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VK 5010 Centerline Height Measurement System Operator's Manual

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Revision F**

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Chapter 1 Safety Practices and Hazards

The VK 5010 has been carefully designed so that when used properly you have an accurate, fast, flexible, and safe instrument.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

The VK 5010 is operated in conjunction with equipment that uses aqueous liquids. Unskilled, improper, or careless use of this instrument can create shock hazards, fire hazards, or other hazards which can cause death, serious injury to personnel, or severe damage to equipment and property.

Information on safety practices is provided with your instrument and operation manuals. Before using your instrument or accessories, you must thoroughly read these safety practices.

Observe all relevant safety practices at all times.

Electrical Hazards

The VK 5010 contains electrical circuits, devices, and components operating at dangerous voltages. Contact with these circuits, devices, and components can cause death, serious injury, or painful electric shock.

Panels or covers that are retained by fasteners which require the use of a tool for removal may be opened only by Varian-trained, Varian-qualified, or Varian-authorized service engineers. Consult the manuals or product labels supplied with the VK 5010 to determine which parts are operator-accessible.

Application of the wrong supply voltage, connection of the instrument to an incorrectly wired supply outlet, or lack of proper electrical grounding can create a fire hazard or a potentially serious shock hazard and could seriously damage the instrument and any attached ancillary equipment.

Always use a three-wire outlet with ground connection which is adequately rated for the load. The installation must comply with local, state, and federal safety regulations.

Do not connect the instrument to the main power supply until you have made sure that the operating voltage is correctly set for the main power supply in the specific outlet in your laboratory to which the equipment will be connected.

Other

Other specific warnings and cautions appear in the manuals where appropriate and detail the specific hazard, describe how to avoid it, and specify the possible consequences of not heeding the warning or caution.

Warning

A 'Warning' message appears in the manual when failure to observe instructions or precautions could result in death or injury. Symbols depicting the nature of the specific hazard are also placed alongside warnings.

These symbols are also used on warning labels attached to the instrument. When you see one of these symbols, you must refer to the relevant operation or service manual for the correct procedure referred to by that warning label.

The meaning of the symbols that appear alongside warnings in this manual are as follows:



Electrical shock



Caution

Refer to accompanying documents

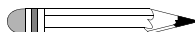
Read all warnings and cautions carefully and observe them at all times.

Caution

A 'Caution' message appears in the manual when failure to observe instructions could result in damage to equipment (Varian supplied and/or other associated equipment).



A 'Note' appears in the manual to give advice or information.



Information Symbols

I

Switches main power on

0

Switches main power off



Indicates single-phase alternating current



Indicates the product complies with the requirements of one or more European Union (EU) directives



Indicates specific equipment meets consensus-based standards of safety to provide assurance, required by OSHA, that these products are safe for use in the workplace for North America



Indicates that this product must not be disposed of as unsorted municipal waste (see "WEEE Directive" on page 11)

General

WEEE Directive

All Varian products that are subject to the WEEE directive shipped after August 13, 2005 are compliant with the WEEE marking requirements. Such products are marked with the "crossed out wheelie bin" WEEE symbol shown on page 10 in accordance with European Standard EN 50419.

This symbol on the product or on its packaging indicates that this product must not be disposed of as unsorted municipal waste. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

For more information on collection, reuse, and recycling systems, please contact your local/regional waste administration, your local distributor, or Varian, Inc.

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Chapter 2 ***Introduction***

The VK 5010 is designed for testing and documenting the critical physical parameters of centerline and height as specified in the USP General Chapters <711> Dissolution and <724> Drug Release. Regulatory authorities are emphasizing these factors since inaccuracies can lead to major changes in your dissolution results. Prior to the introduction of the VK 5010, the available tools did not give precise numerical values for centerline and height measurements. The VK 5010 is specifically designed to find these values. It can be configured for either six or eight positions.

Test data from up to 30 dissolution testers can be stored in the VK 5010's non-volatile memory. The data can be downloaded to a PC or printer via the Report Center printer. The VK 5010 records the serial numbers (up to 9 digits) of the tester and the test values. You can print a detailed, hardcopy calibration report listing all parameter values for each vessel position with the built-in Report Center printer. If you are using Varian serialized vessels, paddles, or basket shafts, you can enter the serial numbers of each one and have these numbers print as well.

