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VK 8000 for use with Dissolution Apparatus Operator's Manual

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November 2010
Revision M**

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Chapter 1 ***Safety Practices
and Hazards***

The VK 8000 and accessories have 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.

Operation of a VK 8000 and accessories involves the use of 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 8000 and accessories contain 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 8000 and accessories 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 may be 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



Pinch point



Caution
Refer to accompanying documents

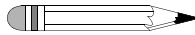
Read all warnings and cautions carefully and observe them at all times.

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 14)

General

CE Compliant Products

The VK 8000 and accessories have been designed to comply with the requirements of the Electro-magnetic Compatibility (EMC) Directive and the Low Voltage Directive (LVD) of the EU.

Varian, Inc. has confirmed that each product complies with the relevant directives by testing a prototype against the prescribed European Norm (EN) standards.

Proof that a product complies with the directives is indicated by:

- the CE marking appearing on the rear of the product.
- the documentation package that accompanies the product containing a copy of the declaration of conformity. This declaration is the legal declaration by Varian, Inc. that the product complies with the directives and also shows the EN standards to which the product was tested to demonstrate compliance. The declaration of conformity is signed by the representative of the manufacturing plant.

cTUVus - U.S. and Canadian Product Approvals

The VK 8000 and accessories have been designed to comply with North American safety requirements.

These products have been tested and certified for the North American market by TUV Rheinland of North America, Inc. The TUVus mark signifies that these products have been tested to U.S. standards and certified for the U.S. market. The cTUV mark signifies that these products have been tested to Canadian standards and certified for the Canadian market. When the two marks are coupled, the cTUVus mark signifies that these products have been tested to standards and certified for both markets.

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 wheelee bin" WEEE symbol shown on page 12 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.

Chapter 2 ***Introduction***

The VK 8000 Dissolution Sampling Station can store up to 15 different sampling programs. Dissolution apparatus parameters can be entered as part of the VK 8000 program. These parameters are downloaded to the dissolution apparatus when you start a run with the VK 8000.

The VK 8000 fail-safe sample delivery uses either the peristaltic pump (see “VK 8000 with Peristaltic Pump” on page 16) or VK 806 Syringe Pump optionally coupled with the automated VK 808 Filter Changer (see “VK 8000 with Syringe Pump” on page 16). Hard-copy documentation is provided by the built-in Report Center Printer which prints all essential parameters for proof of proper operation and compliance with current GMPs. A remote printer can also be added.

The VK 8000 has a replacement media (RM) module which can be used to replenish sample volumes taken with fresh media. It can also fill pre-capped HPLC autosampler vials for direct transfer of samples to an HPLC system. Septa are pierced using the exclusive needle manifold, which lowers and raises at each sample timepoint. Sample trays are available in a variety of sizes to accommodate either vials or test tubes.

The VK 8000 is automation ready. An RS232 port permits integration with other automated systems. Sampling runs can be activated with an external switch closure or

TTL signal. The VK 8000 has a programmable TTL output to control the instruments in the system.



Warning

The VK 8000 and accessories contain 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.



Caution

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.

VK 8000 with Peristaltic Pump

The VK 8000, when used in conjunction with the peristaltic pump, is capable of performing unattended sampling from a dissolution apparatus. All parameters of operation are controlled by the VK 8000. Sampling can be carried out automatically and takes into account all relevant variables in the sample flow path such as tubing length, tension, and diameter. Samples may be delivered into open test tubes or pre-capped autosampler vials.

VK 8000 with Syringe Pump

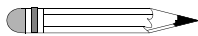
The VK 8000, when used in conjunction with the VK 806 Syringe Pump with or without the VK 808 Filter Changer, is capable of performing unattended sampling from a dissolution apparatus. All parameters of operation are controlled by the VK 8000. Variables in the sample flow path such as tubing length and diameter are accounted for in the sampling process. Samples may be delivered into open test tubes or pre-capped autosampler vials.

The syringe pump incorporates the use of up to eight individual syringes housed in a single unit. The syringe pump provides syringe-driven accuracy of sampling. Introducing the filter changer into the system provides superior removal of particulates through the use of membrane filters.

Conventions Used in this Manual

- Items you are asked to press are in bold. For example, “press **H** on the keypad”.
- Key sequences you are asked to press appear like this: **MENU > 4**.

Note



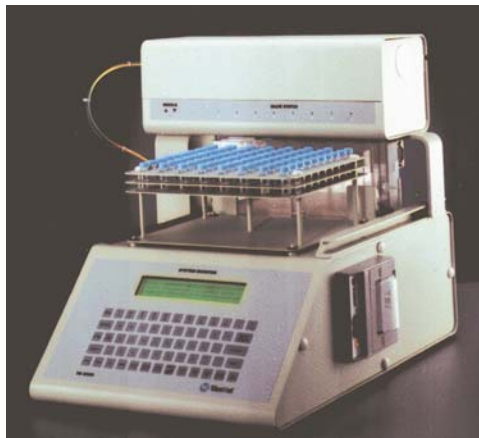
Remember to return the warranty card supplied with this manual. Completing and returning the card ensures your right to protection under the terms and conditions of your warranty. It also enables us to better assist you in the event of any problems. Additionally, it guarantees you will be informed of any issues that arise concerning your equipment, such as upgrades, retrofits, or regulatory changes.

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Chapter 3 ***Unpacking and
Positioning Your
System***

Check the contents for any damages due to shipping. The packaging used to ship your equipment ensures that damage rarely occurs, but if it does, contact both the carrier who delivered the instrument and the Dissolution Systems Service Department. Though claims for damage should be filed with the carrier, we will be glad to help you file a claim and get you up and running as quickly as possible.

Unpacking Your VK 8000



The VK 8000 is shipped in foam-filled cartons. The number of cartons may vary depending on your configuration.

- Step 1. Carefully remove the VK 8000 and accessory kit from their shipping cartons. Remove all cushioning material and tape.
- Step 2. Place the VK 8000 on a clear, dry, level section of the benchtop close to the dissolution apparatus. The preferred placement of the VK 8000 is on the right side of the dissolution apparatus.



Caution

Unscrew and remove the two clamps which secured the VK 8000 dispensing arm during shipping. These clamps are located on both sides of the right dispensing support arm where it connects to the VK 8000 main body. Failure to remove the two clamps prior to powering up the VK 8000 will damage your unit.

Unpacking Your Peristaltic Pump



- Step 1. Carefully remove the peristaltic pump from its shipping carton. Remove all cushioning and tape.

- Step 2. Place the peristaltic pump on a clear, dry, level section of the benchtop between the VK 8000 and the dissolution apparatus.

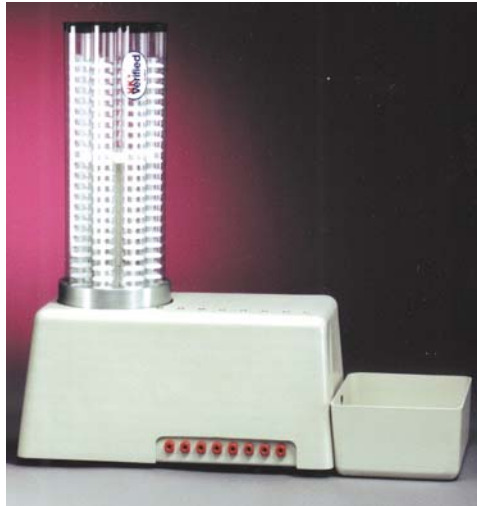
Unpacking Your Syringe Pump



The syringe pump is shipped in individual packaging.

- Step 1. Carefully lift the unit out of the box.
- Step 2. Remove any cushioning material.
- Step 3. Place the unit on a clear, dry, level section of the benchtop between the VK 8000 and the dissolution apparatus.

Unpacking Your Filter Changer



The filter changer is shipped in individual packaging.

- Step 1. Carefully lift the unit out of the box.
- Step 2. Remove any cushioning material.
- Step 3. Place the unit on a clear, dry, level section of the benchtop between the VK 8000 and the syringe pump.

Setting Up Your Sampling System

This manual provides setup instructions for all configurations using the VK 8000 with a dissolution apparatus. All setup combinations are described in individual chapters. Refer to the following list and read the appropriate chapter for your system configuration:

- *Setting Up Your VK 8000 with Peristaltic Pump* on page 25.
- *Setting Up Your VK 8000 with Syringe Pump* on page 31.
- *Setting Up Your VK 8000 with Syringe Pump and Filter Changer* on page 37.



Warning

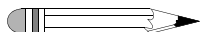
For all configurations, ensure the equipment is configured for the voltage supplied.

Chapter 4 ***Setting Up Your
VK 8000 with
Peristaltic Pump***



Setting Up the Peristaltic Pump

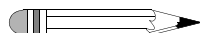
- Step 1. Remove the two screws on top of the pump. Lift off the plastic cover and set it aside.
- Step 2. Remove the cartridges from the pump by pressing down the levers on the right side. Lift the cartridges up and away from the pump.
- Step 3. Loosely fit the peristaltic pump tubing along the inside groove of the first cartridge, locking the tubing clips on the outside notches.



Note

Ensure that all pump cartridges are installed. It is not necessary to install tubing on any unused positions.

- Step 4. Refit the cartridge to the pump by hooking the clip on the bottom left of the cartridge into the groove on the left side of the pump.
- Step 5. Push down the right side of the cartridge, ensuring that the tubing remains under the cartridge, and pull up the lever to lock the cartridge in place. If desired, trim the excess tubing to within one inch of the tubing clips.



Note

The cover does not fit unless the cartridges are positioned with the levers on the right side.

- Step 6. Repeat steps 3 - 5 for each remaining cartridge.
- Step 7. Refit the cover and replace the two screws. If the cover is not replaced correctly, the pump will not operate.

Cable Connections

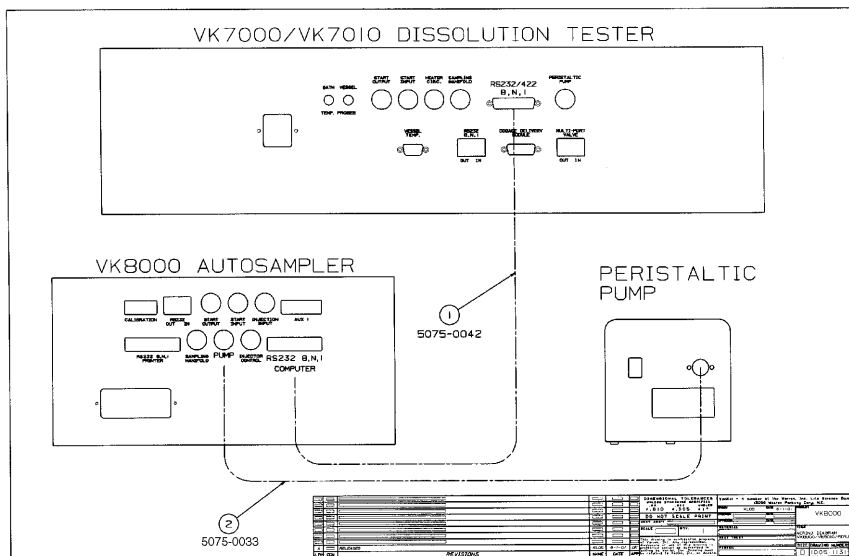


Warning

The electrical connection at the back of the VK 8000 is the primary disconnect for the instrument. The instrument should be positioned to allow accessibility to the power cords for easy disconnection.

Refer to the following example diagram to correctly make cable connections for the VK 8000, peristaltic pump, and dissolution apparatus:

FIGURE 1. Cable Connections for VK 8000, Peristaltic Pump, and VK 7000 / 7010



- Step 1. Connect the five-pin cable (#2, P/N 5075-0033) between the jack on the VK 8000 rear panel labeled PUMP and the jack on the peristaltic pump rear panel labeled PUMP CONTROL.

- Step 2. If your system configuration includes the VK 7000 / 7010 / 7020 / 7020 S / 7025 / 7030, connect the RS232 cable (#1, P/N 5075-0042) between the RS232 ports on the dissolution apparatus rear panel and the VK 8000 rear panel.
- If your system configuration includes the Varian 705 DS, connect the 9-to-9-pin connector to the RS232 port on the dissolution apparatus rear panel.
- Step 3. If your system configuration includes the Varian 705 DS, connect the RS232 cable (P/N 5075-0553) between the 9-to-9-pin connector on the dissolution apparatus rear panel and the RS232 port on the VK 8000 rear panel.

