11	VERTICAL TAB (LINE FEED)
FF	0C	12	FORM FEED
CR	0D	13	CARRIAGE RETURN
SI	OF	15	SHIFT IN
DC1	11	17	SELECT PRINTER
DC2	12	18	SET 10 PITCH
DC3	13	19	DESELECT PRINTER
CAN	18	24	CANCEL
ESC	1B	27	ESCAPE
SP	20	32	SPACE
DEL	7F	127	DELETE

Figure 5. Single Byte Controls

With PC Character Set 1 active, the single byte controls (except SPACE) are recognized with or without the high order bit set, for example, BS is X'88' or X'08'. The terminology X'00' shows that the value within the quotes is expressed in hexadecimal notation and D'0' shows that the value is in decimal notation.

CONTROL CODE	HEX	DECIMAL	FUNCTION
ESC - n	2D	45	BEGIN/END UNDERSCORE
ESC 0 ·	30	48	SET 3.2 mm (1/8 Inch) LINE SPACING
ESC 1	31	49	SET 2.4 mm (9/96 Inch) LINE SPACING
ESC 2	32	50	START VARIABLE LINE SPACING
ESC 5 n	35	53	SET/RESET AUTO LF/CR MODE
ESC 6	36	54	SELECT PC CHARACTER SET 2
ESC 7	37	55	SELECT PC CHARACTER SET 1
ESC :	3A	58	SET 12 PITCH
ESC = ...	3D	61	PRINTWHEEL DOWNLOAD
ESC > n	3E	62	SET HORIZONTAL MOTION INDEX
ESC A n	41	65	SET VARIABLE LINE SPACING
ESC B n..X'00'	42	66	SET VERTICAL TABS(NO OP)
ESC C n m	43	67	SET PAGE LENGTH
ESC D n..X'00'	44	68	SET HORIZONTAL TAB STOPS
ESC E	45	69	BEGIN EMPHASIS
ESC F	46	70	END EMPHASIS
ESC P n	50	80	SET PROPORTIONAL SPACE MODE
ESC Q 6	51	81	DESELECT ON POSITIVE QUERY REPLY
ESC S n	53	83	SET SUPER/SUBSCRIPT MODE
ESC T	54	84	RESET SUPER/SUBSCRIPT MODE
ESC U n	55	85	SET PRINT DIRECTION
ESC X n m	58	88	SET HORIZONTAL MARGINS
ESC [F	5B,46	91,70	PAPER FEED CONTROLS
ESC [K	5B,4B	91,75	SET INITIAL CONDITIONS
ESC [T ...	5B,54	91,84	SET CHARACTER SET GLOBAL
ESC [\ ...	5B,5C	91,92	SET VERTICAL UNITS
ESC [c	5B,63	91,99	MESSAGE
ESC \ n m	5C	92	PRINT ALL CHARACTERS
ESC] ...	5D	93	REVERSE LINE FEED
ESC ^	5E	94	PRINT SINGLE CHARACTER
ESC h	68	104	PARTIAL INDEX DOWN
ESC i	69	105	PARTIAL INDEX UP
ESC o	6F	111	END DOCUMENT
ESC p	70	112	BEGIN DOCUMENT

Figure 6. Escape Sequence Controls

Note: For the escape sequences, refer to the full function descriptions for these controls.

Single Byte Controls

The single byte controls that the IBM 5218 Printer Driver recognizes are described below. If the IBM PC Character Set 1 is active, these controls are also recognized with the high order bit on.

The terminology X'00' shows that the value within the quotes is expressed in hexadecimal notation and D'0' shows that the value is in decimal notation.

- NULL (NUL X'00', D'0')

NUL ends the horizontal and vertical tab stop setting sequences. A NUL code that is not part of an ESC controls sequence is ignored.

- BACKSPACE (BS X'08', D'8')

The BS code causes the print point to be moved to the left by the current value of the ESC > n (Set Horizontal Motion Index) or by the active pitch distance.

- HORIZONTAL TAB (HT X'09', D'9')

The HT code causes the print point to move right to the next horizontal tab stop. If there is no tab stop to the right of the current print point or if an HT code is received past the right margin, the HT control is ignored.

- LINE FEED (LF X'0A', D'10')

The LF code causes all data in the print buffer to print and the paper to advance one line. The paper advance distance is determined by the active line spacing, the ESC A n (Set Variable Line Spacing) control, or by the Initial Program Load defaults if no line spacing control is received.

- VERTICAL TAB (VT X'0B', D'11')

The VT control is treated as a Line Feed.

• FORM FEED (FF X'0C', D'12')

The FF code causes the print point to move to the left margin, all data in the print buffer to print, and the paper to advance to a position determined by the type of paper handling device used.

- Manual (Cut Sheet) Paper Handling: The paper is advanced to the pre-determined end of form position, plus 13 mm (0.5 inch) to prevent carrier motion from marking the paper.
- Tractor (Continuous Forms): The paper is advanced to the pre-determined end of form position. (Not supported in shared mode.)
- Automatic Sheetfeed: The paper (or envelope) is ejected into the output stacker. When the next printable character is received, the paper sensor is checked for paper under the platen. If no paper has been manually loaded, paper will be loaded automatically from the sheet feeder.

The top of form position is determined from the page length description in the ESC C (Set Page Length) control or from the default page length if no ESC C control has been received.

• CARRIAGE RETURN (CR X'0D', D'13')

The CR code causes the print point to move to the left margin of the current line. If Auto Line Feed with Carriage Return is in effect, a Line Feed is added.

• SHIFT IN (SI X'0F', D'15')

The Shift In control sets 15 pitch (15 characters per inch). It changes the HMI (Horizontal Motion Index) to 1.7 mm (8/120 inch) for the duration of the condense print format mode. The receipt of the SI control will not cause a printwheel prompt to be issued.

- **SELECT PRINTER** (DC1 X'11', D'17')

The DC1 control selects the printer, allowing it to receive data. The line buffer is cleared by DC1.

- **SET 10 PITCH** (DC2 X'12', D'18')

DC2 sets 10 pitch (10 characters per inch) printing mode. It changes the HMI (Horizontal Motion Index) to 2.5 mm (12/120 inch).

- **DESELECT PRINTER** (DC3 X'13', D'19')

The DC3 control deselects the printer. The device prints the contents of the line buffer up to the DC3 code and ignores all following data until a DC1 code is received.

- **CANCEL** (CAN X'18', D'24')

The CAN code clears the printer line buffer. It does not change the print point.

- **ESCAPE** (ESC X'1B', D'27')

The ESC code is used as a prefix to extend the number of controls.

- **SPACE** (SP X'20', D'32')

Space is a no print character that moves the print point to the right by the active pitch or HMI (Horizontal Motion Index) distance.

- **DELETE** (DEL X'7F', D'127')

The Delete code is ignored by the printer driver.

- BEGIN/END UNDERSCORE (ESC - n)
  (X'1B 2D n', D'27 45 n')

This control starts and stops the underscore function. All
graphic characters, horizontal tabs and spaces are
underscored.

The following hexadecimal values specify start and stop of
the underscore function:

n = X'00' — Stop underscore function (default)
n = X'01' — Start underscore function.

- SET 3.2 mm (1/8 Inch) LINE SPACING (ESC 0)
  (X'1B 30', D'27 48')

This control causes the line spacing to be set to 3.2 mm (1/8
inch) per line.

- SET 2.4 mm (9/96 Inch) LINE SPACING (ESC 1)
  (X'1B 31', D'27 49')

This control causes the line spacing to be set to 2.4 mm
(9/96 inch) per line.

- START VARIABLE LINE SPACING (ESC 2)
  (X'1B 32', D'27 50')

This control causes the line spacing to be set to the value
specified by the ESC A (Set Variable Line Spacing) control.
If no ESC A control is read, this control establishes 4.2 mm
(1/6 inch) line spacing.