Conventions Used in this Manual

- Items you are asked to press are in bold. For example, “press **1** on the keyboard”.
- Key sequences you are asked to press appear like this: **MENU > 2 > 1 > 2**.

Specifications

Variable	Specification
Voltage Requirements	115 V / 60 Hz 230 V / 50 Hz
Current Requirements	115 V - 1.5 Amp 230 V - 1.5 Amp
Fuse Requirements	115 V - 1.5 Amp, 5 mm x 20 mm FAST 230 V - 1.5 Amp, 5 mm x 20 mm FAST
Height Accuracy	± 0.1 mm
Centerline Accuracy	± 0.1 mm
Dimensions	Width: 24.1 cm (9.5 inches) Depth: 19 cm (7.5 inches) Height: 17.78 cm (7 inches)
Memory	Up to 30 testers at 8 vessels per tester
Weight	3 Kg (6.6 lbs)

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Chapter 3 ***Setting Up the VK 5010***

Unpacking Your VK 5010

Follow these steps to safely unpack your VK 5010:

- Step 1. Open each carton and check the contents for damage which may have occurred during shipping. Shipping damage rarely occurs, but if it does contact both the carrier who delivered the instruments and the Dissolution Systems Service Department. Though claims for damage should be filed with the carrier, we can help you file a claim.

- Step 2. Carefully remove the VK 5010 base unit, centerline offset gauge, paddle/basket height gauge, basket configuration height gauge, and all the cables from the shipping carton.

- Step 3. Remove as much cushioning material and tape as possible.

- Step 4. Place the base unit and accessories on a clear, dry, level section of the bench top close to the dissolution apparatus. The preferred placement of the VK 5010 is on the right side of the dissolution apparatus.



Warning

The electrical connection at the back of the VK 5010 is the primary disconnect for the instrument. The VK 5010 should be positioned to allow accessibility to the power cord for easy disconnection.

Check to make sure all of the following items were shipped with the unit:

TABLE 1. Inventory List

Qty.	Item	Part Number
1	<i>Operator's Manual and Technical Information CD</i>	73-1003
1	VK 5010 CLH Measurement System including centerline offset gauge, paddle configuration height gauge and basket configuration height gauge	12-0540
1	6 mm Precision Height Ball	4040-0193
Optional		
1	Hard plastic carrying case with cutouts from instrument and gauges	12-0531

If any item is missing, contact the Varian Service Department or your local representative for replacements.

VK 5010 Attachments

Centerline Offset Gauge

The electronic centering sensor allows you to measure the centerline offset for a paddle or basket shaft.

FIGURE 1. Centerline Offset Gauge



Paddle/Basket Height Gauge

The paddle/basket height sensor can be used to verify paddle or basket height. It verifies the distance between the bottom of the paddle or basket and the inner apex of the bottom of the vessel.

FIGURE 2. Paddle/Basket Height Gauge



Power Switch Functions



Warning

Ensure the AC power setting is at the correct voltage for your power supply. The power setting is indicated on the line fuse holder located next to the on/off switch on the instrument back panel. To change the voltage, see "Fuse Replacement" on page 51.

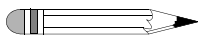
The electrical connection at the back of the VK 5010 is the primary disconnect for the instrument.

The VK 5010 has a main power switch and a battery power/charge switch.

The main power switch is located on the rear panel. See Figure 3, "VK 5010 Rear Panel," on page 22. With the switch in the ON position, the VK 5010 is on and you can charge the battery and print.

The battery power/charge switch is on the left side panel. When AC power is not present, such as when the power cord is not attached or when the main switch is off, the battery power/charge switch allows battery power for data collection and monitoring. If the AC power is on, the battery power/charge switch is used to charge the battery only.

It is recommended that you fully discharge the battery before the next charge to extend battery life. When the power is weak, leave the battery switch on overnight without AC power. This drains the remaining power so that it can be recharged. Each charge period takes five to six hours.



Note

AC power is necessary for printing.

Setting up the VK 5010

FIGURE 3. VK 5010 Rear Panel



Warning

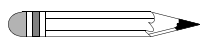


Ensure the AC power setting is at the correct voltage for your power supply. The power setting is indicated on the line fuse holder located next to the on/off switch on the instrument back panel. To change the voltage, see “Fuse Replacement” on page 51.