Installing the Sampling Manifold (VK 7010)

- Step 1. Locate the two metal guide shafts that hold the ends of the manifold in place.
- Step 2. Insert the guide shafts in the holes on the bottom cover of the dissolution apparatus drive unit located between the left set of spindles and right set of spindles. Screw them securely in place.
- Step 3. Locate the internal drive shaft that protrudes through the middle of the bottom cover of the dissolution apparatus drive unit. Attach the extension bar.
- Step 4. Slide the manifold onto the drive shaft extension and guides until the bottom of the drive shaft extension is relatively flush with the underside of the manifold assembly. Tighten the screw on the manifold block with an Allen wrench to secure the manifold to the drive shaft.
- Step 5. Prior to analysis, verify that the positions of the sampling cannula tips conform to the proper sampling position per USP.

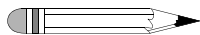
Installing AutoTemp

If the AutoTemp option is installed on your unit, locate the coiled nine-pin cable in the accessory kit. Connect the cable from the manifold to the jack labeled VESSEL TEMP on the dissolution apparatus back panel.

Sample Tubing Connections

The VK 8000 is shipped with all tubing attached to the valves in the dispensing arm.

Note



Do not remove the nylon tie wraps securing the tubing into bundles.

The direction of the peristaltic pump can be set via a switch on its rear panel. It does not matter at this point to which side the bundles go, as long as all lines in the bundle from the sampling cannulas are connected to one side, and all lines in the bundle from the valve inlets to the other.

- Step 1. If your system configuration includes the VK 7000 / 7010 / 7020 / 7020 S / 7025 / 7030, connect the 72-inch multi-color Teflon lines from the dissolution apparatus sampling cannulas to the tubing on one side of the appropriate peristaltic pump cartridges.

If your system configuration includes the Varian 705 DS, connect the resident probes to the 72-inch multi-color Teflon lines and attach the lines to the tubing on one side of the appropriate peristaltic pump cartridges.

- Step 2. Connect the 32-inch multi-color Teflon lines between the tubing coming from the remaining side of the peristaltic pump cartridges and the tubing coming from the left positions of the VK 8000 solenoid valves. Ensure each cartridge has identical color tubing connected at both the inlet and the outlet.

- Step 3. Connect the tubing coming from the top positions of the VK 8000 solenoid valves to the 72-inch multi-color Teflon return lines on the dissolution apparatus. Ensure each line is attached to its identical color.

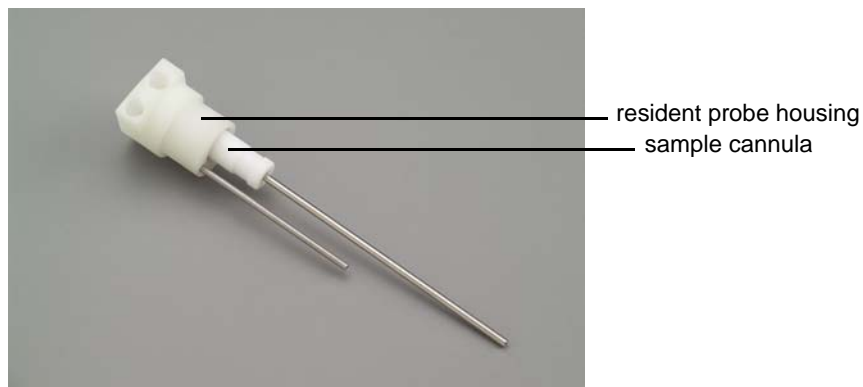


Caution

Do not tighten the plastic fittings on the ends of the tubing more than half a turn past finger-tight. Overtightening will damage the fittings.

- Step 4. If your system configuration includes the Varian 705 DS, connect the return lines to the return cannulas of the resident probes.
- Step 5. If your system configuration includes the Varian 705 DS, remove the sample cannula from the resident probe housing, insert the sample filter, and reconnect (see Figure 2, "Resident Probe," below). Repeat for each resident probe.

FIGURE 2. Resident Probe



Chapter 5 ***Setting Up Your
VK 8000 with
Syringe Pump***



Cable Connections

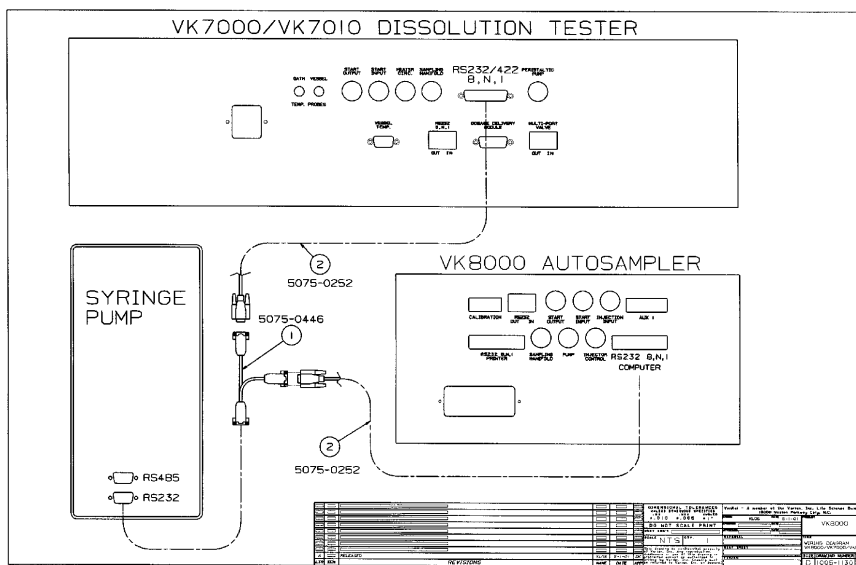


Warning

The electrical connection at the back of the VK 8000 is the primary disconnect for the instrument. The instrument should be positioned to allow accessibility to the power cords for easy disconnection.

Refer to the following example diagram to correctly make cable connections for the VK 8000, syringe pump, and dissolution apparatus:

FIGURE 3. Cable Connections for VK 8000, Syringe Pump, and VK 7000 / 7010



- Step 1. Connect the single end of the Y cable (#1, P/N 5075-0446) to the RS232 port on the syringe pump.
- Step 2. Connect an RS232 cable (#2, P/N 5075-0252) between the RS232 port on the VK 8000 and one extension of the Y cable attached to the syringe pump.

Step 3. If your system configuration includes the VK 7000 / 7010 / 7020 / 7020 S / 7025 / 7030, connect a second RS232 cable (#2, P/N 5075-0252) between the remaining extension of the Y cable attached to the syringe pump and the RS232 port on the dissolution apparatus.

If your system configuration includes the Varian 705 DS, connect the 9-to-9-pin connector to the RS232 port on the dissolution apparatus rear panel and connect the RS232 cable (P/N 5075-0448) between the remaining extension of the Y cable attached to the syringe pump and the 9-to-9-pin connector.

If your system configuration includes a non-Varian dissolution apparatus, attach the adapter (P/N 5075-0852) to the connector labeled 2 (see Figure 4, "Y Cable 5075-0446 and Adapter 5075-0852," below) of a second RS232 cable (#2, P/N 5075-0252) and connect that cable to the appropriate port on the dissolution apparatus. Connect the remaining extension of the second Y cable to the remaining extension of the Y cable attached to the syringe pump.

FIGURE 4. Y Cable 5075-0446 and Adapter 5075-0852



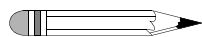
Installing the Sampling Manifold (VK 7010)

- Step 1. Locate the two metal guide shafts that hold the ends of the manifold in place.
- Step 2. Insert the guide shafts in the holes on the bottom cover of the dissolution apparatus drive unit located between the left set of spindles and right set of spindles. Screw them securely in place.
- Step 3. Locate the internal drive shaft that protrudes through the middle of the bottom cover of the dissolution apparatus drive unit. Attach the extension bar.
- Step 4. Slide the manifold onto the drive shaft extension and guides until the bottom of the drive shaft extension is relatively flush with the underside of the manifold assembly. Tighten the screw on the manifold block with an Allen wrench to secure the manifold to the drive shaft.
- Step 5. Prior to analysis, ensure the positions of the sampling cannula tips conform to the proper sampling position per USP.

Installing AutoTemp

If the AutoTemp option is installed on your unit, locate the coiled nine-pin cable in the accessory kit. Connect the cable from the manifold to the jack labeled VESSEL TEMP on the back of the dissolution apparatus.

Sample Tubing Connections



Note

Do not remove the nylon tie wraps securing the tubing into bundles.

- Step 1. If your system configuration includes the VK 7000 / 7010 / 7020 / 7020 S / 7025 / 7030, connect the 72-inch multi-color Teflon lines from the dissolution apparatus sampling cannulas to the left port (labeled IN) of each syringe starting with position 1.
- If your system configuration includes the Varian 705 DS, connect the resident probes to the 72-inch multi-color Teflon lines and attach the lines to the left port (labeled IN) of each syringe starting with position 1.
- Step 2. Connect the 32-inch multi-color Teflon lines between the right port (labeled OUT) of each syringe to the tubing coming from the left positions of the VK 8000 solenoid valves. Ensure each line is attached to its identical color.
- Step 3. Connect the tubing coming from the top positions of the VK 8000 solenoid valves to the 72-inch multi-color Teflon return lines on the dissolution apparatus. Ensure each line is attached to its identical color.

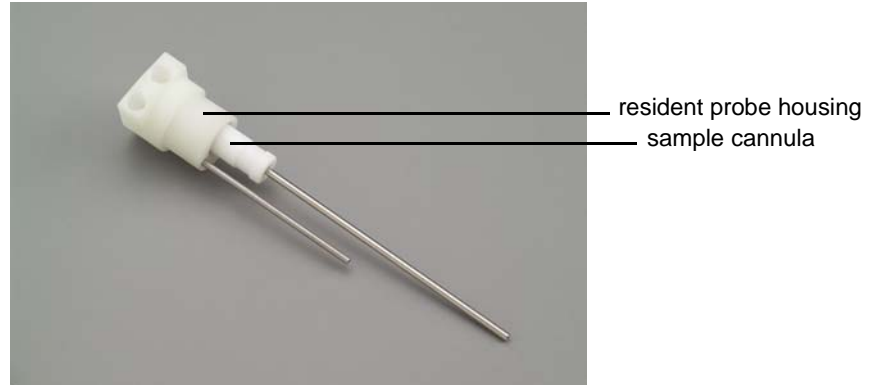


Caution

Do not tighten the plastic fittings on the ends of the tubing more than half a turn past finger-tight. Overtightening will damage the fittings.

- Step 4. If your system configuration includes the Varian 705 DS, connect the return lines to the return cannulas of the resident probes.
- Step 5. If your system configuration includes the Varian 705 DS, remove the sample cannula from the resident probe housing, insert the sample filter, and reconnect (see Figure 5, "Resident Probe," on page 36). Repeat for each resident probe.

FIGURE 5. Resident Probe



Chapter 6 ***Setting Up Your
VK 8000 with
Syringe Pump and
Filter Changer***



Cable Connections

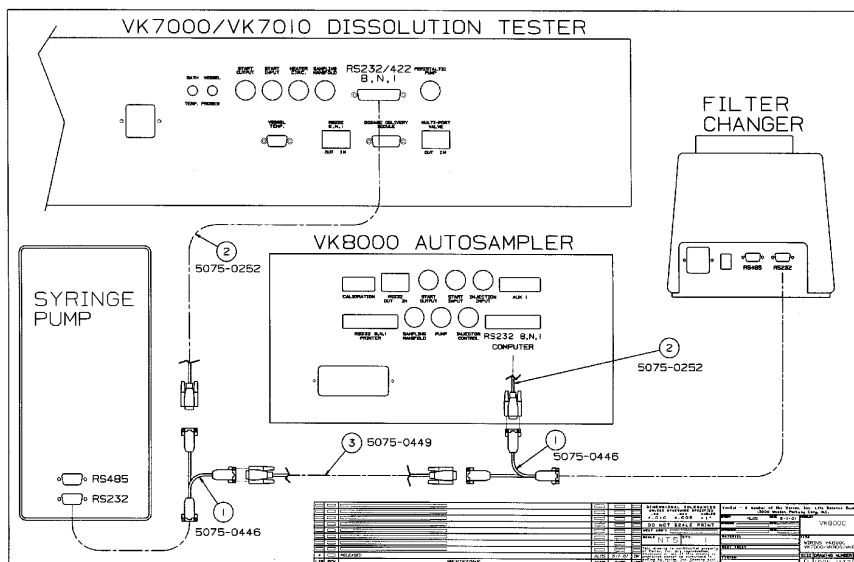


Warning

The electrical connection at the back of the VK 8000 is the primary disconnect for the instrument. The instrument should be positioned to allow accessibility to the power cords for easy disconnection.