- SET/RESET AUTO LF/CR MODE (ESC 5 n)
    (X'1B 35 n', D'27 53 n')

This control sets and resets the automatic line feed with carriage return mode. When the mode is set, an LF code is added to each CR read by the printer.

> n = X'00' Reset auto LF/CR mode (default)
> n = X'01' Set auto LF/CR mode

- SELECT PC CHARACTER SET 2 (ESC 6)
    (X'1B 36', D'27 54')

This control sets the IBM PC Character Set 2. In this mode, the IBM 5218 Printer Driver Program only recognizes the single byte control values listed in Figure 5 on page 47, of this appendix, not with the high order bit on. Refer to "Appendix D. Supported Character Set" for the characters that are supported.

- SELECT PC CHARACTER SET 1 (ESC 7)
    (X'1B 37', D'27 55')

This control invokes the IBM Personal Computer Character Set 1. In this mode, the IBM 5218 Printer Driver Program recognizes the single byte controls at the code points specified in Figure 5 on page 47, of this appendix, or with the high order bit on.

- SET 12 PITCH (ESC :)
    (X'1B 3A', D'27 58')

This code causes printing in 12 pitch (12 characters per inch). It changes the HMI (Horizontal Motion Index) to 2.1 mm (12/120 inch). It remains in effect until a command to change pitch, an INIT or an ESC [K (Set Initial Conditions) control is received.

No printwheel change prompt is issued by this control.

- **PRINTWHEEL DOWNLOAD (ESC = ...)**
  (X'1B 3D', D'27 61')

This control lets the IBM 5218 Printer Driver Program accept data as the printwheel definition. The count field value defines the number of data bytes to follow. If fewer than 194 required bytes are transferred, the printwheel table is flagged as invalid. If more than 194 required bytes are transferred, the extra bytes are ignored.

> cntl = low byte of count field (should be X'C2')
> cnth = high byte of count field (should be X'00')
> id1 = first byte of id field
> id2 = second byte of id field
> n, ...,n = printwheel table image.

The data contains two bytes of information for each petal (character) and is transferred in order of increasing petal number. It contains the associated code point, hammer impression level, and character width for proportional spacing.

> Byte 1, Bits 7-0 = Character's ASCII Code Point
> Byte 2, Bits 5-4 = Hammer Impression Level
>   = 00, No hammer fire
>   = 01, Low impression level
>   = 10, Medium impression level
>   = 11, High impression level
>   Bits 3-0 = Character width in 0.2 mm
>   (1/120 inch) units.

Any code point may be specified. However, those code points that are interpreted as controls in the active code page will not print unless an ESC ^ (Print Single Character) or an ESC \ (Print All Characters) code is received.

This control defines the downloaded printwheel table and does not change the active printwheel table. To start this code, the ESC [T (Set Character Set Global) command must be sent. If the downloaded printwheel table is active when the ESC [T code is received, the new downloaded printwheel table takes effect immediately.

• SET HORIZONTAL MOTION INDEX, (ESC > n)
  (X'1B 3E n', D'27 62 n')

This control specifies HMI (Horizontal Motion Index) in 0.2 mm (1/120 inch) units. HMI is the width of graphic characters, spaces, backspaces, and horizontal tab stop columns.

  n = X'01' to X'FF' giving values of 0.2 mm (1/120 inch) to 54 mm (255/120 inch).

  Values less than 3 may cause a 92 error.

• SET VARIABLE LINE SPACING, (ESC A n)
  (X'1B 41 n', D'27 65 n')

This control sets line spacing in 5.3 mm (1/48 inch) increments as the default. The ESC [\ (Set Vertical Units) code allows the increment to be changed to 0.35 mm (1/72 inch). The line spacing does not take effect until it is invoked with ESC 2 (Start Variable Line Spacing).

  n = X'01' to X'FF' gives values of 5.3 mm (1/48 inch) to 135 mm (255/48 inch)
  n = X'08' selects 4.2 mm (8/48 or 1/6 inch) line spacing (default)
  n = X'00' is ignored.

• SET VERTICAL TABS (ESC B n..X'00')
  (X'1B 42 n..00', D'27 66n..0')

This control is ignored. All data bytes following the ESC B sequence are ignored until the NUL code is encountered.

- SET PAGE LENGTH (ESC C n. m)
  (X'1B 43 n m', D'27 67 n m')

This control specifies the page length in lines (n) or in inches (m). For predictable results, this control should be sent on page boundaries only (before the first character on a page).

Page length in number of lines:

> n = X'01' to X'FF' lines per page, m not present. If the value of n causes the page length to be greater than 38 cm (15 inches) it is set to 38 cm (15 inches).

Page length in inches:

> n = X'00', m = X'00' to X'FE'
> n = X'00', m = X'00' the control is ignored
> n = X'00', m = X'0B' 28 cm (11 inches) (default)
> n = X'00', m = X'01' to X'0F' inches per page giving from 26 mm to 38 cm (1 to 15 inches) per page. If m is greater than 15, it is set to 15.

For inch designation, set n = X'00'. For lines, do not include m. Do not set m = X'FF'.

- SET HORIZONTAL TAB STOPS (ESC D n..X'00')
  (X'1B 44 n..00', D'27 68 n..0')

This control specifies horizontal tab stops in column positions. Pitch changes move the absolute tab position, but do not change the column number.

> n = X'01' to X'FF' (decimal 1 to 255)

All tab stops after 255 are ignored.

Default tab stops are at every 8 character positions.

- BEGIN EMPHASIS (ESC E)
    (X'1B 45', D'27 69')

This is the start control that identifies text to be emphasized. Emphasis occurs by overstriking a graphic character after a 0.2 mm (1/120 inch) movement to the right. A graphic character at the right margin is emphasized to the left.

- END EMPHASIS (ESC F)
    (X'1B 46', D'27 70')

This control ends emphasis.

- SET PROPORTIONAL SPACE MODE (ESC P n)
    (X'1B 50 n', D'27 80 n')

This control starts and stops the proportional space mode. It can only be started in line buffered print mode.

The following one-byte hexadecimal values specify the state of the Proportional Space Mode:

n = X'00' — End Proportional Space Mode (default)
n = X'01' — Begin Proportional Space Mode.

Proportional Space Mode remains active until one of the following controls is received:

End of Proportional Space
The printer driver is started or initialized.

No printwheel prompt is issued by this control. If a printwheel change is needed, the application must use the ESC [T (Set Character Set Global), the ESC [c (Message) control or rely on the operator to ensure that the proper printwheel is installed.

- DESELECT ON POSITIVE QUERY REPLY (ESC Q 6)
  (X'1B 51 06, D'27 81 6')

This control allows the host application to determine what device is attached to the parallel interface, or which printer driver is emulating the parallel interface. The printer driver must be selected by the DC1 control after a positive response, if data is to be transferred to it.

- SET SUPER/SUBSCRIPT MODE (ESC S n)
  (X'1B 53 n', D'27 83 n')

This control sets either Superscript Mode or Subscript Mode. When Superscript Mode is entered, the print point is moved to a position one half line above the text line. When Subscript Mode is entered, the print point is moved to a position one half line below the text line. Superscript and Subscript Modes are canceled by the ESC T (Reset Superscript/Subscript Mode) control.

  n = X'00' — Sets Superscript Mode.
  n = X'01' — Sets Subscript Mode.

- RESET SUPER/SUBSCRIPT MODE (ESC T)
  (X'1B 54', D'27 84')

This control cancels the Superscript or Subscript modes. When Superscript Mode is canceled, a forward half line feed is accomplished. When Subscript Mode is canceled, a reverse half line feed is accomplished.

- SET PRINT DIRECTION (ESC U n)
  (X'1B 55 n' D'27 85 n')

This control specifies the print direction for all following lines of text. The print direction may be affected if another ESC U control, an ESC [K (Set Initial Conditions), a CR, or an INIT signal is received across the application interface. The following hexadecimal values specify the print direction:

  n = X'00' — Select bidirectional print (default)
  n = X'01' — Select left-to-right print
  n = X'02' — Select right-to-left print.