The electrical connection at the back of the VK 5010 is the primary disconnect for the instrument.

- Step 1. Ensure the power switches on the rear panel and left side panel are in the off position.

- Step 2. Connect the cables between the remote sensors and their corresponding jacks on the VK 5010 rear panel. Each cable has a different kind of connector making it impossible to plug it into the wrong jack.
- Step 3. Connect the AC power cord between the receptacle on the rear panel and an appropriate AC power receptacle.



Note

AC power is necessary for battery charging or printing.

Main Menu

The Menu screen is accessed by pressing **MENU** on the VK 5010 keypad. This option is used to set up the VK 5010 or to set the clock. The following screen displays when MENU is pressed:

```
++VK 5010 MAIN MENU++
1. SET CLOCK
2. SETUP
MM/DD/YY                HH:MM:SS
```

From this screen, two options can be selected:

- Set Clock
- Setup

Setting the Clock

- Step 1. From the VK 5010 Main Menu, select option 1 to set the clock. The following screen displays:

ENTER DATE: MM/DD/YY	
MM/DD/YY	HH:MM:SS

- Step 2. Enter the date in a MM/DD/YY format. Press **ENTER**. The following screen displays:

ENTER TIME: HH:MM:SS	
USE 24 HOUR FORMAT	
MM/DD/YY	HH:MM:SS

- Step 3. Enter the time in a HH:MM format and press **ENTER**. The Main Menu displays.

Setup

The following screen displays by selecting option **2** from the Main Menu:

++SYSTEM SETUP++	
1. SCREEN SAVER TIME	
2. POSITION	
MM/DD/YY	HH:MM:SS

From this screen, you can select two options:

- Screen Saver Time
- Position

Screen Saver Time

The following screen displays when you select option **1** from the System Setup screen.

Enter 0 - 9M: X	
MM/DD/YY	HH:MM:SS

Enter a numeric value between 0 and 9 to indicate the number of minutes of uninterrupted operation before the VK 5010 goes into the screen saver mode. Press **ENTER**. The Main Menu displays.

Select **SETUP** from the Main Menu.

Position

The following screen displays when you select option **2** from the System Setup screen.

++TOTAL POSITIONS++	
1. SIX	2. EIGHT
MM/DD/YY	HH:MM:SS

Enter the configuration of your dissolution tester. Select option **1**, six, or **2**, eight, and press **CLEAR**. The Initialization screen displays.

VARIAN INC.	
VK5010 CLH TESTER	
PROGRAM REV: X.YY	
MM/DD/YY	HH:MM:SS

Chapter 4 Operation

Initialization

When the VK 5010 is powered on, the Initialization screen displays:

VARIAN INC.	
VK5010 CLH TESTER	
PROGRAM REV: X.YY	
MM/DD/YY	HH:MM:SS

From the keypad, you can access four options:

1. Menu
2. View Data
3. Test
4. Print

Viewing Data

The View Data option is accessed by pressing **VIEW DATA** on the VK 5010 keypad. You can use this option to view data stored in memory.

Press **VIEW DATA**. The following screen displays:

```
++STORAGE VIEW++  
1. STORAGE MAP  
2. STORAGE DATA  
MM/DD/YY                HH:MM:SS
```

From this screen, you can select two options:

- Storage Map
- Storage Data

Storage Map

Step 1. Select **1**, Storage Map, to view the serial numbers for the dissolution testers which have been evaluated. The following screen displays:

```
01 VKS/N X-XXXX-XXXX  
02 VKS/N X-XXXX-XXXX  
<ENTER> TO NEXT  
<CLEAR> TO PREVIOUS
```

Step 2. Press **ENTER** to access the next location or all 30 possible locations. Optionally, press **CLEAR** to return to the previous screen.

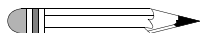
Storage Data

- Step 1. Select **2**, Storage Data, to view the recorded dissolution tester serial number as well as the date and time the apparatus was evaluated. Values for position number, vessel ID, offset, and height are also stored. The following screen displays:

```
STORAGE #: XX
                *ENTER 01 to 30*
MM/DD/YY                HH:MM:SS
```

- Step 2. Enter the storage number.

Note



The number entered must be 2 digits in length. For example, for 1, enter 01.