Refer to the following example diagram to correctly make cable connections for the VK 8000, syringe pump, filter changer, and dissolution apparatus:

FIGURE 6. Cable Connections for VK 8000, Syringe Pump, Filter Changer, and VK 7000 / 7010



- Step 1. Connect the single end of a Y cable (#1, P/N 5075-0446) to the RS232 port on the filter changer.
- Step 2. Connect an RS232 cable (#2, P/N 5075-0252) between the RS232 port on the VK 8000 and one extension of the Y cable attached to the filter changer.

- Step 3. Connect a nine-pin cable (#3, P/N 5075-0449) to the remaining extension of the Y cable attached to the filter changer.
- Step 4. Connect the single end of a second Y cable (#1, P/N 5075-0446) to the RS232 port on the syringe pump.
- Step 5. Connect one extension of the second Y cable to the remaining end of the nine-pin cable attached to the filter changer (#3, P/N 5075-0449) from step 3.
- Step 6. If your system configuration includes the VK 7000 / 7010 / 7020 / 7020 S / 7025 / 7030, connect a second RS232 cable (#2, P/N 5075-0252) between the remaining extension of the Y cable attached to the syringe pump from step 4 and the RS232 port on the dissolution apparatus.
- If your system configuration includes the Varian 705 DS, connect the 9-to-9-pin connector to the RS232 port on the dissolution apparatus rear panel and connect the RS232 cable (P/N 5075-0448) between the remaining extension of the Y cable attached to the syringe pump from step 4 and the 9-to-9-pin connector.
- If your system configuration includes a non-Varian dissolution apparatus, attach the adapter (P/N 5075-0852) to the connector labeled 2 (see Figure 7, "Y Cable 5075-0446 and Adapter 5075-0852," on page 40) of a second RS232 cable (#2, P/N 5075-0252) and connect that cable to the appropriate port on the dissolution apparatus. Connect the remaining extension of the second Y cable to the remaining extension of the Y cable attached to the syringe pump from step 4.

FIGURE 7. Y Cable 5075-0446 and Adapter 5075-0852



Installing the Sampling Manifold (VK 7010)

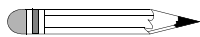
- Step 1. Locate the two metal guide shafts that hold the ends of the manifold in place.
- Step 2. Insert the guide shafts in the holes on the bottom cover of the dissolution apparatus drive unit located between the left set of spindles and right set of spindles. Screw them securely in place.
- Step 3. Locate the internal drive shaft that protrudes through the middle of the bottom cover of the dissolution apparatus drive unit. Attach the extension bar.

- Step 4. Slide the manifold onto the drive shaft extension and guides until the bottom of the drive shaft extension is relatively flush with the underside of the manifold assembly. Tighten the screw on the manifold block with an Allen wrench to secure the manifold to the drive shaft.
- Step 5. Prior to analysis, ensure the positions of the sampling cannula tips conform to the proper sampling position per USP.

Installing AutoTemp

If the AutoTemp option is installed on your unit, locate the coiled nine-pin cable in the accessory kit. Connect the cable from the manifold to the jack labeled VESSEL TEMP on the back of the dissolution apparatus.

Sample Tubing Connections



Note

Do not remove the nylon tie wraps securing the tubing into bundles.

- Step 1. If your system configuration includes the VK 7000 / 7010 / 7020 / 7020 S / 7025 / 7030, connect the 72-inch multi-color Teflon lines from the dissolution apparatus sampling cannulas to the left port (labeled IN) of each syringe starting with position 1.
- If your system configuration includes the Varian 705 DS, connect the resident probes to the 72-inch multi-color Teflon lines and attach the lines to the left port (labeled IN) of each syringe starting with position 1.
- Step 2. Connect the 28-inch multi-color Teflon lines between the right port (labeled OUT) of each syringe and the top inlet ports of the filter changer starting with the port closest to the carousel.

- Step 3. Connect the 32-inch multi-color Teflon lines between the side ports of the filter changer and the tubing coming from the left positions of the VK 8000 solenoid valves. Ensure each line is attached to its identical color.
- Step 4. Connect the tubing coming from the top positions of the VK 8000 solenoid valves to the 72-inch multi-color Teflon return lines on the dissolution apparatus. Ensure each line is attached to its identical color.

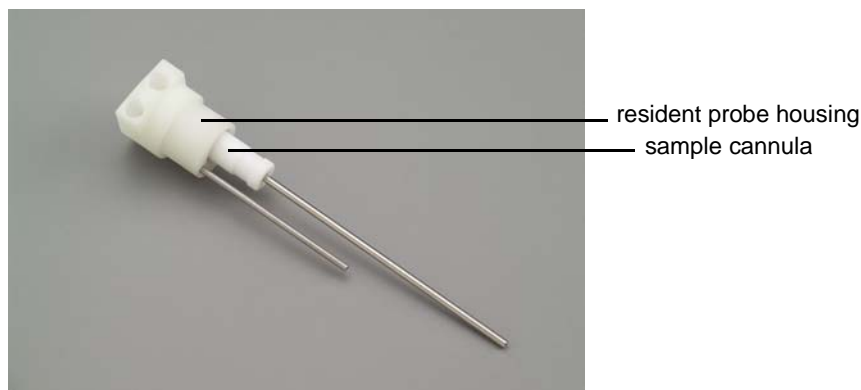


Caution

Do not tighten the plastic fittings on the ends of the tubing more than half a turn past finger-tight. Overtightening will damage the fittings.

- Step 5. If your system configuration includes the Varian 705 DS, connect the return lines to the return cannulas of the resident probes.
- Step 6. If your system configuration includes the Varian 705 DS, remove the sample cannula from the resident probe housing, insert the sample filter, and reconnect (see Figure 8, "Resident Probe," below). Repeat for each resident probe.

FIGURE 8. Resident Probe



Loading Filters into the Filter Changer

- Step 1. Choose a tube of filters. Although you can load up to eight tubes of filters, only one tube is necessary for the filter changer to function properly.
- Step 2. Remove the cap from the end of the tube to expose the long, thin exit nozzle of the end filter.
- Step 3. Insert the tube, with the open end down, into the metal filter assembly in the filter changer carousel. Pivot the tube until it slides vertically into the white stabilizer slot.
- Step 4. Repeat steps 2 - 4 to load additional tubes of filters.



Caution

Use only Varian-certified filters or Millipore-equivalent types of filters. Other types of filters may not work properly in the filter changer and could damage the unit.

Changing Filter Types

To change filter types in the VK 806 Filter Changer, complete the following steps:

- Step 1. Remove all tubes of filters from the carousel of the filter changer.
- Step 2. From the VK 8000 Ready screen, press **MENU**. The Main Menu displays.
- Step 3. Select option **7**, Manual Operation. The Manual Operations screen displays.
- Step 4. Select option **6**, Syringe/Filter.
- Step 5. From the Operate Syringe/Filter Changer screen, select option **5**, Filter Changer. The Filter Changer Manual Control screen displays.

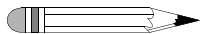
- Step 6. Select option **3**, Change Filters.
- Step 7. Enter **8** as the number of filters to change and press **ENTER**. The filters expel from the filter changer.
- Step 8. Repeat steps 6 and 7 until filters no longer expel from the filter changer. The following error message displays on the screen: FILTER CHANGER ROTOR ERROR. THE FILTER CHANGER IS EMPTY OR HAS FAILED TO LOAD PROPERLY. PRESS <1> TO CONTINUE OR <ESC> TO QUIT.
- Step 9. Press **ESC**. The Filter Changer Manual Control screen displays.
- Step 10. Load the new tubes of filters into the carousel of the filter changer. See "Loading Filters into the Filter Changer" on page 43.
- Step 11. Select option **3**, Change Filters.
- Step 12. Enter **8** as the number of filters to change and press **ENTER**. The filters expel from the filter changer.
- Step 13. When the filter changer stops expelling filters, select option **3**, Change Filters, again.
- Step 14. Enter **1** as the number of filters to change and press **ENTER**. The remaining filter of the previous type expels from the filter changer and is replaced with the new filter.
- Step 15. Press **ESC** four times to return to the Ready screen.

Installing the Catch Basin

Slide the side of the catch basin containing the opening over the screw mounted on the front of the filter changer.

Chapter 7 *Final Setup*

Installing VK 8000 Full Flow Filters



Note

If your system configuration includes the Varian 705 DS, this section is not applicable. Use the filters appropriate for use with the resident probes (see page 30, page 35, or page 42 as applicable based on your system configuration for installation instructions).

The VK 8000 has been supplied with 10-, 35-, and 70-micron Full Flow Filters for use with the sampling cannulas. In theory, dissolution continues until the samples are filtered. The VK 8000 allows filtering at the instant a sample is taken with the use of the Full Flow Filters. Some drug excipients may clog the Full Flow filters reducing their performance. Filters may need to be changed during a run only in extreme cases.



Caution

Install Full Flow Filters on the sampling cannulas to prevent clogging of the sampling lines. Damage to your equipment will result if the sampling lines clog. For best results, use the 10-micron Full Flow Filter.

Power and Network Connections



Warning

The electrical connection at the back of the VK 8000 is the primary disconnect for the instrument. The instrument should be positioned to allow accessibility to the power cords for easy disconnection.

Ensure the VK 8000 and any coupled components are configured for the voltage supplied at the receptacle.

- If your system configuration includes the peristaltic pump, the power receptacle and power switch are located on the rear of the unit. Connect the power cord and turn on the peristaltic pump.
- If your system configuration includes the syringe pump, the power receptacle and power switch are located on the left side of the unit. Connect the power cord and turn on the syringe pump.
- If your system configuration includes the filter changer, the power receptacle and power switch are located on the rear of the unit. Connect the power cord and turn on the filter changer.

The VK 8000 has a dual voltage (115 V / 230 V) option on the power entry module. Ensure the voltage indicated on the fuse drawer matches the power outlet. Connect the power cord to the rear of the VK 8000. Turn on the VK 8000. The system monitor illuminates. The system monitor displays the initial status screen and then changes to the Ready screen.

FIGURE 9. VK 8000 Initial Status Screen

```
VK 8000 FRACTION COLLECTOR
PROGRAM REVISION x.xx
INITIALIZING...PLEASE WAIT
TIME: 08/29/04 21:56:40 ELAPSE: 000:00:00
```

The firmware version (program revision) displays. This is the only time the firmware version displays. Record the number below and refer to it if you need to call the Dissolution Systems Service Department.

Firmware version	
-------------------------	--

While the unit is powering up, the dispensing arm returns to its home position at the rear of the unit and the firmware program initializes. If the dispensing arm is already at the home position when the unit is powered up, the initial status screen displays for three seconds only. When the initial status screen disappears, the Ready screen displays. From the Ready screen, you can access the Main Menu or any of the manual functions.

FIGURE 10. VK 8000 Ready Screen

READY
PRG# 01 R-M: ENABLED VOLUME: 5 mL
TIME: 08/29/04 21:56:40 ELAPSE: 000:00:00

Installing the Sample Tray

Place the supplied sample tray on top of the unit. The sample tray has four grommets corner holes which fit over the four locating pins.



Caution

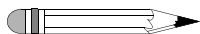
The sample tray must be securely mounted on the locating pins. Otherwise, damage can occur to the sampling needles and drive mechanism.