- SET HORIZONTAL MARGINS (ESC X n m)
    (X'1B 58 n m', D'27 91 88 n m')

This control specifies the left and right margins. The margins are specified in character positions relative to the left edge of the paper. The maximum line size is represented by the equation $[(120/HMI) \times 13.2]$ where $HMI = ESC > n$.

    n = LEFT MARGIN (default = 1)
    n = X'01' to X'FF' giving left margins from 1 to 255
    n = X'00' uses the current value

    m = RIGHT MARGIN (default = 132)
    m = X'01' to X'FF' giving right margins from 1 to 255
    m = X'00' uses the current value

- PAPER FEED CONTROLS (ESC [F)
    (X'1B 5B 46 03 00 k n m', D'27 91 70 3 0 k n m')

This control specifies the paper feed parameters for automatic sheet feed devices.

    k = PAPER FEED TECHNIQUE
    k = X'00' Current
    k = X'01' Cut sheet (manual)
    k = X'03' Automatic sheetfeeder.

    n = FORMS CONTROL
    n = X'00' Use the current forms setting
    n = X'01' Start paper feed (default)
    n = X'02' Start envelope feed.

    m = SOURCE DRAWER
    m = X'00' Use the currently selected paper source drawer
    m = X'01' Use sheet feed bottom drawer (default)
    m = X'02' Use sheet feed top drawer.

This control is honored only if the automatic sheet feed device is mounted.

- SET INITIAL CONDITIONS (ESC [K)
    (X '1B 5B 4B 01 00 00 11', D'27 91 75 1 0 0 17')

This control causes the printer to become ready, and establishes the IPL defaults, or the customization parameters (if used). It also defines the document boundaries for printer sharing.

- SET CHARACTER SET GLOBAL (ESC [T . . .)
    (X'1B 5B 54 05 00 ch cl ph pl f',
     D'27 91 84 5 0 ch cl ph pl f')

This control specifies the Graphic Character Set Global ID and the Code Page ID. It is used to convert code points into graphic characters, and determines if printwheel change prompting is allowed. This control is used with the ESC > (Set Horizontal Motion Index), and the ESC P (Set/Reset Proportional Space Mode) controls to completely specify the font.

ch,cl = CHARACTER SET ID — This is a two byte hexadecimal value that shows the Graphic Character Set Global ID.
ch,cl = X'0000' — Use the current character set
ch,cl = X'0067' — US ASCII (Default)
ch,cl = X'0007' — Downloaded Character Set
All other values select the default IPL character set.

ph,pl = PAGE — This parameter is ignored. The current page code is used.

f = PROMPT FLAG — This is a hexadecimal value that prompts for a printwheel change.
f = X'01' — Prompt for printwheel change (default).
f = X'02' — Do not prompt for printwheel change.

• SET VERTICAL UNITS (ESC [\ . . .)
   (X'1B 5B 5C 02 00 n 00', D'27 91 92 2 0 n 0')

This control establishes the base units for the ESC A (Set Variable Line Spacing) control. The current line spacing is not affected.

   n = X'30' —5.3 mm (1/48 inch) (default)
   n = X'48' —0.35 mm (1/72 inch).

If any other value is selected, the default is used.

• MESSAGE (ESC [c)
(X'1B 5B 63 02 00 C2 81', D'27 91 99 02 00 194 129)

This control sends a change font message to the printer operator. When the printer receives this code, the **Ready** light goes off and the **Change Font** light comes on. After the proper printwheel is installed, press **Start** to resume printing.

• PRINT ALL CHARACTERS (ESC \ n m)
   (X'1b 5C n m', D'27 92 n m')

This control causes the indicated number of characters to print regardless of their code points. An underscore prints if the specified code point is not in the active character set. This control operates independently of ESC 6 (Select PC Character Set 2) and ESC 7 (Select PC Character Set 1).

   n = low count
   m = high count

• REVERSE LINE FEED (ESC] . . .)
   (X'1B 5D', D'27 93')

This control causes a reverse line feed. The vertical distance moved is the current line spacing distance.

- PRINT SINGLE CHARACTER (ESC^)
   (X'1B 5E', D'27 94')

This control causes the next character to print regardless of
the code point. An underscore prints if the specified code
point is not in the active character set. This control operates
independently of ESC 6 (Select PC Character Set 2) and
ESC 7 (Select PC Character Set 1).

- PARTIAL INDEX DOWN (ESC h)
   (X'1B 68', D'27 104')

 This control causes a forward half line feed. If half the
active line spacing is not a whole number of 0.3 mm (1/96
inch), it is rounded down to the nearest whole number. This
control functions independently of the ESC S (Set Subscript
or Superscript) and the ESC] (Reverse Line Feed).

- PARTIAL INDEX UP (ESC i)
   (X'1B 69, D'27 105')

This control causes a reverse half line feed. If half of the
active line spacing is not a whole number of 0.3 mm (1/96
inch), it is round down to the nearest whole number. This
control functions independently of the ESC S (Set Subscript
or Superscript) and the ESC] (Reverse Line Feed) controls.

- END DOCUMENT (ESC o)
   (X'1B 6F', D'27 111')

This control is used by the application to show the end of a
document. When the printer is configured for printer sharing
and the application has control of the printer, this control
releases the printer after 2 seconds of inactivity across the
BIOS interface. The ESC o control ends a document that
was started by an ESC p (Begin Document).

- BEGIN DOCUMENT (ESC p)
  (X'1B 70', D'27 112')

This control is used by the application to specify the
beginning of a document. When the IBM 5218 Printer
Driver Program is configured for printer sharing, the
receipt of this code shows that the application is
requesting a shared printer. This means that once the
application has control of the printer, it maintains control
until the ESC o (End Document) control is received.

Multiple ESC p (Begin Document) controls may be sent
without an ESC o (End Document) control. Only one
ESC o (End Document) control is needed.

Appendix B. General Characteristics

Line Spacing Controls

The vertical line spacing defaults to 6 lines per inch at power-on, after the printer driver initialization, or on receipt of an ESC [K (Set Initial Conditions) control. The line spacing may also be specified with any of the following data stream controls.

CONTROL	LINE SPACING
ESC 0	3.2 mm (1/8 inch)
ESC 1	2.4 mm (9/96 inch)
ESC 2	Execute ESC A, or 4.2 mm (1/6 inch)
ESC A n	n/0.5 mm (n/48 inch)

Column Width and Pitch Controls

The size of a column for the setting of tab stops or margins and the amount of escapement for the space and backspace controls depends on the active pitch as defined in the following charts:

PITCH	SPACE SIZE
10	2.5 mm (6/60 inch)
12	2.1 mm (5/60 inch)
15	1.7 mm (4/60 inch)
PSM	2.1 mm (5/60 inch)
HMI	HMI/0.2 mm (HMI/120 inch)

The following controls select pitch.

PITCH	CONTROLS
10	ESC > X'0C', DC2, ESC [K
12	ESC > X'0A', ESC :
15	ESC > X'08'
PSM	ESC P X'01'
HMI	ESC > n

If the pitch is changed in the middle of the line, the right edge of the last character box becomes the left edge of the next character box. The escapement distance between the print points of the two characters is 1/2 old pitch width + 1/2 new pitch width.

Printed Line Size

The maximum length of a line that will fit on a page is 34 cm (13.2 inches). The number of characters that may be printed in 34 cm (13.2 inches) is dependent on the active pitch as defined below.

PITCH	MAXIMUM LINE SIZE
10	132 characters
12	158 characters
15	198 characters
PSM	Variable number of characters
HMI	Represented by the following equation: (120/HMI) x 13.2 characters.

ASCII Command Interdependencies

This section defines which ASCII controls may be active simultaneously and which are mutually exclusive.