The following screen displays:

```
STORAGE #: XX
VKS/N: X-XXXX-XXXX
<ENTER> TO NEXT
<CLEAR> TO PREVIOUS
```

- Step 3. Press **ENTER** to access the next screen as shown below. The following screen displays indicating the date and time the data was acquired:

```
STORAGE #: XX
DATE: MM/DD/YY HH:MM
<ENTER> TO NEXT
<CLEAR> TO PREVIOUS
```

- Step 4. Press **ENTER** to access the next screen. The following screen displays indicating the position number and serial number of the shaft:

```
POSITION NUMBER X
SHAFT ID: U/C
<ENTER> TO NEXT
<CLEAR> TO PREVIOUS
```

- Step 5. Press **ENTER** to access the next screen. The following screen displays indicating the vessel identifying number:

```
POSITION NUMBER X
VESSEL ID: XXXXXXXX
<ENTER> TO NEXT
<CLEAR> TO PREVIOUS
```

- Step 6. Press **ENTER** to access the next screen. The following screen displays indicating the centerline offset and height:

```
OFFSET (mm): XX.X
HEIGHT (mm): XX.X
<ENTER> TO NEXT
<CLEAR> TO PREVIOUS
```

- Step 7. Press **ENTER** to go to the next vessel position.

- Step 8. After all of the positions have been viewed, press **ENTER** to return to the Storage Number screen.

- Step 9. Enter a new storage number to review or press **MENU** to return to the Storage View screen. Press **CLEAR** to return to the Initialization screen.

Testing

The Test option is accessed by pressing **TEST** on the VK 5010 keypad. Use this option to verify the height and centerline measurements meet current USP specifications.

Press **TEST**. The following screen displays:

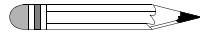
++VK 5010 TEST MENU++	
1. HEIGHT MEASURE	
2. CTR LINE MEASURE	
MM/DD/YY	HH:MM:SS

From this screen, you can select two options:

- Height measurement
- Centerline measurement

Height Measurement

Note



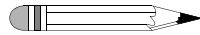
The paddle and basket height must be set prior to using the VK 5010 to verify the height measurement.

- Step 1. Select option 1 from the Test screen. The following screen displays:

```
STORAGE #:  
*ENTER 01 TO 30*  
AND PRESS <ENTER>  
MM/DD/YY HH:MM:SS
```

- Step 2. Enter a numeric value between 01 and 30 and press **ENTER**.

Note



The number entered must be 2 digits in length. For example, for 1, enter 01.

The following screen displays:

```
VK 7000 S/N: XXXXXXXXX  
*PRESS <ENTER> WHEN  
DONE*  
MM/DD/YY HH:MM:SS
```

- Step 3. Enter the serial number of the dissolution tester and press **ENTER**. The following screen displays:

TEST ON POSITION 1	
1. TEST	2. SKIP NEXT
3. EXIT	
MM/DD/YY	HH:MM:SS

- Step 4. Select option **1** to continue testing at the current position (see “Height Measure Test Option” on page 34) or select option **2** to skip to the next position. Optionally, select option **3** to exit and return to the Test screen.

Height Measure Test Option

- Step 1. Raise the drive unit of the dissolution tester and ensure the paddles/baskets are completely out of the vessel. From the Test on Position 1 screen, press **1**. The following screen displays:

```
SHAFT ID: XXXXXXXX
*PRESS <ENTER> WHEN
  DONE*
MM/DD/YY                HH:MM:SS
```

- Step 2. Enter the shaft identifier and press **ENTER**. The following screen displays:

```
VESSEL ID: XXXXXXXX
*PRESS <ENTER> WHEN
  DONE*
MM/DD/YY                HH:MM:SS
```

- Step 3. Enter the vessel identifier and press **ENTER**. The following screen displays:

```
++HEIGHT MEASURE++

PLACE BALL IN VESSEL
AND PRESS <ENTER>
```

- Step 4. Carefully place the ball in the vessel and allow it to settle at the bottom of the vessel. Press **ENTER**. The following screen displays:

```
++HEIGHT MEASURE++  
  
INSTALL DEVICE  
AND PRESS <ENTER>
```

- Step 5. Install the height measuring device by carefully snapping it onto the shaft.