Installing the Media Rinse Reservoir

The media rinse reservoir fits in the rear of the unit between the metal brackets. The dispensing arm must be moved forward to put it in place.

- Step 1. From the Ready screen, press **MENU**.
- Step 2. Select option **7**, Manual Operation.
- Step 3. Select option **4**, Goto Rows.
- Step 4. Enter **4** to move the dispensing arm to row 4. The dispensing arm moves forward to allow access to the rear of the VK 8000.
- Step 5. Place the media rinse reservoir between the metal brackets directly behind the sample tray.

Note

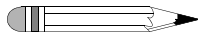


The media rinse reservoir has two chambers—one for replacement media and one for rinsing. The replacement media chamber has two barbed fittings—one on each end of the tank. The rinse chamber has a single barbed fitting. Orient the reservoir with the rinse chamber toward the front.

- Step 6. Connect the six-foot length of clear tygon tubing to the barbed elbow fitting located on the rinse chamber of the reservoir. Place the other end in a sink, drain, or suitable waste container.
- Step 7. If your system configuration includes the syringe pump, press **H** to move the dispensing arm to the home position and press **ESC** three times to return to the Ready screen.

If your system configuration includes the peristaltic pump, complete the steps under “Installing and Connecting the Autocalibration Block” on page 49.

Installing and Connecting the Autocalibration Block



Note

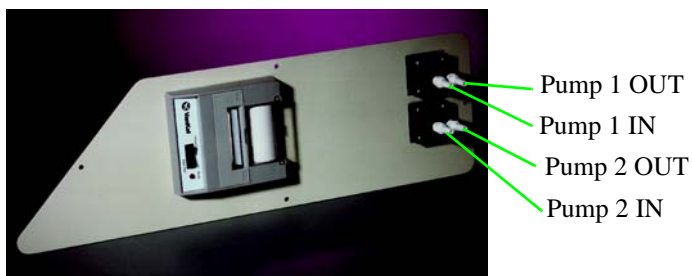
The autocalibration block is available for use only if your system configuration includes the peristaltic pump.

- Step 1. With the dispensing arm forward, insert the autocalibration block behind the media rinse reservoir. Ensure the RS232 port is positioned to the right for a 6-row configuration and toward the back for a 12-row configuration.
- Step 2. Connect the nine-pin RS232 cable between the CALIBRATION port on the VK 8000 rear panel and the RS232 port on the side of the autocalibration block.
- Step 3. Press **H** to move the dispensing arm to the home position.
- Step 4. Press **ESC** three times to return to the Ready screen.

Installing the RM Module

Internal Unit

FIGURE 11. Internal Media Replacement Module



- Step 1. Attach a length of 1/2-inch diameter tubing to the IN fitting of pump 1 (the top pump).
- Step 2. Place the free end in one of the unstirred vessels containing medium or in the receptacle being used to hold the replacement medium.
- Step 3. If desired, attach a clip to regulate flow speed on this length of tubing.
- Step 4. Connect a length of tubing from the OUT fitting of pump 1 to the IN fitting on the RM chamber of the media rinse reservoir.
- Step 5. Attach a length of tubing between the OUT fitting of the RM chamber and the IN fitting on pump 2 (the bottom pump).
- Step 6. Attach a length of tubing to the OUT fitting on pump 2 and place the free end in the replacement medium vessel or receptacle.

External Unit

FIGURE 12. External Media Replacement Module



- Step 1. Remove the cover housing the RM chamber from the side of the VK 8000.
- Step 2. Detach the RM chamber.
- Step 3. Insert the end of the tubing attached to the IN fitting on the pump into the plastic RM chamber.
- Step 4. Slide a tubing clamp on a length of tubing.
- Step 5. Connect one end of the tubing containing the clamp to the OUT fitting on the pump. Connect the other end to the IN fitting of the RM chamber.
- Step 6. Connect a length of plastic tubing to the OUT fitting of the RM chamber.
- Step 7. Place the free end of this piece in the plastic RM chamber.
- Step 8. Re-attach the RM chamber, tighten all screws, and replace all covers.

Hidden Key Functions

Key Sequence	Function
MENU > 0 > 0	Use this key sequence to select the system configuration. Select the option that corresponds to the number of valves on your VK 8000.
MENU > 0 > 8	Use this key sequence to select a fixed 1200 baud or a programmable baud. Select option 2 , Programmable Baud. Note: if you are using the VK 8000 with other Varian equipment, the baud rate must be set to 9600 baud (see "Printer Operation and Communications" on page 71).
MENU > 0 > A	Use this key sequence to set the drop volume before sampling. Enter the desired drop volume and press ENTER . The maximum acceptable value is 1. Note: the drop volume is an amount of sample that is dispensed through the VK 8000 needles prior to dispensing samples into the collection tubes to ensure the needles are purged completely.
MENU > 0 > B	Use this key sequence to enable or disable the moving alert. The asterisk (*) displays next to the current selection. If enabled, the alarm sounds when the dispensing arm is in motion.
MENU > 0 > C	Use this key sequence to enable or disable the delayed start alarm. The asterisk (*) displays next to the current selection. If the delayed start alarm is enabled, the alarm sounds prior to the start of the program. See "VK 70xx Options Screen" on page 82.
MENU > 0 > E	Use this key sequence to select the printer type. Ensure the asterisk (*) displays next to option 1, Impact. If not, select option 1 to enable the impact printer. Note: select option 1, Impact, or the instrument will not operate properly.
MENU > 0 > F	Use this key sequence to select the date display style. The asterisk (*) displays next to the current selection. Select option 1 , MM/DD/YY, or option 2 , DD/MM/YY.

Key Sequence	Function
MENU > 0 > P	Use this key sequence to enable or disable the syringe pump. The asterisk (*) displays next to the current selection. If your system configuration includes the syringe pump, you must enable the syringe pump control options on the VK 8000 prior to setting the syringe pump parameters (see "Main Menu Option 3 Set Syringe Pump (Syringe Pump)" on page 65.
MENU > 0 > R	Use this key sequence to enable or disable media replacement for the syringe pump. The asterisk (*) displays next to the current selection. Select option 1 , Enable, or option 2 , Disable, as appropriate.

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Chapter 8 *Operating the VK 8000*

VK 8000 Keypad Options



The keypad on the VK 8000 is similar to a personal computer keyboard. For example, it has a SPACE key, an ENTER key, and a SHIFT key. These keys function exactly like their counterparts on a personal computer or typewriter keyboard. See Figure 13, "VK 8000 Keypad," below. A discussion about each of the main function keys follows.

FIGURE 13. VK 8000 Keypad



The front panel options include the following:

Option	Function
ESC	<p>Press ESC to stop execution of a running program or calibration routine. Press ESC to move back one level to the previous menu or selection when moving through the multi-level menu.</p> <p>Be very careful when using ESC while a program is running. If a program or calibration is running and ESC is pressed, a prompt appears on the first line of the display asking if you want to stop the running program. The options are Y or N. Press Y to stop the running program. Press N to continue the running program.</p>
MENU	<p>Use this option to set the clock, alarms, VK 70xx parameters, start output delay / syringe pump parameters, manual prime time / volume, manual purge time / volume as well as to remotely control the dissolution apparatus and manually control the VK 8000. See "VK 8000 Main Menu" on page 57.</p>
PRINT	<p>Press PRINT to record the batch information, print the sample times, enable or disable the Report Center Printer, select a local or remote printer, set the communication port identification number, and set the baud rate. See "Printer Operation and Communications" on page 71.</p>
CAL	<p>Use this option to calibrate the VK 8000 to ensure that sample volumes are accurately and precisely taken. See "Volumetric Calibration" on page 87.</p> <p>Note: the CAL key on the VK 8000 can be used only if the peristaltic pump is installed on your system.</p>
PROG	<p>Use this option to set program parameters. See "Programming the VK 8000" on page 73.</p>
START PROG	<p>Use this option to start a program. See "Start Program" on page 79.</p>
MANUAL SAMPLE	<p>Use this option to collect a sample from the dissolution vessels on command without a program. See "Manual Sample" on page 84.</p>
OPEN VALVES	<p>Press OPEN VALVES to open all valves simultaneously. This function keeps the valves open as long as the key on the keypad is pressed. To change the valve configuration, press MENU > 0 > 0 and select the appropriate configuration.</p>

Option	Function
 (PROBES UP / DOWN)	Press  (PROBES UP / DOWN) to raise or lower the sampling cannulas on the dissolution apparatus.
PUMP OFF PUMP FWD PUMP REV	PUMP OFF, PUMP FWD, and PUMP REV work exclusively with the Varian peristaltic pump. When the syringe pump is connected, they are disabled.
CLEAN SYTEM	Use this option to keep the valves, needles, and fluid lines clean. See "Clean System Function with Peristaltic Pump" on page 96 or "Clean System Function with Syringe Pump" on page 100.
LOCK KBRD	Press LOCK KBRD to lock the keypad. Press LOCK KBRD again to unlock the keypad.

VK 8000 Main Menu

From the Ready screen, press **MENU**. The Main Menu displays. Options 3, 4, and 5 change depending on your system configuration.

When your system configuration includes the peristaltic pump, the following Main Menu displays:

MAIN MENU	
1 SET CLOCK/ALARMS	4 MANUAL PRIME TIME
2 SET VK 70xx	5 MANUAL PURGE TIME
3 START OUTPUT DELAY	6 CONTROL VK 70xx
	7 MANUAL OPERATION

When your system configuration includes the syringe pump with or without the filter changer, the following Main Menu displays:

MAIN MENU	
1 SET CLOCK/ALARMS	4 MANUAL PRIME VOL.
2 SET VK 70xx	5 MANUAL PURGE VOL.
3 SET SYRINGE PUMP	6 CONTROL VK 70xx
	7 MANUAL OPERATION

Following is a description of the Main Menu screen options:

Option	Function
1 Set Clock/Alarms	Use this option to set the clock and alarms. If your system configuration includes the syringe pump, the start output delay option also displays on this screen. See "Main Menu Option 1 Set Clock/Alarms" on page 61.
2 Set VK 70xx	Use this option to set the VK 70xx parameters. See "Main Menu Option 2 Set VK 70xx" on page 63.
3 Start Output Delay (peristaltic pump)	<p>If your system configuration includes the peristaltic pump, use this option to set the delay from the start of a program until the TTL signal is sent from the START OUTPUT jack on the VK 8000 rear panel.</p> <p>Select option 3, Start Output Delay. Enter a delay length of up to 99:59 minutes for the VK 8000 TTL output and press ENTER. The Main Menu displays.</p> <p>Note: this output signal can be used to start other instrumentation, such as a dissolution apparatus, after the program on the VK 8000 is started. The default delay is 00:00, indicating that the signal will be sent at the moment a program starts. For example, a value of 10:00 delays the signal for ten minutes after the program starts. Set the value to 00:00 to eliminate the delay feature.</p> <p>When the syringe pump is enabled, Start Output Delay displays under the Set Clock and Alarms screen as option 6. See "6 Start Output Delay" on page 62.</p>
3 Set Syringe Pump (syringe pump)	If your system configuration includes the syringe pump, use this option to set the syringe pump parameters. See "Main Menu Option 3 Set Syringe Pump (Syringe Pump)" on page 65.