Only one pitch and one line spacing density may be active at any time. Whenever a pitch control or a line spacing control is received, it takes precedence over any previous pitch or line spacing control.

Line Buffer Play-Out Codes and Conditions

Receipt of any of the following control codes will cause the data contained in the current line buffer to be printed.

CR	Carriage Return
DC3	Deselect Printer
FF	Form Feed
LF	Line Feed
VT	Vertical Tab
ESC C n m	Set Page Length
ESC Q 6	Deselect on Positive Query Reply
ESC S n	Set Superscript/Subscript
ESC T	Reset Superscript/Subscript
ESC U n	Set Print Direction
ESC [T . . .	Set Character Set Global
ESC h	Partial Index Up
ESC i	Partial Index Down
	Automatic New Line
	Buffer Overflow
	Implicit Form Feed

Receipt of any of the following control codes will cause the data contained in the entire buffer to be printed.

ESC [K	Set Initial Conditions
ESC o	End Document
ESC p	Begin Document
	Receipt of an Initialization Request (INIT)

Appendix C. Initial Program Load Defaults

The table below lists the defaults which will be assigned to the listed parameters when the IBM 5218 Printer Driver Program is loaded. These may be changed by explicit controls, or by changing the IBM Printer Driver Program defaults using the customization program.

CONTROL	PARAMETER	RANGE	DEFAULT
ESC >	HMI	3-255	12/120 (10 PITCH)
ESC 5	AUTO LF/CR	0-1	0 RESET
ESC A	LINE SPACING	0-255	8/48 (1/6 INCH)
ESC 7	SELECT PC CHARACTER SET 1		PC CHARACTER SET 1
ESC C	PAGE LENGTH	0-255	66 LINES
	PAGE LENGTH	1-15	28 cm (11 INCHES)
ESC D	TAB STOPS	1-255	EVERY 8 POSITIONS
ESC F	END EMPHASIS		EMPHASIS OFF
ESC P	SET PSM	0-1	0 (OFF)
ESC T	RESET SUBSCRIPT/ SUPERSCRIPT		RESET
ESC X	LEFT MARGIN	1-255	1
	RIGHT MARGIN	1-255	132
ESC [F	PAPER FEED TECHNIQUE	0-1,3	ATTACHED DEVICE
	FORMS CONTROL	0-2	PAPER FEED
	SOURCE DRAWER	0-2	DRAWER 1(BOTTOM)
ESC [T	CHARACTER SET ID	0, 7, 103,	US
	FLAG	0-2	PROMPT FOR PRINTWHEEL CHANGE
ESC [\	UNITS	48,72	48
	COMMUNICATIONS		NORMAL
	TOP MARGIN		1 LINE

Appendix D. Supported Character Set

The IBM 5218 Printer Driver Program supports the character set listed below. Any character received by the IBM 5218 Printer Driver Program not listed below is printed as an underscore.

Note: If character set DW is selected in the Customization Menu Program, Hex value A5 (Dec value 165) prints a period (.) and Hex value 9C (Dec value 156) prints a comma (,).

HEX VALUE	DECIMAL VALUE	CHARACTER
20	32	Space
21	33	! Exclamation Point
22	34	'' Quotation Mark
23	35	# Number Sign
24	36	$ Dollar Sign
25	37	% Percent Sign
26	38	& Ampersand
27	39	' Apostrophe
28	40	(Left Parenthesis
29	41	) Right Parenthesis
2A	42	* Asterisk
2B	43	+ Plus Sign
2C	44	, Comma
2D	45	- Hyphen
2E	46	. Period
2F	47	/ Slash
30	48	0 Zero
31	49	1 One
32	50	2 Two
33	51	3 Three
34	52	4 Four
35	53	5 Five
36	54	6 Six
37	55	7 Seven
38	56	8 Eight
39	57	9 Nine
3A	58	: Colon

HEX VALUE	DECIMAL VALUE	CHARACTER
3B	59	; Semicolon
3C	60	< Less Than Sign
3D	61	= Equal Sign
3E	62	> Greater Than Sign
3F	63	? Question Mark
40	64	@ At Sign
41	65	A
42	66	B
43	67	C
44	68	D
45	69	E
46	70	F
47	71	G
48	72	H
49	73	I
4A	74	J
4B	75	K
4C	76	L
4D	77	M
4E	78	N
4F	79	O
50	80	P
51	81	Q
52	82	R
53	83	S
54	84	T
55	85	U
56	86	V
57	87	W
58	88	X
59	89	Y
5A	90	Z
5B	91	[Open Square Bracket
5C	92	\ Reverse Slash
5D	93	] Close Square Bracket
5E	94	^ Circumflex

HEX VALUE	DECIMAL VALUE	CHARACTER
5F	95	___ Underscore
60	96	` Grave
61	97	a
62	98	b
63	99	c
64	100	d
65	101	e
66	102	f
67	103	g
68	104	h
69	105	i
6A	106	j
6B	107	k
6C	108	l
6D	109	m
6E	110	n
6F	111	o
70	112	p
71	113	q
72	114	r
73	115	s
74	116	t
75	117	u
76	118	v
77	119	w
78	120	x
79	121	y
7A	122	z
7B	123	{ Open Brace
7C	124	¦ Vertical Broken Line
7D	125	} Close Brace
7E	126	~ Tilde

Appendix E. Technical Reference

This section contains information about the cables you need to operate the IBM 5218 Printer when it is attached to an IBM Personal Computer. It also contains an enhanced diagnostic procedure for the IBM Asynchronous Communication Card.

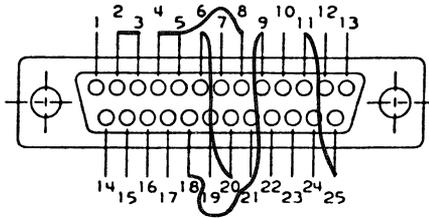## Enhanced Diagnostic Procedure — IBM Asynchronous Communication Card

This procedure is used to test the current loop portion of the IBM Asynchronous Communication Card. It is used with the *IBM Personal Computer: Maintenance and Service*, IBM number 6025072, DOS 2.0 or later. If you use any other diagnostic program, this procedure may not work. To use this procedure you need to build the wrap plug.

Building the Wrap Plug

To do this you need to:

1. Get a DB 25 Female connector and 6 jumper wires.

2. Place the jumper wires as follows:

From Pin	To Pin
2	3
4	5
5	8
6	20
9	18
11	25

DB 25 Female Connector
Wiring Side

You now have a wrap plug that can test the current loop portion of your IBM Asynchronous Communication Card.
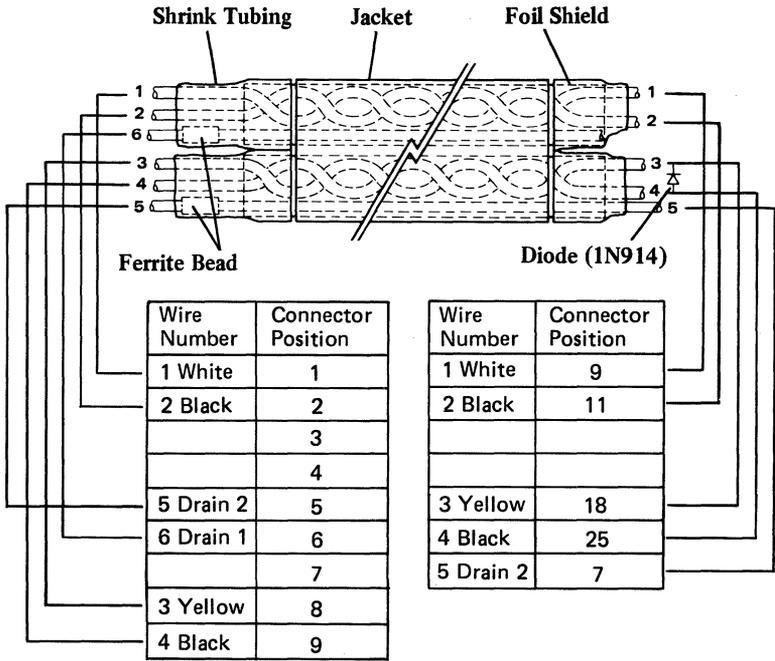
Using the Wrap Plug

To run this diagnostic procedure you should:

1. Remove the cable connected to your IBM Asynchronous Communication Card on your IBM Personal Computer.

2. Install the wrap plug you made on the IBM Asynchronous Communication Card.

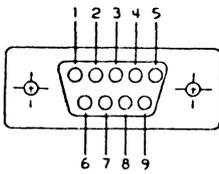3. Run your normal IBM Personal Computer Advanced Diagnostic Procedures.