FIGURE 4. Paddle/Basket Height Gauge



- Step 6. Slide the device down until it rests on the paddle or basket. Press **ENTER**. The following screen displays:

```
++HEIGHT MEASURE++  
PRESS PLUNGER  
AGAINST PAD/BASKET  
AND PRESS <ENTER>
```

- Step 7. Press the plunger all the way in against the paddle or basket and press **ENTER**.

- Step 8. Release the plunger. The following screen displays:

```
++HEIGHT MEASURE++  
LOWER DEVICE INTO  
VESSEL UNTIL STOP  
AND PRESS <ENTER>
```

- Step 9. Lower the drive unit of the tester and device into the vessel until it stops and press **ENTER**. The following screen displays:

```
++HEIGHT MEASURE++  
HEIGHT (mm): XX.X  
PRESS <TEST> FOR NEXT  
AND <CLEAR> TO EXIT
```

- Step 10. Raise the drive unit of the tester.
- Step 11. Slide the device up the shaft and gently pull the top of it away from the shaft. The device is easily removed.
- Step 12. Remove the ball from the vessel using a magnetic wand, stir bar retriever, or by hand using gloves.

- Step 13. Press **TEST** to begin the testing procedure on the next position or press **CLEAR** to return to the Test screen.

Centerline Measurement

- Step 1. Raise the drive unit of the dissolution tester and ensure the paddles/baskets are completely out of the vessel. Select option **2** from the Test screen. The following screen displays:

STORAGE #: 01
ENTER 01 TO 30
AND PRESS <ENTER>
MM/DD/YY
HH:MM:SS

- Step 2. Enter the same 2-digit number entered during "Height Measurement" on page 32 and press **ENTER**. The following screen displays:

VK 7000 S/N: XXXXXXXXX
*PRESS <ENTER> WHEN
DONE*
MM/DD/YY
HH:MM:SS

- Step 3. Enter the serial number of the dissolution tester and press **ENTER**. The following screen displays:

TEST ON POSITION 1
1. TEST
2. SKIP NEXT
3. EXIT
MM/DD/YY
HH:MM:SS

From this screen, you have three options:

- Select option **1** to continue testing on the current position (see "Centerline Measurement Test Option" on page 39) or select option **2** to skip to the next position. Optionally, select option **3** to exit and return to the Test screen.

Centerline Measurement Test Option

- Step 1. Select option 1 on the Test on Position 1 screen. The following screen displays:

```
SHAFT ID: XXXXXXXX
*PRESS <ENTER> WHEN
  DONE*
MM/DD/YY                HH:MM:SS
```

- Step 2. Enter the shaft identifier and press **ENTER**. The following screen displays:

```
VESSEL ID: XXXXXXXX
*PRESS <ENTER> WHEN
  DONE*
MM/DD/YY                HH:MM:SS
```

- Step 3. Enter the vessel identifier and press **ENTER**. The following screen displays:

```
++CTR LINE MEASURE++

INSTALL DEVICE
AND PRESS <ENTER>
```

- Step 4. Carefully install the shaft centerline gauge by snapping it onto the shaft.

FIGURE 5. Shaft Centerline Gauge



- Step 5. Carefully slide the device down until it rests on the paddle blade or basket. Press **ENTER**. The following screen displays:

```
++CTR LINE MEASURE++  
  LOWER PAD/BASKET  
    INTO VESSEL  
  AND PRESS <ENTER>
```

- Step 6. Lower the paddle or basket into the vessel to a point where the device is touching approximately the middle of the vessel. Press **ENTER**. The following screen displays:

```
++CTR LINE MEASURE++  
  
ROTATE SHAFT ONE REV  
AND PRESS <ENTER>
```

- Step 7. Turn the spindle heads to rotate the shaft one full revolution and press **ENTER**. The following screen displays:

```
++CTR LINE MEASURE++  
OFFSET (mm): XX.X  
PRESS<TEST> FOR NEXT  
PRESS<CLEAR> TO EXIT
```

- Step 8. The centerline measurement displays on the screen. Press **TEST** to begin the testing procedure on the next position or press **CLEAR** to return to the Test screen.

- Step 9. Raise the drive unit on the tester.

- Step 10. Slide the device up the shaft and gently pull the bottom away from the shaft.