Option	Function
4 Manual Prime Time (peristaltic pump)	<p>If your system configuration includes the peristaltic pump, use this option to set the interval the peristaltic pump runs forward, drawing medium into the system, before the valves open to deliver samples.</p> <p>Select option 4, Manual Prime Time. Enter a value for the priming time from 1 to 99 seconds and press ENTER. The Main Menu displays.</p> <p>Note: at a minimum, the manual prime time should be long enough for medium to be seen dripping from the return cannulas. In general, the longer the tubing lengths, the longer the priming time required. This value is not used by sampling programs, which have their own individual priming time values. It is used only with the MANUAL SAMPLE, CAL, and CLEAN SYSTEM keys on the VK 8000.</p>
4 Manual Prime Vol. (syringe pump)	<p>If your system configuration includes the syringe pump, use this option to set the amount of drawn medium necessary to fill the sampling lines of the entire system.</p> <p>Select option 4, Manual Prime Vol. Enter a value for the priming volume and press ENTER. The Main Menu displays.</p> <p>Note: at a minimum, the manual prime volume should be large enough for medium to be seen dripping from the return cannulas. In general, the longer the tubing lengths, the larger the priming volume required. This value is not used by sampling programs which have their own individual priming volume values. It is used only with the MANUAL SAMPLE and CLEAN SYSTEM keys on the VK 8000.</p>

Option	Function
5 Manual Purge Time (peristaltic pump)	<p>If your system configuration includes the peristaltic pump, use this option to set the interval the peristaltic pump runs in reverse to return the uncollected medium in each line back into the vessel from which it was drawn.</p> <p>Select option 5, Manual Purge Time. Enter a value for the manual purge time from 1 to 99 seconds and press ENTER. The Main Menu displays.</p> <p>Note: purging also clears the sampling filters of particulate matter that may restrict successive samples. As with priming, the longer the tubing lengths, the longer the purge time required. This value is not used by sampling programs, which have their own individual purging time values. It is used only with the MANUAL SAMPLE, CAL, and CLEAN SYSTEM keys on the VK 8000.</p>
5 Manual Purge Vol. (syringe pump)	<p>If your system configuration includes the syringe pump, use this option to set a purge volume that ensures all stranded medium is properly expelled.</p> <p>Select option 5, Manual Purge Vol. Enter a value for the purge volume that ensures at least two plunger strokes and press ENTER. The Main Menu displays.</p> <p>Note: the first stroke moves all medium from the sampling lines to the return lines. The second stroke draws air into the sampling lines and purges the remaining medium from the return lines. As with priming, the longer the tubing lengths, the larger the purge volume required. This value is not used by sampling programs which have their own individual purging volume values. It is used only with the MANUAL SAMPLE and CLEAN SYSTEM keys on the VK 8000.</p>
6 Control VK 70xx	<p>Use this option to remotely control the dissolution apparatus from the VK 8000. See "Main Menu Option 6 Control VK 70xx" on page 67.</p>
7 Manual Operation	<p>Use this option to manually control the VK 8000. See "Main Menu Option 7 Manual Operation" on page 68.</p>

Main Menu Option 1 Set Clock/Alarms

From the Main Menu, select option 1, Set Clock/Alarms. The Set Clock and Alarms screen displays.

SET CLOCK AND ALARMS	
1 SET CLOCK	2 TIMER ALARM
3 ROW COMPL ALARM	4 CALIB. COMPL ALARM
5 PRG COMPL ALARM	6 START OUTPUT DELAY

Following is a description of the Set Clock and Alarms screen options:

Option	Function
1 Set Clock	Select option 1, Set Clock. Enter the date in the appropriate format and press ENTER . The time displays in 24-hour format. If the time is correct, press ENTER or ESC to return to the Main Menu. If the time is incorrect, enter the correct time in 24-hour format and press ENTER . The Set Clock and Alarms screen displays.
2 Timer Alarm	Use this option to set the elapsed timer alarm. The elapsed timer alarm is a simple timer you can use to time any interval from 1 minute to 99 hours. The alarm sounds when the time has expired. Once turned off, the timer does not operate again until you reset it. Select option 2, Timer Alarm. Enter a duration in hh:mm format and press ENTER . The Set Clock and Alarms screen displays. Press any key to silence the alarm after it sounds.
3 Row Compl Alarm	Use this option to set an alarm to indicate the completion of each sample point. This alarm is useful when the samples must be checked or removed for immediate analysis. Select option 3, Row Compl Alarm. Select option 1 to enable or option 2 to disable the alarm. The Set Clock and Alarms screen displays. Press any key to silence the alarm after it sounds.

Option	Function
4 Calib. Compl Alarm	<p>Use this option to set an alarm to sound when autocalibration is complete and all lines are purged.</p> <p>Select option 4, Calib. Compl Alarm. Select option 1 to enable or option 2 to disable the alarm. The Set Clock and Alarms screen displays.</p> <p>Press any key to silence the alarm after it sounds.</p> <p>Note: this option is only available if your system configuration includes the peristaltic pump.</p>
5 Prg Compl Alarm	<p>Use this option to set an alarm to sound at the end of the program. It is a useful reminder that the program is complete.</p> <p>Select option 5, Prg Compl Alarm. Select option 1 to enable or option 2 to disable the alarm. The Set Clock and Alarms screen displays.</p> <p>Press any key to silence the alarm after it sounds.</p>
6 Start Output Delay	<p>Note: option 6 displays only when the syringe pump is enabled.</p> <p>If the syringe pump is enabled, use this option to set the delay from the start of a program until the TTL signal is sent from the START OUTPUT jack on the VK 8000 rear panel.</p> <p>Select option 6, Start Output Delay. The Start Output Delay screen displays. Enter a delay length of up to 99:59 minutes for the VK 8000 TTL output and press ENTER. The Set Clock and Alarms screen displays.</p> <p>Note: this output signal can be used to start other instrumentation, such as a dissolution apparatus, after the program on the VK 8000 is started. The default delay is 00:00, indicating that the signal will be sent at the moment a program starts. For example, a value of 10:00 delays the signal for ten minutes after the program starts. Set the value to 00:00 to eliminate the delay feature.</p> <p>When the syringe pump is disabled, this option displays under the Main Menu. See "3 Start Output Delay (peristaltic pump)" on page 58.</p>

Main Menu Option 2 Set VK 70xx

From the Main Menu, select option **2**, Set VK 70xx. Enter a program number and press **ENTER**. The VK 70xx Parameters screen displays.

VK 70xx PARAMETERS	
1 SET SPINDLE RPM	4 SET BATH TEMP (VESSEL TEMP)
2 FINAL SPIN LENGTH	5 COM PORT ID
3 INI/FINAL VESSEL TEMP	6 DDM OR BASKET
	7 PRINT FREQ

Following is a description of the VK 70xx Parameters screen options:

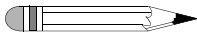
Option	Function
1 Set Spindle RPM	Select option 1 , Set Spindle RPM. The Parameter for Manual or Program screen displays. Select option 1 , Manual, to set an RPM to be used as the default for manual operation (see "Main Menu Option 6 Control VK 70xx" on page 67). Optionally, select option 2 , Program, to set an RPM to be used as a default for programmed operation (see "Start Program" on page 79). Enter the desired RPM and press ENTER . The VK 70xx Parameters screen displays.
2 Final Spin Length	Select option 2 , Final Spin Length, to program a short, high-speed spin cycle at 250 RPM at the end of the test. Enter a duration for the final spin and press ENTER . The VK 70xx Parameters screen displays. Note: many dissolution protocols now call for an infinity sample to be taken after the end of the test.
3 Ini/Final Vessel Temp	Select option 3 , Ini/Final Vessel Temp. The Initial Vessel Temp Measurement screen displays. Select option 1 to enable or option 2 to disable the initial vessel temperature reading. The Final Vessel Temp Measurement screen displays. Select option 1 to enable or option 2 to disable the final vessel temperature reading. The VK 70xx Parameters screen displays.

Option	Function
4 Set Bath Temp 4 Vessel Temp	<p>If your system configuration includes a VK 7000 / 7010 / 7020 / 7020 S / 7025, select option 4, Set Bath Temp. If your system configuration includes a VK 7030, select option 4, Vessel Temp.</p> <p>Select option 1, Manual, to set the water bath / vessel temperature. Optionally, select option 2, Program, to set a desired water bath / vessel temperature to download to the dissolution apparatus. Enter the desired temperature and press ENTER. The VK 70xx Parameters screen displays.</p>
5 Com Port ID	<p>Select option 5, Com Port ID, to change the communication port identification number. Your system was shipped with the communication port identification number set to 01. You can set the identification number to any number between 1 and 99. The identification number is used when multiple units are connected in series so that the controlling or master VK 8000 can start individual units.</p> <p>Enter the communication port identification number and press ENTER. The VK 70xx Parameters screen displays.</p>
6 DDM or Basket	<p>Select option 6, DDM or Basket, to select the apparatus type. The Select Basket or Paddle of VK 70xx screen displays.</p> <p>If using baskets, select option 1, Basket. The VK 70xx Parameters screen displays.</p> <p>If using paddles and sequential delivery, select option 2, Paddle. The Dosage Delivery Mode of VK 70xx screen displays. Select option 1, Sequential, enter a time interval for the dosage drop and press ENTER. The VK 70xx Parameters screen displays.</p> <p>Note: only use the sequential delivery option if your dissolution apparatus is equipped with clutches.</p> <p>If using paddles and simultaneous delivery, select option 2, Paddle. The Dosage Delivery Mode of VK 70xx screen displays. Select option 2, Simultaneous. The VK 70xx Parameters screen displays.</p>

Option	Function
7 Print Freq	<p>The dissolution apparatus status prints at each sample timepoint. Select option 7, Print Freq, to set additional times to print the dissolution apparatus status. This option should be reserved for use when there is more than 30 minutes between sample timepoints.</p> <p>Enter a print frequency and press ENTER. The VK 70xx Parameters screen displays.</p> <p>The print frequency timer restarts after each sample timepoint.</p> <p>Note: the status does not print if the specified print frequency is less than three minutes from the sample timepoint; the sample timepoint takes precedence.</p>

Once all values have been entered, press **ESC**. A confirmation screen displays. Press **Y** to send the newly entered configuration to the dissolution apparatus and override the existing settings.

Main Menu Option 3 Set Syringe Pump (Syringe Pump)

	<p>Note</p> <p>Ensure the syringe pump is enabled prior to setting the syringe pump parameters (see MENU > 0 > P under "Hidden Key Functions" on page 53).</p>
-------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------

From the Main Menu, select option **3**, Set Syringe Pump. Select option **1** to enable the syringe pump. Once enabled, the Set Syringe Pump Parameters screen displays.

SET SYRINGE PUMP PARAMETERS	
1 SYRINGE SIZE	2 PLUNGER SPEED
3 PRIME LOSS VOLUME	4 ASPIRT. DWELL TIME

Following is a description of the Set Syringe Pump Parameters screen options:

Option	Function
1 Syringe Size	<p>Use this option to set the syringe size.</p> <p>Select option 1, Syringe Size. Select the syringe size that corresponds with the Kloehe syringes loaded into the syringe pump. The Set Syringe Pump Parameters screen displays.</p>
2 Plunger Speed	<p>Use this option to configure the syringe pump plunger to operate at a specific speed.</p> <p>Select option 2, Plunger Speed. Enter a plunger speed between 100 and 1500 motor steps per second (sps) and press ENTER. The recommended value is 500. The Set Syringe Pump Parameters screen displays.</p>
3 Prime Loss Volume	<p>Use this option to configure the prime loss volume. Prime loss volume compensates for the volume of medium used to fill the tubing between the sampling cannulas and sampling valves during the priming cycle. When sampling, an amount of sample equal to the prime loss volume flows past the valves in the VK 8000 before the valves open to collect sample. The program also restricts this volume to be less than or equal to the syringe size volume.</p> <p>Select option 3, Prime Loss Volume. Enter a prime loss volume based on the sample tubing length, inner diameter, and system dead volumes and press ENTER. The Set Syringe Pump Parameters screen displays.</p> <p>If the tubing length between the sampling cannulas and sampling valves is changed, adjust the prime loss volume accordingly.</p>
4 Aspart. Dwell Time	<p>Use this option to configure the aspiration dwell time. Aspiration dwell time is the time the syringe plunger pauses at the bottom of a stroke to allow the medium being drawn to overcome the vacuum generated by the drawn plunger.</p> <p>Select option 4, Aspart. Dwell Time. Enter an aspiration dwell time between 1 and 10 seconds and press ENTER. The recommended time is 10 seconds. The Set Syringe Pump Parameters screen displays.</p>

Option	Function
5 Full Stroke (hidden option)	<p>Use this option to configure the number of steps the stepper motor makes to draw the syringe plunger its maximum stroke length.</p> <p>Select option 5, Full Stroke. Enter a full stroke value between 0 and 19999 and press ENTER. The recommended value is 19300. The Set Syringe Pump Parameters screen displays.</p> <p>If the volume dispensed by the syringe is outside of the required specifications, the full stroke value can be adjusted using the following calculation and solving for x:</p> $\frac{\text{target volume (mL)}}{x} = \frac{\text{avg volume dispensed (mL)}}{19300}$
6 Pump Current (hidden option)	<p>Use this option to configure the pump current. The use of more viscous media requires a higher pump current.</p> <p>Select option 6, Pump Current. Enter a pump current between 0 and 8 and press ENTER. The recommended value is 4. The Set Syringe Pump Parameters screen displays.</p>

Main Menu Option 6 Control VK 70xx

From the Main Menu, select option **6**, Control VK 70xx. The VK 70xx Control/Monitor screen displays.