If this diagnostic test shows that the IBM Asynchronous Card is working properly, return to the Chapter 5 "Problem Determination Procedures" on page 37.

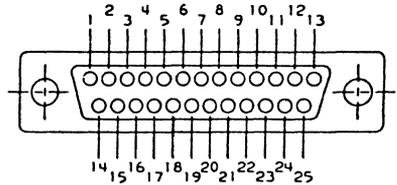# Cabling Diagram — IBM 5218 Printer to IBM Personal Computer

Shrink Tubing   Jacket   Foil Shield

Ferrite Bead   Diode (1N914)

Wire Number	Connector Position
1 White	1
2 Black	2
	3
	4
5 Drain 2	5
6 Drain 1	6
	7
3 Yellow	8
4 Black	9

Wire Number	Connector Position
1 White	9
2 Black	11
3 Yellow	18
4 Black	25
5 Drain 2	7

Cable Connections

DB 9 Female Connector
Wiring Side

DB 25 Female Connector
Wiring Side

Figure 7.   Cable: IBM 5218 Printer to IBM Personal Computer, IBM Part 6113647.

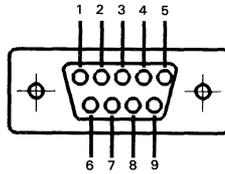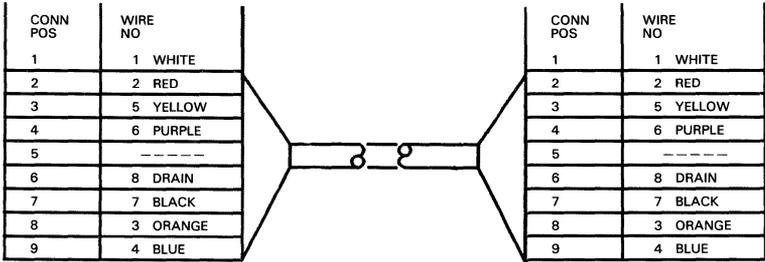# Cable Specifications for IBM 5218 Printer to IBM Personal Computer

A cable of up to 60 meters (197 feet) can be used if it meets the following characteristics:

- Two balanced twisted pair, each pair shielded

  - Conductors

    Conductor size — No. 22 stranded
    Resistance — 17.2 Ohms/305 meters (1000 ft.)
    @ 20° C

  - Shields — must be insulated from each other.

  - Electrical characteristics:

    Impedance (Zo) — 55±10% Ohms @ 1 MHz
    Attenuation — 4.5 db/305 meters (1000 ft.)
    @ 100 kHz
    Capacitance — 0.044 ±0.002 uf/305 meters
    (1000 ft.) @ 1 kHz

  - Balance

    Capacitive unbalance — Less than 16%
    Resistive unbalance — Less than 6.9%

- Ferrite Bead Impedance (Measured with a Vector Impedance Bridge)

Frequency (MHZ)	Minimum Impedance (Ohms)
1	7
5	20
10	30
30	60
70	80
100	80

Cabling Diagram — IBM 5218 Printer to IBM 5218 Printer Sharing Device

Note: See Warning 2 on page 81.

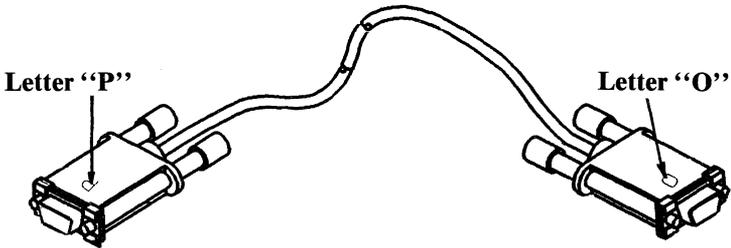| CONN POS	WIRE NO			CONN POS	WIRE NO	
1	1	WHITE		1	1	WHITE
2	2	RED		2	2	RED
3	5	YELLOW		3	5	YELLOW
4	6	PURPLE		4	6	PURPLE
5	— — — — —			5	— — — — —	
6	8	DRAIN		6	8	DRAIN
7	7	BLACK		7	7	BLACK
8	3	ORANGE		8	3	ORANGE
9	4	BLUE		9	4	BLUE

```
        1 2 3 4 5
      ┌─────────────┐
   ⊕  │ ○○○○○  │ ⊕
      │  ○○○○   │
      └─────────────┘
        6 7 8 9
```

**DB 9 Female Connector
Wiring Side**

Letter "P"   **Letter "O"**

Figure 8.   Cable: IBM 5218 Printer to IBM 5218 Printer Sharing Device, IBM Part 6113648.

Warning 1: To comply with FCC Regulations on electromagnetic interference for a class B computing device, the attach cable must be shielded and properly grounded. Use IBM cable number 6113647. Use of substitute cable not properly shielded and grounded may result in violating FCC regulations.

Warning 2: To comply with FCC Regulations on electromagnetic interference for a class B computing device, the attach cable must be shielded and properly grounded. Use IBM cable number 6113648. Use of substitute cable not properly shielded and grounded may result in violating FCC regulations.

Appendix F. Operational Information

This section gives you some suggestions on how to use the
DOS MODE and PRINT commands in conjunction with the
IBM 5218 Printer Driver Program. When you use the IBM
5218 Printer and the IBM 5218 Printer Driver Program on
your system, there are some differences in the way the IBM
5218 Printer operates in comparison to an IBM Graphics
Printer. In addition, some application programs require that
you do something special to ensure the desired operation.

Using DOS Commands

Using the DOS MODE Command with PD5218

DOS 2.0 and 2.1 provide an option, P, with the MODE
command. This option automatically retrys the printer after
printer timeout. Unless you use this option in the following
order, you may lose some of your data. The suggested
sequence is:

```
A> PD5218
A> MODE LPT1:,,P
```

If you use a custom default file and LPT1 is not your LPT
number, you should insert the correct LPT number in the
Mode command.

If you use the Mode command from the IBM 5218 Printer
Driver Program diskette or from an application diskette, you
need to copy the DOS file MODE.COM from the DOS
diskette to the desired diskette.

When you use the DOS Mode command option P, all printer
timeout conditions are retried. Time out conditions include:

• Printer power off

• Printer in use by another IBM Personal Computer
(shared mode).

After you use the Mode command P option and the
printer is unavailable, your IBM Personal Computer
becomes unavailable:

- If you submit a print request other than DOS
  print

  or

- If you use the background print facility of some
  application programs.

You can correct this condition if you press and hold down
the CTRL key and then press the SCROLL LOCK key. It
can take up to thirty seconds for this sequence to make your
IBM Personal Computer available.

You must then resubmit your print request, when the printer
becomes available.

Using the DOS PRINT Command

If you want the DOS background PRINT operation to work
properly with the IBM 5218 Printer Driver Program, you
should install the IBM 5218 Printer Driver Program before
you give the DOS PRINT command, for example:

```
A> PD5218
A> MODE LPT1:,,P
A> Print
```

If you use the Print command, you should enter it after the
Mode command. Respond to the PRINT prompt for NAME
of list device (prn): with LPT and the number selected in
the custom default file or press ENTER if you use the
default parameters.