Test Data

- Step 1. From the Test Data screen, press **PRINT**. The following screen displays:

STORAGE#: XX	
ENTER 01 to 30	
MM/DD/YY	HH:MM:SS

- Step 2. Enter a numeric value between 01 and 30 to indicate the storage number of the data requested and press **ENTER**. The following screen displays:

++TEST DATA++	
1. PRINT	2. SEND DATA
3. COM ID	4. BAUD RATE
MM/DD/YY	HH:MM:SS

Printing

- Step 1. To print, select option **1**, Print, from the Test Data screen. The following screen displays indicating the printer is functional and your print job is underway:

Printing.....	
MM/DD/YY	HH:MM:SS

- Step 2. When printing is complete, the Test Data screen displays.

Send Data

- Step 1. To send data, select option **2**, Send Data, from the Test Data screen. The following screen displays indicating data is being sent from the VK 5010 to a local PC or other data collection source:

Sending Data.....	
MM/DD/YY	HH:MM:SS

- Step 2. When data has been sent, the Test Data screen displays.

Com ID

- Step 1. To view the communication port identification number, select option **3**, Com ID, from the Test Data screen. The following screen displays:

COM ID: XX	
MM/DD/YY	HH:MM:SS

- Step 2. Press **ENTER** to return to the Test Data Screen.

Baud Rate

- Step 1. To set the baud rate, select option **4**, Baud Rate, from the Test Data screen. The following screen displays:

++SET BAUD RATE++	
1. 1200	2. 2400
3. 4800	4. 9600
MM/DD/YY	HH:MM:SS

- Step 2. Select the desired baud rate for your transmission. The Test Data screen displays.

Chapter 5 ***Troubleshooting and Maintenance***

Periodic Maintenance



Warning

The VK 5010 contains electrical circuits, devices, and components operating at dangerous voltages. Contact with these circuits, devices, and components can cause death, serious injury, or painful electric shock.

Periodic maintenance needs may vary depending on frequency of instrument usage.

Calibration

Varian recommends the VK 5010 be calibrated at six-month intervals. However, based on your own SOPs, this can be extended for up to a year. Call the Dissolution Systems Service Department for a quote, packing instructions, and a Return Authorization Number before sending your unit for recalibration.

Report Center Impact Printer

The following is helpful information for using your impact printer.

Installing the Cartridge Ribbon

If the printer is used infrequently, the print impression sometimes becomes weak because the ribbon dries out. If the printed material is difficult to read and you suspect this is the cause of the problem, advance to a new section of the ribbon by pressing the printer toggle switch to the *Paper feed* position. If the printing is still faint, replace the cartridge.

To install the cartridge:

- Step 1. Toggle the printer off line by pressing the printer toggle switch to the *OnLine/Off Line* position. When the printer is off line, the Ready LED does not illuminate.
- Step 2. Four small grooves are embossed on the printer cover. Gently push on these grooves to tilt the cover. When the printer cover is tilted up, you can lift it off completely.
- Step 3. Push down on the right side of the ribbon cartridge (marked PUSH) and remove the old cartridge.
- Step 4. Install the new cartridge. If there is already paper in the printer, hold the cartridge between your thumb and index finger, slide it over the paper and into the printer compartment. Ensure the paper is between the ribbon cartridge and the ink ribbon. Ensure the ink cartridge is inserted firmly to prevent weak or irregular printing. The cartridge must be properly seated and aligned for the best printing.
- Step 5. Turn the cartridge knob (marked by an arrow) clockwise to stretch the ribbon taut.
- Step 6. Replace the cover.

- Step 7. Toggle the printer online by pressing the printer toggle switch to the *OnLine/Off Line* position. The Ready LED illuminates.
- Step 8. Replace the paper if necessary.

If you get ribbon ink on the printer's plastic cover, remove it immediately. Once dried, it is difficult to remove.

Replacing the Paper Roll

- Step 1. Toggle the printer off line by pressing the printer toggle switch to the *OnLine/Off Line* position. When the printer is off line, the Ready LED does not illuminate.
- Step 2. Grasp the paper roll cover firmly by the grooves on the side and the front edge. Pull outward to remove the cover.
- Step 3. Press the printer toggle switch to *Paper feed* to advance the paper approximately one inch beyond the paper cutter.
- Step 4. Using scissors, cut the paper feeding to the printer and remove the paper roll.
- Step 5. Pull the remaining paper through the printer mechanism. *Pull the paper from the front (paper cutter side)*. Pulling the paper out of the back of the printer will damage the print mechanism.
- Step 6. Unroll several inches of paper on the new roll.
- Step 7. If it is jagged, cut a straight edge on the paper roll to facilitate the entry of the paper into the printer.
- Step 8. Slide the paper through the slot connecting the paper compartment and the printer compartment. You can slide it in approximately 1/4 inch before it stops.