VK 70xx CONTROL/MONITOR				
1 RUN	2 STOP	3 LIFT	4 LOWER	5 STILL
SET RPM: 100.0	ACTUAL RPM: 000.0			
SET BATH TEMP: 37.5	ACTUAL TEMP: 37.5			

The following options are commands communicated from the VK 8000 to the dissolution apparatus:

Option	Function
1 Run	Select option 1 , Run, to start the paddle or basket rotation at the last set RPM.
2 Stop	Select option 2 , Stop, to stop the rotation of the paddles or baskets.

Option	Function
3 Lift	Select option 3, Lift, to raise the dissolution apparatus drive unit.
4 Lower	Select option 4, Lower, to lower the dissolution apparatus drive unit.
5 Still	Select option 5, Still, to stop the upward or downward movement of the dissolution apparatus drive unit.

All functions are executed immediately without pressing ENTER. Press **ESC** to return to the Main Menu.



Caution

After selecting option 3, Lift, or option 4, Lower, the drive unit can only be stopped by selecting option 5, Still, or by pressing **DRIVE UP**, **DRIVE DOWN**, or **LIFT ▲** or **▼** on the dissolution apparatus.

Main Menu Option 7 Manual Operation

From the Main Menu, select option 7, Manual Operation.

The following Manual Operations screen displays when your system configuration includes the peristaltic pump:

MANUAL OPERATIONS	
1 LIFT VALVES	2 LOWER VALVES
3 OPEN/CLOSE VALVES	4 GOTO ROWS
5 TURN ON (OFF) R-M PUMP	

The following Manual Operations screen displays when your system configuration includes the syringe pump with or without the filter changer:

MANUAL OPERATIONS	
1 LIFT VALVES	2 LOWER VALVES
3 OPEN/CLOSE VALVES	4 GOTO ROWS
5 TURN ON (OFF) R-M PUMP	6 SYRINGE/FILTER

All functions execute immediately without pressing ENTER. Press **ESC** to return to the Main Menu.

Following is a description of the Manual Operations screen options:

Option	Function
1 Lift Valves	Select option 1, Lift Valves, to raise the valve needles if lowered.
2 Lower Valves	Select option 2, Lower Valves, to lower the valve needles if raised.
3 Open/Close Valves	Select option 3, Open/Close Valves, to toggle the valves open and closed.
4 Goto Rows	Select option 4, Goto Rows, to move the VK 8000 dispensing arm to a specific row. Enter a row number. The dispensing arm moves to the indicated row and stops. If the moving alert is enabled, the alarm sounds when the dispensing arm moves. To disable the alert, see MENU > 0 > B under "Hidden Key Functions" on page 52.
5 Turn On (Off) R-M Pump	Select option 5, Turn On (Off) R-M Pump, to toggle the replacement media option off and on, if installed.
6 Syringe/Filter (syringe pump only)	Use this option to manually control the syringe pump and filter changer as applicable. See "Manual Operation Option 6 Syringe/Filter" below.

Manual Operation Option 6 Syringe/Filter

From the Manual Operations screen, select option 6, Syringe/Filter. The Operate Syringe/Filter Changer screen displays.

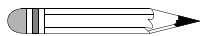
OPERATE SYRINGE/FILTER CHANGER	
1 VALVE TO INPUT	2 VALVE TO OUTPUT
3 SYRINGE FILL	4 SYRINGE DISPENSE
5 FILTER CHANGER	6 SYRINGE PARAMETERS

Following is a description of the Operate Syringe/Filter Changer screen options:

Option	Function
1 Valve to Input	<p>The syringe pump contains a valve to control the direction of the flow of media. Use this option to move the valve to the input position to manually input or fill the syringe with media.</p> <p>Select option 1, Valve to Input, to move the valve to the input position. The valve emits a loud click when it moves. If you hear no sound, the valve is already in the input position.</p>
2 Valve to Output	<p>The syringe pump contains a valve to control the direction of the flow of media. Use this option to move the valve to the output position to manually output or purge the syringe of media.</p> <p>Select option 2, Valve to Output, to move the valve to the output position. The valve emits a loud click when it moves. If you hear no sound, the valve is already in the output position.</p>
3 Syringe Fill	<p>Use this option to draw a specific amount of medium into the syringes. Ensure the valve is in the input position before drawing the medium (see "1 Valve to Input" above).</p> <p>Select option 3, Syringe Fill. Enter the desired percentage of each syringe to fill and press ENTER. The syringes draw the specified amount of medium.</p>
4 Syringe Dispense	<p>Use this option to dispense medium from the syringes.</p> <p>Select option 4, Syringe Dispense. The syringes dispense the previously drawn medium (see "3 Syringe Fill" above).</p>
5 Filter Changer	<p>Use this option to manually operate the filter changer.</p> <p>Select option 5, Filter Changer. The Filter Change Manual Control screen displays.</p> <p>To open the filter clamp, select option 1, Open Clamp.</p> <p>To close the filter clamp, select option 2, Close Clamp.</p> <p>To change the filters, select option 3, Change Filters. Enter the number of filters to change and press ENTER. The specified number of filters are expelled and replaced.</p> <p>Press ESC to return to the Operate Syringe/Filter Changer screen.</p>

Option	Function
6 Syringe Parameters	Use this option to configure the syringe pump. Select option 6, Syringe Parameters. The Set Syringe Pump Parameters screen displays. For a description of the screen options, see "Main Menu Option 3 Set Syringe Pump (Syringe Pump)" on page 65. Note: the syringe pump parameters are global. These parameters can be entered under option 3 of the Main Menu or option 6 of the Operate Syringe/Filter Changer screen.

Printer Operation and Communications



Note

Ensure the printer type is set to impact for the instrument to operate properly (see MENU > 0 > E under "Hidden Key Functions" on page 52).

Use print options to

- print batch information and sample times for each of the 15 stored programs.
- control the built-in Report Center Printer and the remote printer (if one is connected).
- set the communication port identification number and the baud rate.

Press **PRINT**. Enter a program number and press **ENTER**. The Print Selections screen displays.

PRINT SELECTIONS	
1 BATCH INFORMATION	2 SAMPLE TIMES
3 TURN ON (OFF) REP CENTER	4 SET COM PORT ID
5 SET BAUD RATE	

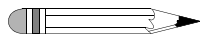
Following is a description of the Print Selections screen options:

Option	Function
1 Batch Information	Select option 1, Batch Information, to immediately print the previously entered batch information, if any, for the selected program. This printed data is the header information you can enter via option 4, Headers, on the Program Variables screen (see "4 Headers" on page 75).
2 Sample Times	Select option 2, Sample Times, to immediately print the sampling times for each row of the selected program. This is the complete listing of all timepoints entered in option 2, Sample Time Points, under the Program Variables screen (see "Program Option 2 Sample Time Points" on page 78).
3 Turn On (Off) Rep Center	Select option 3, Turn On (Off) Rep Center, to enable or disable the Report Center Printer. This option always reflects the opposite of the current state of the Report Center Printer. For example, if it is currently disabled, TURN ON REP CENTER displays next to option 3. Note: the state of the Report Center Printer is not unique to an individual program. It is global. When you enable or disable it, the Report Center Printer stays enabled or disabled until you change it again, even if you switch programs.
4 Set Com Port ID	Select option 4, Set Com Port ID, to enter a new communication port identification number. Your system was shipped with the communication port identification number set to 01. You can set the identification number to any number between 1 and 99. The identification number is used when multiple units are connected in series so that the controlling or master VK 8000 can start individual units. Enter the communication port identification number and press ENTER . The Print Selections screen displays.

Option	Function
5 Set Baud Rate	Select option 5 , Set Baud Rate, to set the baud rate for your system. If you are using the VK 8000 with other Varian equipment, set the baud rate to 9600 baud (option 4). Select the desired baud rate from the menu. The Print Selections screen displays. Note: in order to set the baud rate from this option, the baud rate must be set to programmable baud (see MENU > 0 > 8 under "Hidden Key Functions" on page 52).

Programming the VK 8000

Note

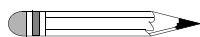


Programs are not write-protected. Check with other users before proceeding.

To program the VK 7020 / 7020 S / 7025 / 7030 with the VK 8000, you must enable external control on the dissolution apparatus and log out. For more information, see the *VK 7020 / 7020 S / 7025 Dissolution Apparatus Operator's Manual* or *VK 7030 Dissolution Apparatus Operator's Manual*.

- Step 1. From the Ready screen, press **PROG** to program the VK 8000.
- Step 2. Enter a program number and press **ENTER**. The Program Variables screen displays, as shown on page 74. Each option is explained on the following pages.

Note



The VK 8000 can store up to 15 programs in non-volatile memory. Valid program numbers are 1 to 15. If 0 (zero) or a number larger than 15 is entered, the system continues to prompt you until a valid number is entered.

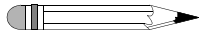
The following Program Variables screen displays when your system configuration includes the peristaltic pump:

PROGRAM VARIABLES	
1 SET VK 70xx PARAMETERS	4 HEADERS
2 SAMPLE TIME POINTS	5 PRIME TIME
3 SAMPLE VOLUME	6 PURGE TIME
	7 R-M

The following Program Variables screen displays when your system configuration includes the syringe pump with or without the filter changer:

PROGRAM VARIABLES	
1 SET VK 70xx PARAMETERS	4 HEADERS
2 SAMPLE TIME POINTS	5 PRIME VOLUME
3 SAMPLE VOLUME	6 PURGE VOLUME
	7 FILTER CHG or R-M

Note



If your system configuration includes the syringe pump and filter changer, option 7 displays as Filter Chg. See “7 Filter Chg (syringe pump and filter changer)” on page 77.

If your system configuration includes the syringe pump but not the filter changer, option 7 displays as R-M. See “7 R-M (syringe pump)” on page 77.

Following is a description of the Program Variables screen options:

Option	Function
1 Set VK 70xx Parameters	Use this option to set the dissolution apparatus parameters. Select option 1, Set VK 70xx Parameters. The VK 70xx Parameters screen displays. See “Main Menu Option 2 Set VK 70xx” on page 63 for a description of the VK 70xx Parameters screen options.
2 Sample Time Points	Use this option to enter the sample timepoints. See “Program Option 2 Sample Time Points” on page 78.