If you use the PRINT command from the IBM 5218 Printer
Driver Program diskette or from an application diskette, you
need to copy the DOS file PRINT.COM from the DOS
diskette to the desired diskette.

IBM 5218 Printer Operational Differences Compared With The IBM Graphics Printer

This section describes the operational differences between the IBM 5218 Printer and the IBM Graphics Printer.

- The IBM 5218 Printer only supports the character set described in Appendix D of this manual.

- The IBM 5218 Printer vertical line spacing defaults to 1/48 inch, while the IBM Graphics Printer defaults to 1/72 inch. You can change the default by using the Customization Program that comes with your IBM 5218 Printer Driver Program diskette.

- The ESC 1 command causes the IBM 5218 Printer Driver to set the line spacing at 9/96 inch, while the IBM Graphics Printer is set at 7/72 inch.

- The IBM 5218 Printer does a line feed when it receives a vertical tab command.

- The IBM 5218 Printer initial horizontal tab stop is one. The IBM Graphics Printer initial horizontal tab stop is zero. If the IBM 5218 Printer receives a horizontal tab command when it is positioned at a horizontal tab stop, it moves to the next tab stop.

- The Begin Emphasis command on the IBM 5218 Printer creates a bold face character, not just a darker character. Begin Emphasis is often used on the IBM Graphics Printer to improve print quality. The IBM 5218 Printer is a letter quality printer and uses Begin Emphasis as a true Emphasis.

- The IBM 5218 Printer superscripts and subscripts are full sized characters half-indexed above or below the base writing line. The base writing line is restored at page boundaries. The IBM Graphics Printer superscripts and subscripts are compressed characters that are printed higher or lower on the base writing line.

- A line feed command causes the IBM 5218 Printer to move down vertically, while the IBM Graphics Printer moves down vertically followed by a carriage return to the left margin.

- When the IBM 5218 Printer receives an initialization signal it causes the text in the buffer to play out before the printer is reset.

- The Shift In command causes the IBM 5218 Printer to print 15 characters per inch, while the IBM Graphics Printer prints 16.5 character per inch.

- In the Share Mode (the default), periods of inactivity by the application may cause the IBM 5218 Printer Driver Program to release the IBM 5218 Printer for use by another IBM Personal Computer. To prevent this from occurring, you can configure your application for non-sharing by using the Customization menu or by using the Begin Document command.

- In the Shared mode, tractor form alignment must be performed before each document is printed. For additional information see "Paper Alignment with the Tractor Feed Installed" on page 34.

- If you attempt to print on the last physical line on a cutsheet of paper (approximately 0.19 inch), you may lose some printed data.

- The following IBM Graphics Printer controls are **NOT** supported by the IBM 5218 Printer:

  - Esc 3   Graphics Vertical Spacing
  - Esc 8   Ignore End Of Forms
  - Esc 9   Allow End of Forms
  - Esc B   Set Vertical Tabs
  - Esc G   Set Double Print
  - Esc H   Reset Double Print
  - Esc J   Graphics Vertical Spacing
  - Esc K   Bit Image Graphics
  - Esc L   Bit Image Graphics
  - Esc N   Set Skip Perforation
  - Esc O   Reset Skip Perforation
  - Esc W   Set/Reset Double Wide Print Mode
  - Esc Y   Bit Image Graphics
  - Esc Z   Bit Image Graphics
  - Esc <   Home Head
  -          Bell
  - Esc SO   Double Wide Print

- The IBM 5218 Printer ignores unsupported commands, but it does print the document. However, the registration may differ from the IBM Graphics Printer.

Application Program Operational Differences

Some application programs need additional configuring to ensure expected results. This section describes these additional procedures.

IBM DisplayWrite 2

When you use your IBM DisplayWrite 2 Program with the IBM 5218 Printer Driver Program, you should use custom default file DW2.CDF. This custom file is configured for character set DW and prevents possible extra printer prompts for printwheel changes.

If you need to change any other default parameters such as the LPT number, use the Customization Menu Program. Refer to "Using the Customization Program" on page 25. Make sure that you keep the Character Set as DW.

Before running your IBM DisplayWrite 2 Program, you should:

1. Ensure that the following are on your application program diskette:

    *   AUTOEXEC.BAT.
    *   MODE.COM.
    *   PRINT.COM (if desired).
    *   PD5218.COM.
    *   DW2.CDF (or your customized file).

2. Follow the correct command sequence. Your
    AUTOEXEC.BAT file command sequence might look
    like this:

```
PD5218.COM DW2.CDF
MODE LPT1:,,P
```

If LPT1 is not the LPT number you selected in the
DW2.CDF file, you should insert the correct LPT number.

If you use the PRINT command, you should enter it after the
MODE command. You should respond to the PRINT
prompt (prn): with the LPT number you selected in the
DW2.CDF file. For additional information refer to "Using
DOS Commands" on page 81.

In order for your IBM PCWriter Program to use the IBM 5218 Printer Driver Program you need to configure the IBM PCWriter program.

You can do this by using the CONFIG procedure that comes on the IBM 5218 Printer Driver Program diskette. The CONFIG procedure allows the IBM PCWriter program to print on the IBM 5218 Printer using the IBM PCWriter "Type 1" printer option. In addition, it allows you to use the automatic dual drawer cut sheet and envelope feed features of the IBM 5218 Printer.

The IBM 5218 Printer Driver Program diskette also contains a RECONFIG procedure that allows you to restore your original IBM PCWriter option to print on any "Type 1" printer as defined by the IBM PCWriter Program.

To configure the IBM PCWriter Program for the IBM 5218 Printer Driver Program:

1. Insert the IBM 5218 Printer Driver Program diskette into the IBM Personal Computer drive A and IPL the system.
2. When the DOS prompt A>, appears, type:

   `CONFIG d:[path\] device`

   The following defines the parameters:

   "d" shows which drive contains the IBM PCWriter Program diskette. (The drive must be specified.) On a one diskette drive system, you must specify drive B.

   "path" This option does not have to be specified. It shows the path to the directory containing the IBM PCWriter Program. If the path option is specified, it must end with a backslash (\).

   "device" defines the paper source parameters that you can select using the Change Document Format or the Change Page Format on the IBM PCWriter menu.

   • "Sheet" shows that paper source 1 is the bottom drawer and paper source 2 is the top drawer. "Sheet" should also be specified if you manually insert paper or use the IBM Tractor feed device.
   • "Envelope" shows that paper source 1 is the bottom drawer and that paper source 2 is the envelope drawer.

3. Press enter and follow the instructions that appear on your IBM Personal Computer screen.

As an example, if you have the IBM PCWriter Program on a fixed-disk system on drive C, the path is PCWRT, the IBM 5218 Printer Driver Program diskette is in drive A, and you

want to use the automatic sheet feed and envelope feed
features, you would type the following:

```
A:CONFIG C:PCWRT\ ENVELOPE
```

Using the RECONFIG Procedure

To restore the IBM PCWriter Program back to the original
parameters you need to reconfigure the program. To do this
you would type the following:

```
A:RECONFIG d:[path\]
```

The following defines the parameters:

"d" shows which drive contains the IBM PCWriter
Program diskette. (The drive must be specified.)

"path" shows the path to the directory containing
PCWriter. If the path option is specified, it must end
with a backslash (\).

For example, if the IBM PCWriter Program diskette is in
drive B, and the path is PCWRT, and the CONFIG
procedure was run, and you want to restore a "Type 1"
printer, as defined by the IBM PCWriter Program, you
would type:

```
A:RECONFIG B:PCWRT\
```

Considerations When Running Your PCwriter Program

The following information should help you run your
PCwriter Program with your IBM 5218 Printer Driver
Program.

Text

When you use the IBM 5218 Printer Driver Program you
must ensure that the IBM PCWriter paper size selection and
the actual paper length used are the same.

If you attempt to print on the last physical line on a cutsheet
of paper (about 0.19 inch), you may lose some printed data.