- Step 9. While holding the paper in place, press the printer toggle switch to the *Paper feed* position and hold until approximately one inch of paper has emerged from the top of the printer.



Caution

Ensure the roll of paper feeds squarely. If it does not, the paper can jam and possibly damage the printer mechanism.

- Step 10. Release the printer toggle switch.
- Step 11. Turn the paper roll to take up any slack in the paper feeding to the printer.
- Step 12. Place the paper roll into the paper compartment.
- Step 13. Replace the paper roll cover. If the cover is difficult to remove or replace, the left and right edges can be trimmed or shaved with a utility knife allowing the cover to slide easier.
- Step 14. Toggle the printer online by pressing the printer toggle switch to the *OnLine/Off Line* position. The Ready LED illuminates.

toggling Your Printer Online

Complete these steps to toggle your printer online:

- Step 1. Toggle the printer online by pressing the printer toggle switch to the *OnLine/Off Line* position. When the printer is off line, the Ready LED does not illuminate.
- Step 2. Release the switch and it returns to the center position. The Ready LED illuminates and a READY message prints if the PRINT READY command has not been turned off. See "Printer Configuration" on page 49 for instructions on turning on and off the PRINT READY

command. When you first turn on the instrument, it prints a READY message to assure you that the built-in microprocessor is operating properly.

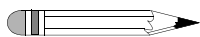
When you turn off the printer, wait at least three seconds before turning it on again.

Printer Self Test

You can test the print head and ribbon only *after* inserting paper. Do not attempt to print without paper. Follow these steps to perform a printer self test:

- Step 1. Turn off the VK 5010.
- Step 2. Press and hold the printer toggle switch in the *Paper feed* position.
- Step 3. Turn on the VK 5010.
- Step 4. Hold the printer toggle switch until printing begins. The printer prints a list of the current configuration settings and performs a continuous print test.
- Step 5. Press the printer toggle switch to the *OnLine/Off Line* position to stop the printing operation.
- Step 6. The printer is ready to resume normal operation.

Printer Configuration

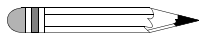


Note

The printer configuration is set by the factory. This procedure should be performed only if the printer displays erroneous characters. Contact the Dissolution Systems Service Department for assistance, if necessary.

- Step 1. Turn off the VK 5010.

- Step 2. Press and hold the printer toggle switch in the *OnLine/Off Line* position while turning on the instrument. Hold the printer toggle switch in the *OnLine/Off Line* position for six seconds after the instrument is turned on, then release the switch.
- Step 3. The printer should print: *++SETUP MENU *++and CONFIGURE... [NEXT/OK]. If this message does not print, repeat steps 1 through 3.
- Step 4. The printer toggle switch is used to complete the configuration. Pressing the left side of the printer toggle switch selects NEXT to advance to the next menu item. Pressing the right side of the printer toggle switch selects OK to accept what is stated on this line of the menu item. Each time the switch is pressed, another part of the menu prints. Allow the printer to finish printing before pressing the switch again. See the table of commands below.



Note

The printout is easier to read if the printer cover is removed.

*++SETUP MENU***		
CONFIGURE	[NEXT/OK]	Press NEXT to avoid configuration
CUSTOM	[NEXT/OK]	Press OK to enter custom mode
CUSTOM MENU		
PRINT CUSTOM SETUP	[NEXT/OK]	Press NEXT
AUTO SEQ = NO	[NEXT/OK]	Press OK
ZERO = Ø	[NEXT/OK]	Press OK
POUND SIGN = #	[NEXT/OK]	Press OK
_(UNDERScore)	[NEXT/OK]	Press OK
ONLINE/OFFLINE = YES	[NEXT/OK]	Press OK
EXT CH SET = NO	[NEXT/OK]	Press OK
PRINT READY = YES	[NEXT/OK]	Press NEXT
PRINT READY = NO	[NEXT/OK]	Press OK
READY...		