Option	Function
3 Sample Volume	<p>Select option 3, Sample Volume. Enter the sample volume in milliliters and press ENTER. The program Variables screen displays. You can enter the volume with up to three digits (for example 13.5) so that fractional milliliters can be collected. Verify the collection tubes can hold the requested volume.</p> <p>Note: the maximum volume accepted is 14 mL.</p>
4 Headers	<p>Select option 4, Headers. The Batch # Selections screen displays. For each option, enter the desired information and press ENTER. Press ESC to return to the Program Variables screen.</p> <p>Note: the Batch # Selections screen displays options for the report header information. The print field accepts ten characters. Characters can be letters, numbers, special characters or spaces. The information entered for each selection prints in the header of each printout. The entries made from this menu are attached to the active program. Since there are 15 programs, there can be a different set of entries for each. All are stored in the battery-protected memory and remain until changed via this menu.</p>
5 Prime Time (peristaltic pump)	<p>If your system configuration includes the peristaltic pump, use this option to set the interval the peristaltic pump runs forward, drawing medium into the system, before the valves open to deliver samples. Select option 5, Prime Time. Enter a value for the priming time from 1 to 99 seconds and press ENTER. The Program Variables screen displays.</p> <p>Note: at a minimum, the prime time should be long enough for medium to be seen dripping from the return cannulas. In general, the longer the tubing lengths, the longer the priming time required.</p>

Option	Function
5 Prime Volume (syringe pump)	<p>If your system configuration includes the syringe pump, use this option to set the amount of drawn medium necessary to fill the sampling lines of the entire system.</p> <p>Select option 5, Prime Volume. Enter a value for the priming volume and press ENTER. The Program Variables screen displays.</p> <p>Note: at a minimum the prime volume should be large enough for medium to be seen dripping from the return cannulas. In general, the longer the tubing lengths, the larger the prime volume required.</p>
6 Purge Time (peristaltic pump)	<p>If your system configuration includes the peristaltic pump, use this option to set the interval the peristaltic pump runs in reverse to return the uncollected medium in each line back into the vessel from which it was drawn.</p> <p>Select option 6, Purge Time. Enter a value for the purge time from 1 to 99 seconds and press ENTER. The Program Variables screen displays.</p> <p>Note: purging also clears the sampling filters of particulate matter that may restrict successive samples. As with priming, the longer the tubing lengths, the longer the purge time required.</p>
6 Purge Volume (syringe pump)	<p>If your system configuration includes the syringe pump, use this option to set a purge volume that ensures all stranded medium is properly expelled.</p> <p>Select option 6, Purge Volume. Enter a value for the purge volume that ensures at least two strokes of the syringe plunger and press ENTER. The Program Variables screen displays.</p> <p>Note: the first stroke moves all medium from the sampling lines to the return lines. The second stroke draws air into the sampling lines and purges the remaining medium from the return lines. As with priming, the longer the tubing lengths, the larger the purge volume required.</p>

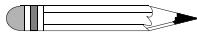
Option	Function
7 R-M (peristaltic pump)	<p>If your system configuration includes the peristaltic pump, select option 7, R-M. The Replacement Media Option screen displays. Select option 1, Enable. Enter the desired percentage of replacement medium and press ENTER. Optionally, select option 2, Disable. The Program Variables screen displays.</p> <p>Note: if the RM option is not installed, select option 2, Disable.</p>
7 Filter Chg (syringe pump and filter changer)	<p>If your system configuration includes the syringe pump and filter changer, select option 7, Filter Chg. Enter the desired number of samples each filter should process before being discharged and press ENTER. The recommended value is 1. The Program Variables screen displays.</p> <p>Note: if your system configuration includes the syringe pump and filter changer, ensure the syringe pump option is enabled. From the Ready screen, press MENU. Select option 3, Set Syringe Pump. Select option 1, Enable. Also press MENU > 0 > P and select option 1, Enable.</p> <p>The replacement media option is not available with this system configuration. Ensure the RM option for the syringe pump is disabled using the hidden key function MENU > 0 > R.</p>
7 R-M (syringe pump)	<p>If your system configuration includes the syringe pump but not the filter changer, select option 7, R-M. The Replacement Media Option screen displays. Select option 1, Enable, or option 2, Disable. If the RM option is not installed, select option 2, Disable. The Program Variables screen displays.</p> <p>Note: if your system configuration includes the syringe pump, ensure the syringe pump option is enabled. From the Ready screen, press MENU. Select option 3, Set Syringe Pump. Select option 1, Enable. Also press MENU > 0 > P and select option 1, Enable.</p> <p>If your system configuration includes the syringe pump but not the filter changer, use the hidden key function MENU > 0 > R to enable or disable the RM option, as appropriate. If the RM option is not installed, select option 2, Disable.</p>

Program Option 2 Sample Time Points

From the Program Variables screen, select option **2**, Sample Time Points. The following screen displays:

```
SAMPLE TIME POINT: 000:02
ENTER hhh:mm UP TO 999:59 HOURS
PROG #: 1 ROW: 0 VOLUME: 5ml
TIME:08/29/04 09:37:14 ELAPSE:000:00:00
```

Note

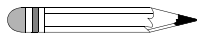


This screen accepts sampling times and saves them for execution when the program is run. Timepoints are requested in order of execution starting with collection row 0 on the sample tray. The sample time is entered as hours and minutes. Once you enter a time, the row number increments and another sample timepoint is requested.

The following conventions are used with this screen:

- Review previously entered sample timepoints by pressing **ENTER** to scroll through the entries.
- After all desired sample timepoints have been entered, enter **000:00** for the last sample timepoint and press **ENTER**. If the maximum of ten sample timepoints are entered, you do not have to enter 000:00 for the last sample timepoint.

Note

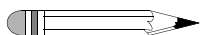


If a sample timepoint is required after the final spin (250 RPM), enter a maximum of nine sample timepoints. The firmware accounts for the final spin sample, but the tenth space must be left blank.

- To add additional sample timepoints, press **ENTER** until a new row time displays. Enter the additional sample timepoint.
- If more than ten sample timepoints are needed, use the link program feature. See "Start Program" on page 79.

- To correct an entry, press **BACKSPACE** to go to the previous character position and re-enter the correct value.
- If a shorter sample timepoint than the previous one is entered for a given row, the row number will not increment. Times must increase from one row to the next.
- To shorten a saved program, enter **000:00** for the first sample timepoint you wish to discard. All successive timepoints are eliminated.
- Press **ESC** to save all new values and return to the Program Variables screen.

Note

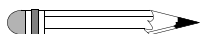


Sample timepoints should be at least five minutes apart to allow adequate time for priming and purging the sampling lines. If your system configuration includes the syringe pump and filter changer, ensure the sample timepoints are at least six minutes apart.

Start Program

- Step 1. From the Ready screen, press **START PROG** to start a program or modify a program already operating. The Enter Prog screen displays.

Note



If using baskets or rotating cylinders, ensure the drive unit of the dissolution apparatus is raised to its highest position before starting the VK 8000 program.

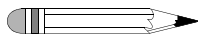
If using the VK 7020 / 7020 S / 7025 / 7030 with the VK 8000, you must enable external control on the dissolution apparatus and log out. For more information, see the *VK 7020 / 7020 S / 7025 Dissolution Apparatus Operator's Manual* or *VK 7030 Dissolution Apparatus Operator's Manual*.

- Step 2. Enter a program number between 1 and 15 and press **ENTER**. The Link Program Option screen displays.

```
***LINK PROGRAM OPTION***  
1 RUN SINGLE PROG      2 LINK ANOTHER PROG  
  
TIME: 08/29/04  15:02:30  ELAPSE: 000:00:04
```

- Step 3. To run a single program, select option 1.

Note



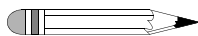
If more than ten rows are required to collect samples, linking a program allows you to run two programs with identical test parameters back to back. To link identical programs, link the program to itself.

To link another program to the one previously selected, select option 2. The following screen displays:

```
LINK PROG #: (1-15):__  
  
TIME: 08/29/04  15:02:30  ELAPSE: 000:00:04
```

Enter the program number to link to the current program and press **ENTER**.

Note



When running two programs, it is necessary to replace the full sample tray with an empty one between programs. Enable the program completion alarm (see "5 Prg Compl Alarm" under "Main Menu Option 1 Set Clock/Alarms" on page 62) to alert the analyst when the first program completes and the second program begins.

Step 4. The Select Start Mode screen displays. Options 1 - 3 start the collection program. Option 4 allows you to change or review the program before beginning.

SELECT START MODE	
1 START NOW	2 DELAYED START
3 REMOTE START	4 MODIFY PROGRAM
PROG#: 1 R-M: DISABLED	VOL: 5 ml

Following is a description of the Select Start Mode screen options:

Option	Function
1 Start Now	Select option 1, Start Now. The VK 70xx Options screen displays. See "VK 70xx Options Screen" on page 82.
2 Delayed Start	Select option 2, Delayed Start. The VK 70xx Options screen displays. See "VK 70xx Options Screen" on page 82.
3 Remote Start	This option is designed for use with the VK 8000 coupled with non-Varian dissolution apparatus. Contact the Dissolution Systems Service Department for information about this function.
4 Modify Program	Select option 4, Modify Program, to modify or review the selected program. See "Programming the VK 8000" on page 73 to review programming options. All program variable items can be viewed or changed. Press ESC to return to the Select Start Mode screen. Selecting option 4 again repeats the modify program operation. When the program is verified or changed to the correct configuration, select the desired start mode (option 1 - 3) to start the program.

VK 70xx Options Screen

VK 70xx OPTIONS	
1 LOAD & RUN VK 70xx	2 RUN WO/ LOADING
3 RUN VK 8000 ONLY	4 SET VK 70xx
TIME: 08/29/04 08:09:51 ELAPSE: 000:00:00	

Following is a description of the VK 70xx Options screen options:

Option	Start Now Function	Delayed Start Function
1 Load & Run VK 70xx	Use this option to upload all saved parameters to the dissolution apparatus and start the program. Select option 1 , Load & Run VK 70xx. The Select VK 70xx Program Start Mode screen displays. See "Select VK 70xx Program Start Mode Screen" on page 83.	
2 Run WO/ Loading	Use this option to program and run the VK 8000 without loading and overriding dissolution apparatus settings. Select option 2 , Run WO/ Loading. The Select VK 70xx Program Start Mode screen displays. See "Select VK 70xx Program Start Mode Screen" on page 83.	
3 Run VK 8000 Only	Select option 3 , Run VK 8000 Only, to immediately start the VK 8000 only. The VK 8000 executes the program currently selected. This option is used when other instrumentation, such as a dissolution apparatus, is connected to the VK 8000 through the START OUTPUT jack on the rear of the instrument.	Select option 3 , Run VK 8000 Only, to start the VK 8000 only. Enter the start time in 24-hour format and press ENTER . Enter the start date in the appropriate format and press ENTER . The VK 70xx Options screen displays. If the delayed start alarm is enabled, enter the duration before the start of the program you would like the alarm to sound. To disable the alarm, see MENU > 0 > C under "Hidden Key Functions" on page 52. This option is used when other instrumentation, such as a dissolution apparatus, is connected to the VK 8000 through the START OUTPUT jack on the rear of the instrument.

Option	Start Now Function	Delayed Start Function
4 Set VK 70xx	Use this option to modify or review the current program parameters. Select option 4, Set VK 70xx. The Set VK 70xx Parameters screen displays. See "Main Menu Option 2 Set VK 70xx" on page 63 for a description of the VK 70xx Parameters screen options.	

Select VK 70xx Program Start Mode Screen

```

***SELECT VK 70xx PROGRAM START MODE***
1 INSTANT    2 SET VESSEL TEMP AND START

TIME: 08/29/04 08:09:51    ELAPSE: 000:00:00
    
```

Following is a description of the Select VK 70xx Program Start Mode screen options:

Option	Start Now Function	Delayed Start Function
1 Instant	Select option 1, Instant, to start the dissolution apparatus instantly. To stop the dissolution apparatus, press ESC . A confirmation screen displays. Press Y to stop the program. Press N to continue running the program.	Select option 1, Instant, to set the desired time to start the dissolution apparatus. Enter the start time in 24-hour format and press ENTER . Enter the start date in the appropriate format and press ENTER . The screen displays the program information, including the entered start time and date. If the delayed start alarm is enabled, enter the duration before the start of the program you would like the alarm to sound. To disable the alarm, see MENU > 0 > C under "Hidden Key Functions" on page 52. Press ESC to cancel the delayed start.

Option	Start Now Function	Delayed Start Function
2 Set Vessel Temp And Start	Select option 2, Set Vessel Temp And Start, to set the temperature the vessels have to reach to initiate the test. Enter the desired vessel temperature and press ENTER . The program starts once the set vessel temperature is reached.	Select option 2, Set Vessel Temp And Start, to set the temperature the vessels have to reach to initiate the test. Enter the desired vessel temperature and press ENTER . Enter the start time in 24-hour format and press ENTER . Enter the start date in the appropriate format and press ENTER . The screen displays the program information, including the entered start time and date. If the delayed start alarm is enabled, enter the duration before the start of the program you would like the alarm to sound. To disable the alarm, see MENU > 0 > C under "Hidden Key Functions" on page 52. Press ESC to cancel the delayed start.

Manual Sample

From the Ready screen, press **MANUAL SAMPLE** to collect a sample from the dissolution vessels on command without a program. These options are only for manual sampling and have nothing to do with the stored program parameters for purge volume, prime volume, and so on.