Choosing Typestyles

Use the PCWriter free-key field to select the desired typestyle. The PCWriter default typestyle (typestyle 26 / 10 pitch) allows a typestyle selection that does **NOT** prompt the operator to change the printwheel. All other typestyle selections prompt the operator (at the IBM Personal Computer) to change the printwheel.

The following table shows the typestyles supported by the IBM 5218 Printer Driver Program.

Printwheel	Free-Key Field Parameter	Pitch
PCWriter default	26	10
Courier 10	11	10
Artisan	13	10
Courier 12	85	12
Prestige Elite	86	12
Letter Gothic	87	12
Courier 15	223	15
Gothic 15	222	15

BSC Communications

This section deals with using your IBM 5218 Printer Driver
Program with Binary Synchronous Communications (BSC).

You must not print using your IBM 5218 Printer Driver
Program when running programs such as the IBM
DisplayComm Program. Your IBM 5218 Printer Driver
Program has some restrictions when you use the BSC
communications as this program does. Although your IBM
5218 Printer Driver Program may be resident in your IBM
Personal Computer while a BSC communications program is
operating, you must ensure that you **DO NOT** print to the
IBM 5218 Printer. You must exit the BSC communications
program and return to DOS before you can print to the IBM
5218 Printer. Also, you must ensure that all printing to the
IBM 5218 Printer is completed before running any
application that uses the BSC communications adapter.

Certain programs have an option that lets you return control
of your IBM Personal Computer back to DOS while leaving
a copy of the program resident in your IBM Personal
Computer. Programs that support this option can be
reactivated without reloading the program. If a BSC
communications program has returned control to DOS but is
left resident in your IBM Personal Computer, you must not
print using the IBM 5218 Printer until the BSC
communications program has completely finished.

Technical Note

The only time you can load a program that uses the BSC
communications adapter is after the IBM 5218 Printer Driver
Program has completed. The IBM 5218 Printer Driver
Program is completed when:

1. If after printing:

   - 2 seconds have elapsed (Inactivity Time Out Page)

   - no data is received to a printer I/O call

and

- the IBM Printer Driver is on a page boundary (for example, has just processed a Form Feed).

or

2. If after printing:

- 30 seconds have elapsed and no data is received (Inactivity Time Out Non-Page)

- The IBM 5218 Printer Driver Program is not on a page boundary

    and

- The IBM 5218 Printer Driver Program is on a line boundary (for example, has just processed a Carrier Return).

Be cautious when you select the values from the Customization Menu Program (see "Using the Customization Program" on page 25) because those values also affect when you can run your BSC communications programs.

EASYWRITER [1]

This application is supported in the **non-sharing mode only.**

In order to use your EasyWriter , Version 1.1 application with one IBM Personal Computer and one IBM 5218 Printer, you must use the "Online" file and the Customization Program to modify the IBM 5218 Printer Driver Program to the non-sharing mode. To do this use the following procedure:

Note: The Online file is on your IBM 5218 Printer Driver Program diskette.

1. Use the Customization Menu Program (CDVR) provided on your IBM 5218 Printer Driver Program diskette to customize your program for the non-sharing mode. Refer to this file as: nonshare.cdf.

2. If you use an AUTOEXEC.BAT file to load your IBM 5218 Printer Driver Program, edit your AUTOEXEC.BAT file to add the customized file and the "Online" file as follows:

   ```
   PD5218.COM nonshare.cdf
   copy Online LPT1:
   ```

   Note: If LPT1 is not the LPT selected in the customized file (nonshare.cdf), insert the correct LPT number.

---

1   EasyWriter Version 1.1 is a trademark of Info Unlimited Software, Inc.

3. If you load your IBM 5218 Printer Driver Program manually, you need to type the following before you load your application:

```
PD5218.COM nonshare.cdf
copy Online LPT1:
```

Note: If LPT1 is not the LPT selected in the customized file (nonshare.cdf), insert the correct LPT number.

This application is supported in both the non-sharing mode and in the sharing mode.

Using Lotus 1-2-3 in the Non-Sharing Mode

In order to use your Lotus 1-2-3 application program in the non-sharing mode with one IBM Personal Computer and one IBM 5218 Printer, you must use the "Online" file and the Customization Program to modify the IBM 5218 Printer Driver Program to the non-sharing mode. To do this use the following procedure:

1. Use the Customization Menu Program (CDVR) provided on your IBM 5218 Printer Driver Program diskette to customize your program for the non-sharing mode. Refer to this file as: Nonshare.cdf.

2. If you use an AUTOEXEC.BAT file to load your IBM 5218 Printer Driver Program, edit your AUTOEXEC.BAT file to add the customized file and the "Online" file as follows:

   Note: The Online file is on your IBM 5218 Printer Driver Program diskette.

   ```
   PD5218.COM Nonshare.cdf
   copy Online LPT1:
   ```

   Note: If LPT1 is not the LPT number selected in the customized file (Nonshare.cdf), insert the correct LPT number.

3. If you load your IBM 5218 Printer Driver Program manually, you need to type the following before you load your application:

---

2   Lotus is a trademark of Lotus Development Corporation.

```
PD5218.COM Nonshare.cdf
copy Online LPT1:
```

> *Note:* If LPT1 is not the LPT selected in the customized
> file (Nonshare.cdf), insert the correct LPT number.

Using your Lotus 1-2-3 in the Sharing Mode

If you want to print your Lotus 1-2-3 files when you share
your IBM 5218 Printer with other IBM Personal Computers,
you can do so in one of two ways:

Approach number one

1. When you are using your Lotus 1-2-3 application, save
    the data to be printed on a disk file using the menu
    selection commands "/ PRINT, FILE (filename), . . . "

2. Exit Lotus 1-2-3 and go back to DOS.

3. Set the printer parameters, such as lines per inch or
    pitch, by using the DOS MODE command after the IBM
    5218 Printer Driver Program is loaded, or by loading the
    IBM 5218 Printer Driver Program with the desired
    parameters in the custom default file.

4. Use the DOS COPY or PRINT command to send the
    data file to the printer.

Approach number two

You should use this approach when you share the IBM 5218
Printer with other IBM Personal Computers. You should be
aware that **only** the IBM Personal Computer using this
procedure is allowed to print. When the print job is
completed, you must turn off your IBM Personal Computer
to allow the other IBM Personal Computers to use the IBM
5218 Printer. To do this use the following procedure:

Note: The Online file is on your IBM 5218 Printer Driver
Program diskette.

1. Use the Customization Menu Program (CDVR)
    provided on your IBM 5218 Printer Driver Program
    diskette to customize your program for the non-sharing
    mode. Refer to this file as: nonshare.cdf.

2. If you use an AUTOEXEC.BAT file to load your IBM
    5218 Printer Driver Program, edit your
    AUTOEXEC.BAT file to add the customized file and
    the "Online" file as follows:

    ```
    PD5218.COM Nonshare.cdf
    copy Online LPT1:
    ```

    Note: If LPT1 is not the LPT selected in the customized
    file (nonshare.cdf), insert the correct LPT number.

3. If you load your IBM 5218 Printer Driver Program
    manually, you need to type the following before you load
    your application:

    ```
    PD5218.COM Nonshare.cdf
    copy Online LPT1:
    ```

    Note: If LPT1 is not the LPT selected in the customized
    file (nonshare.cdf), insert the correct LPT number.

Lotus 1-2-3 has a "Print, (Printer, File) Options, Setup"
facility that you can use to issue the paper feed controls to
the IBM 5218 Printer Driver. This facility sends special
instructions to the printer when you choose "GO," during
the current session. See your *Lotus 1-2-3 Users' Guide* for
details.