Your printer is now configured correctly.

Fuse Replacement



Warning

The VK 5010 contains electrical circuits, devices, and components operating at dangerous voltages. Contact with these circuits, devices, and components can cause death, serious injury, or painful electric shock.

Panels or covers that are retained by fasteners which require the use of a tool for removal may be opened only by Varian-trained, Varian-qualified, or Varian-authorized service engineers.

The fuse compartment is located beside the power cord receptacle on the VK 5010 rear panel.

- Step 1. To check or replace the fuse, remove the power cord from the VK 5010.
- Step 2. A release tab is located on the right side of the fuse compartment. Insert a slotted screwdriver under the tab. A slight application of pressure forward releases the door.
- Step 3. The fuses are located in the removable holders marked with an arrow on the top of each. The VK 5010 uses two 1.5 Amp, metric (5 x 20 mm) standard fuses for each holder.
- Step 4. Replace the fuse in the holder and insert the fuse holder into the fuse compartment with the arrows pointing toward the bottom of the compartment.
- Step 5. The holder is designed for multiple voltages. The voltage displays through a window in the fuse compartment door. To change the voltage, gently pull the wheel to remove it from the holder. Rotate the wheel and snap it back in place displaying the correct voltage.
- Step 6. Push the fuse compartment door closed. It snaps into place.
- Step 7. Replace the power cord.

Troubleshooting

The Varian Service Department can assist you if you experience problems or questions concerning your VK 5010. Many problems can be traced to simple sources and are easily solved.

Following is a troubleshooting guide which may help you. The Varian Service Department can be reached at 800.229.1108 (inside the US) or 919.677.1108 (outside the US).

Symptom	Probable Cause	Possible Solution
Unit does not respond when main power switch turned ON.	Blown fuse; check rear panel AC line cord connector.	Replace if necessary.
	Unit not plugged in.	Plug in line cord.
	Electric outlet does not have power.	Check outlet for power.
"Gibberish" appears on Graphics Display.	Corrupt memory.	Press and hold CLEAR. While holding CLEAR, press 0 to reset the system.
	No value previously entered for field.	Program parameter via Main Menu.
Report Center printer does not function.	Printer is disabled.	Enable Report Center via Main Menu.
Printer works, but prints nothing.	Ribbon needs replacement.	Install replacement ribbon cartridge.

Chapter 6 ***Service and
Warranty***

The warranty is provided by Varian, Inc. or one of its authorized representatives.

Service and Warranty Information

Varian dissolution products carry a one-year warranty on parts and labor. The Dissolution Systems Service Department (or one of its representatives) will, at its option, either repair or replace any mechanical and electrical components in your instrument which prove to be defective. During the first year of warranty coverage, there is no charge for the labor to repair your unit. The Dissolution Systems Service Department (or one of its representatives) will determine the best site to repair the unit, either onsite or returned to Varian, Inc. Any onsite warranty services are provided only at the initial installation point. Installation and onsite warranty services are available only in Dissolution Systems service travel areas.

Exclusions and Limitations

Excluded from this warranty are expendable or consumable items such as, but not limited to, paddles, baskets, vessels, and acrylic water baths. Also excluded are defects from improper or inadequate maintenance by the customer, user-induced chemical action or contamination, unauthorized modification or misuse, and improper site preparation and maintenance.

Operation of software is not warranted to be uninterrupted or error-free.

Obtaining Warranty Service

To obtain warranty service in the United States, contact the Dissolution Systems Service Department at 800.229.1108 to obtain authorization to return units for repair. At the option of the customer, onsite warranty service is available, but travel charges may be incurred. The customer should prepay all shipping charges for products returned to the Dissolution Systems Service Department (unless otherwise authorized), and Varian, Inc. will pay all charges for return to the customer.

Warranty Limitations

Varian, Inc. makes no other warranty, either express or implied, with respect to this product. Specifically disclaimed are any implied warranties of merchantability and fitness for a particular use. In no event will Varian, Inc. be liable for any indirect, incidental, or consequential damages arising from the use of this product. This warranty gives you specific legal rights which may vary from state to state or province to province, so you may have other rights and some of these exclusions may not apply to you.

Exclusive Remedies

The remedies provided herein are the customer's sole and exclusive remedies. In no event shall Varian, Inc. or its representatives be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory. Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

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