If you want to use the IBM Front Exit Sheet Feed
Attachment with your Lotus 1-2-3 program you need to
change the /PPOS (or /PFOS) as follows:

```
Bottom Drawer:    \027\091\070\003\000\003\001\001
Top Drawer:       \027\091\070\003\000\003\001\002
Envelope Drawer:  \027\091\070\003\000\003\002\001
```

Note: These sequences can be used with any other IBM
5218 Printer Driver control codes you want to use. The
above sequences do not cause sheets to feed. You need text
or certain controls to feed paper or envelopes. Once the
source drawer is set, it remains set until you change it with
another paper feed control.

Wordstar has a User Patch facility that allows you to issue paper feed controls to the IBM 5218 Printer Driver Program. The CTRL PQ, CTRL PW, CTRL PE, and CTRL PR keying sequences allow you to embed up to four characters. You can change each of these sequences by using the Wordstar Install Program. For further information refer to your *Wordstar Installation Manual.*

If you want your Wordstar program to support the IBM Front Exit Sheet Feed Attachment on your IBM 5218 Printer, you need to change the User Patches as follows:

```
<CTRL>PQ: 27, 91, 70, 3
<CTRL>PW:  0,  3,  1, 1
<CTRL>PE:  0,  3,  1, 2
<CTRL>PR:  0,  3,  2, 1
```

Note: All values are in decimal. These changes completely replace any previous User Patches.

When you want to feed from any of the source drawers in your Wordstar document, enter one of the following controls (either at the beginning of the document, or immediately after a form feed control):

```
Bottom Drawer:   <CTRL>PQ<CTRL>PW
Top Drawer:      <CTRL>PQ<CTRL>PE
Envelope Drawer: <CTRL>PQ<CTRL>PR
```

The above sequences do not cause sheets to feed. You need text or certain controls to feed paper or envelopes. Once the source drawer is set, it remains set until you change it with another paper feed control.

---

3   Wordstar is a trademark of Micro Pro.

PEACHTEXT [4]

Peachtext has an Out command that you can use to issue the paper feed controls to the IBM 5218 Printer Driver. The Out command (when configured for the paper feed controls of the IBM 5218 Printer Driver) can only be sent **after** form feed controls, meaning that the first page of a Peachtext document is fed from the default source drawer.

If you want to use the IBM Front Exit Sheet Feed feature of the IBM 5218 Printer with your Peachtext program, you should use the following Out commands:

```
Bottom Drawer:    \OUT 27, 91, 70, 3, 0, 3, 1, 1
Top Drawer:       \OUT 27, 91, 70, 3, 0, 3, 1, 2
Envelope Drawer: \OUT 27, 91, 70, 3, 0, 3, 2, 1
```

The above sequences do not cause sheets to feed. You need text or certain controls to feed paper or envelopes. Once the source drawer is set, it remains set until you change it with another paper feed control.

See your *Peachtext Users' Manual* for details of the Out command.

---

4   Peachtext is a trademark of Peachtree Software, Inc.

IBM 3270 Personal Computer

The IBM 3270 Personal Computer Control Program Release 1.1 does **not** support Work Station Control Printing (printing what is on your screen). However, application program printing is supported.

IBM 5218 Printer Driver Program Operational Information

The user should be aware of the following procedures and precautions in operating the IBM 5218 Printer Driver Program.

IBM 5218 Printer Driver Program Communications Adapter Configurator

In order for your IBM 5218 Printer Driver Program to be used as a communications adapter, COM1 or COM2, use the COMMFIG procedure that comes on the IBM 5218 Printer Driver Program diskette. The IBM 5218 Printer Driver Program is shipped in the COM1, or primary, configuration.

Note: The IBM Asynchronous Communications Card must be configured for the specified communications adapter (refer to Chapter 1, "Installing Your Hardware, " page 1).

Using the COMMFIG Procedure

The following steps will enable you to use your IBM 5218 Printer Driver Program as a communications adapter:

1. Insert the Printer Driver Program diskette into the IBM Personal Computer drive A, and IPL the system.

2. When the DOS prompt, A>, appears, type:

   ```
   COMMFIG device
   ```

   The "device " parameter defines the communications adapter you select. That is, COM1 (primary Asynchronous) or COM2 (alternate Asynchronous).

   ```
   COMMFIG COM1
   ```

   or,

   ```
   COMMFIG COM2
   ```

IBM 5218 Printer Driver Program Suspension

If an application program suspends operation of the IBM
5218 Printer Driver Program beyond the IBM 5218 Printer
Driver Program's Inactivity Timeout, the printer may be
released and the page ejected.

Note: The IBM 3278/79 Emulation Control Program and
the IBM 3270 Computer Control Program are two examples
of such application programs.

IBM 5218 Printer Driver Program suspension can be avoided
by:

• Assuring that suspension time does not exceed the IBM
5218 Printer Driver Program Inactivity Timeout setting
(refer to the "Customization Menu," Chapter 3).

• Operating the IBM 5218 Printer Driver Program in
non-shared mode if the IBM 5218 Printer Sharing
Device is not being used (refer to the "Customization
Menu," Chapter 3).

Order No. G570-2063-02

Your comments assist us in improving our products. IBM
may use and distribute any of the information you supply in
any way it believes appropriate without incurring any
obligation whatever. You may, of course, continue to use the
information you supply.

Comments:

If you wish a reply, provide your name and address in this
space.

Name _____

Address _____
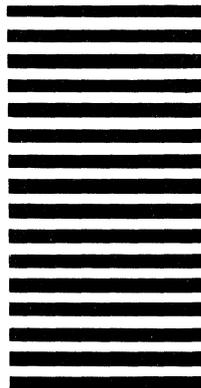
City _____ State _____

Zip Code _____

BUSINESS REPLY MAIL

FIRST CLASS   PERMIT NO. 2198   AUSTIN, TX. 78758

POSTAGE WILL BE PAID BY ADDRESSEE

International Business Machines Corporation
Department 997, Building 998
11400 Burnet Rd.
Austin, Texas 78758

Fold Here

Tape   Please do not staple   Tape

LIMITED WARRANTY

The International Business Machines Corporation warrants this IBM 5218 Printer/ IBM Personal Computer Product (consisting of an IBM 5218 Printer Sharing device and its six-foot connecting cable, as well as attachment cables) to be in good working order for a period of 90 days from the date of purchase from IBM. Should this Product fail to be in good working order at any time during this 90-day warranty period, IBM will, at its option, repair or replace this Product at no additional charge except as set forth below. Repair parts and replacement Products will be furnished on an exchange basis and will be either reconditioned or new. All replaced parts and Products become the property of IBM. This limited warranty does not include service to repair damage to the Product resulting from accident, disaster, misuse, abuse, or non-IBM modification of the Product.

Limited Warranty service may be obtained for the IBM 5218 Printer Sharing device and its six-foot connecting cable by contacting the IBM Service/Exchange Communication Center, toll free, at 1-800-428-2569, during the 90-day warranty period and providing proof of purchase date. Limited Warranty service may be obtained for the 19.7foot attachment cable by calling IBM Direct, toll free, at 1-800-IBM-2468, and asking for the PC group. If this Product is returned to IBM by mail, you agree to insure the Product or assume the risk of loss or damage in transit, to pre-pay shipping charges to the warranty service location and to use the original shipping container or equivalent.

ALL EXPRESS AND IMPLIED WARRANTIES FOR THIS PRODUCT, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PUR-POSE, ARE LIMITED IN DURATION TO A PERIOD OF 90 DAYS FROM THE DATE OF PURCHASE, AND NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER THIS PERIOD. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

IF THIS PRODUCT IS NOT IN GOOD WORKING ORDER AS WARRANTED ABOVE, YOUR SOLE REMEDY SHALL BE REPAIR OR REPLACEMENT AS PROVIDED ABOVE. IN NO EVENT WILL IBM BE LIABLE TO YOU FOR ANY DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF OR INABILITY TO USE SUCH PRODUCT, EVEN IF IBM HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, OR FOR ANY CLAIM BY ANY OTHER PARTY.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR CONSUMER PRODUCTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.