When your system configuration includes the peristaltic pump, the following Manual Sampling screen displays:

MANUAL SAMPLING					
1 START	2 SET ROW #	3 SET VOLUME			
4 PRIME TIME	5 PURGE TIME	6 R-M OPTION			
ROW 3	VOLUME 5ml	PRIME 60	PURGE 60		

When your system configuration includes the syringe pump with or without the filter changer, the following Manual Sampling screen displays:

MANUAL SAMPLING			
1 START	2 SET ROW #	3 SET VOLUME	
4 PRIME VOL.	5 PURGE VOL.	6 R-M OPTION	
ROW 3	VOLUME 5ml	PRIME 10	PURGE 20

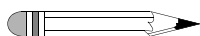
Following is a description of the Manual Sampling screen options:

Option	Function
1 Start	Select option 1, Start, to start the manual sampling procedure using the values you enter for options 2 through 6 on the Manual Sampling screen. The display screen details each step of the manual collection as it takes place. Note: select this option last.
2 Set Row #	Select option 2, Set Row #. Enter the row number between 0 and 9 where you want the samples deposited in the sample tray and press ENTER . The Manual Sampling screen displays.
3 Set Volume	Select option 3, Set Volume. Enter a sampling volume between 0 and 14 mL and press ENTER . The Manual Sampling screen displays. Note: the volume can contain a decimal point so that fractional milliliters can be collected. Be sure not to request more volume than the collection tubes can contain.
4 Prime Time (peristaltic pump)	Select option 4, Prime Time. Enter a value for the priming time and press ENTER . The Manual Sampling screen displays. Note: the priming time is the interval the peristaltic pump runs forward, drawing media into the system, before the valves open to deliver samples.
4 Prime Vol (syringe pump)	Select option 4, Prime Vol. Enter a value for the priming volume and press ENTER . The Manual Sampling screen displays. Note: the priming volume is the amount of drawn medium necessary to fill the sampling lines of the entire system.

Option	Function
5 Purge Time (peristaltic pump)	Select option 5 , Purge Time. Enter a value for the purging time and press ENTER . The Manual Sampling screen displays. Note: the purging time is the interval the peristaltic pump runs in reverse to return the uncollected medium in each line back into the vessel from which it was drawn. Purging also clears the sampling filters of particulate matter that may restrict successive samples.
5 Purge Vol (syringe pump)	Select option 5 , Purge Vol. Enter a value for the purging volume that ensures at least two strokes of the syringe plunger and press ENTER . The Manual Sampling screen displays. Note: the first stroke moves all medium from the sampling lines to the return lines. The second stroke draws air into the sampling lines and purges the remaining medium from the return lines. This ensures all stranded medium is properly expelled.
6 R-M Option	Select option 6 , R-M Option. The Replacement Media Option screen displays. Select option 1 to enable media replacement. Optionally, select option 2 to disable media replacement. The Manual Sampling screen displays. Note: if the VK 8000 is not equipped with the RM option, select option 2, Disable. This option does not display if your system configuration includes the filter changer. If your system configuration includes the syringe pump, use the hidden key function MENU > 0 > R to enable or disable the RM option, as appropriate.

Volumetric Calibration

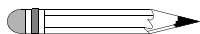
Note



The CAL key on the VK 8000 can be used only if the peristaltic pump is installed on your system. To calibrate the syringes in the VK 806 Syringe Pump, see “5 Full Stroke (hidden option)” under “Main Menu Option 3 Set Syringe Pump (Syringe Pump)” on page 67.

It is critical that sample volumes are accurately and precisely taken. Calibration of your system ensures this by recording in memory the time required to deliver a nominal 10 mL of medium into the graduated calibration tubes. Refer to “Automatic Calibration” below or “Manual Calibration” on page 89 for specific operating procedures necessary to calibrate your VK 8000.

Note



Ensure the cannula filters are in place during calibration.

Automatic Calibration

To perform automatic calibration, complete the following steps:

- Step 1. Ensure the correct prime and purge times have been entered via the Main Menu options 4 and 5, Manual Prime Time and Manual Purge Time, respectively (see “4 Manual Prime Time (peristaltic pump)” on page 59 and “5 Manual Purge Time (peristaltic pump)” on page 60).
- Step 2. Ensure the supplied autocalibration block is firmly in place and connected to the rear panel jack labeled AUTO CALIBRATION.
- Step 3. From the Ready screen, press **CAL**. The dispensing arm moves forward to allow you to check the autocalibration block.

- Step 4. Fill the rinse tray with tap water and lower the sampling cannulas to immerse the filters in the liquid. Alternately, place the resident probes into a container filled with tap water. The system monitor displays a reminder to ensure the tubing and pump are ready. The Calibrate Sampling Volume screen displays.

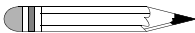
CALIBRATE SAMPLING VOLUME

CHECK PUMP & TUBING. IF AUTO CALIBRATION
INSTALL CALIB FIXTURE BEFORE STARTING!

1 MANUAL 2 AUTOMATIC

- Step 5. Select option **2**, Automatic. The dissolution apparatus sampling cannulas lower. The dispensing arm moves over the autocalibration block and primes the lines according to the manual prime settings. At the end of the priming cycle, all valves lower, open simultaneously, and begin to fill the autocalibration block. As the 10 mL point is reached in each well, the valve closes and the time value is recorded in memory. When the last valve closes, the pump reverses and purges the lines and the dispensing arm returns to its home position. The calibration completion alarm, if enabled, sounds when the calibration sequence is finished. Press any key to silence the alarm.

Note



Because of intrinsic variations in tubing diameters, internal valve passages, and pump tubing tensions, some valves must stay open longer than others to deliver their nominal 10 mL calibration volumes. This is normal operation.

- Step 6. After the dispensing arm moves forward, remove the autocalibration block.
- Step 7. Clean and dry the separate portions of the autocalibration block.
- Step 8. Reconnect the top and bottom portions of the autocalibration block and replace it.
- Step 9. Press **ESC** to return the dispensing arm to the home position.

Manual Calibration

To perform the calibration yourself, complete the following steps:

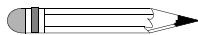
- Step 1. Remove the sample tray.
- Step 2. Ensure the correct prime and purge times have been entered via the Main Menu option 4 and 5, Manual Prime Time and Manual Purge Time, respectively (see "4 Manual Prime Time (peristaltic pump)" on page 59 and "5 Manual Purge Time (peristaltic pump)" on page 60).
- Step 3. Press **MENU**.
- Step 4. Select option **7**, Manual Operation.
- Step 5. Select option **4**, Goto Rows.
- Step 6. Enter **4** to move the dispensing arm to row 4.
- Step 7. Remove the media rinse reservoir.
- Step 8. Remove the top portion of the autocalibration block and place it on its side to prevent damage.
- Step 9. Place clean, empty 10 mL calibration tubes in the bottom portion of the autocalibration block.
- Step 10. Press **H** to return to the home position.
- Step 11. Press **ESC** three times to return to the Ready screen.
- Step 12. Fill the rinse tray with tap water and lower the sampling cannulas to immerse the filters in the liquid. Alternately, place the resident probes into a container filled with tap water.
- Step 13. Press **CAL**.

- Step 14. Select option **1**, Manual. The dissolution apparatus sampling cannulas lower. The dispensing arm moves over the autocalibration block and primes the lines according to the manual prime settings.
- Step 15. Upon completion of the priming cycle, the following screen displays:

PRESS <OPEN VALVES> TO START PRESS AGAIN WHEN 10 ML IS REACHED MANUAL CALIBRATION OF VALVE # 1 TIME: 08/29/04 21:56:40 ELAPSE: 000:00:00

- Step 16. Press **OPEN VALVES**. The first calibration tube begins filling.
- Step 17. Observe the first calibration tube and press **OPEN VALVES** again when 10 mL is reached.
- Step 18. Repeat steps 16 and 17 for the remaining calibration tubes. When the last valve is calibrated, the pump reverses and the lines are purged. The calibration completion alarm, if enabled, sounds when the calibration sequence is finished.
- Step 19. Press any key to silence the alarm.
- Step 20. After the dispensing arm moves forward, remove and clean the calibration tubes.
- Step 21. Reconnect the top and bottom portions of the autocalibration block and place them in the rear-most position between the metal brackets.
- Step 22. Press **ESC**.

Note



If you press **ESC** before all the valves are calibrated, you cancel the calibration and return to the previously saved values for each valve. None of the new calibration results are saved. The calibration must be allowed to finish before the new calibration values are saved.

- Step 23. Press **MENU**.
- Step 24. Select option **7**, Manual Operation.
- Step 25. Select option **4**, Goto Rows.
- Step 26. Enter **4** to move the dispensing arm to row 4.
- Step 27. Replace the media rinse reservoir in front of the autocalibration block.
- Step 28. Press **H** to return to the home position.
- Step 29. Press **ESC** three times to return to the Ready screen.

Checking the Calibration

Check the calibration by running a short sampling procedure and dispensing the requested volume into calibrated test tubes:

- Step 1. Place an appropriate number of 10 mL calibration tubes in row 9 of the VK 8000 sample tray, depending on the configuration of your dissolution apparatus.
- Step 2. From the Ready screen, press **MANUAL SAMPLE**.
- Step 3. Enter the following parameters:

Selection	Response
2 Set Row #	Enter 9 and press ENTER .
3 Set Volume	Enter 10 and press ENTER .
4 Prime Time	Enter 60 and press ENTER .
5 Purge Time	Enter 60 and press ENTER .
6 RM Option	No action required.

- Step 4. Verify the values for each parameter which are shown at the bottom of the display screen for this manual program.
- Step 5. If the values are correct, select option 1, Start, to start the sampling procedure. The VK 8000 dispenses 10 mL into the calibration tubes in row 9 of the sample tray.
- Step 6. Check the volume in each tube to ensure the VK 8000 is dispensing 10 ± 0.5 mL from each position.
- Step 7. If the volumes are not correct, repeat the calibration of the VK 8000 according to the procedure described on page 87 for "Automatic Calibration" or page 89 for "Manual Calibration" as appropriate.

If the volumes are correct, you are ready to use the VK 8000 to collect samples.

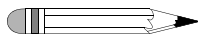
Daisy Chaining

A series of dissolution apparatus and VK 8000s can be started at the same time using one VK 8000 as the master unit. To set up a daisy chain, complete the following steps:

- Step 1. Connect the master VK 8000 START OUTPUT jack to the START INPUT jack of its dedicated dissolution apparatus using a four-pin cable. Connect the START OUTPUT jack of the first dissolution apparatus to the START INPUT jack of a second VK 8000. Connect the START OUTPUT jack of the second VK 8000 to the START INPUT jack of the second dissolution apparatus. Daisy chain successive units using the same technique.
- Step 2. Set the desired program for each VK 8000 independently.

Step 3. For each of the remote units:

Note



Ensure the communication port identification number for each linked VK 8000 increases incrementally (see “4 Set Com Port ID” under “Printer Operation and Communications” on page 72).

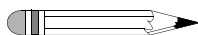
- Press **START PROG.**
- Enter the desired program number and press **ENTER.**
- Select option **1**, Run Single Prog.
- Select option **3**, Remote Start.
- Select option **1**, Load & Run VK 70xx. The program loads and the Ready screen displays.

Step 4. For the master VK 8000:

- Press **START PROG.**
- Enter the desired program number and press **ENTER.**
- Select option **1**, Run Single Prog.
- Select option **1**, Start Now.
- Select option **1**, Load & Run VK 70xx. The program starts.

Each unit starts running the program you entered.

Note



Ensure no start output delays have been set on any of the VK 8000s. See “3 Start Output Delay (peristaltic pump)” under “VK 8000 Main Menu” on page 58 or “6 Start Output Delay” under “Main Menu Option 1 Set Clock/Alarms” on page 62 depending on your system configuration.

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Chapter 9 ***Maintenance***

General Maintenance



Warning

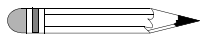
The VK 8000 and accessories contain electrical circuits, devices, and components operating at dangerous voltages. Contact with these circuits, devices, and components can cause death, serious injury, or painful electric shock.

Perform the following maintenance when necessary.

Clean System Function with Peristaltic Pump

Use the clean system function often to keep the valves, needles, and sample lines clean. The timing of the valves opening and closing with the pump rotations creates cavitation in the valves. Cleaning the system dislodges any particulate matter that may affect the operation of the system.

Note



Prior to beginning the clean system function, verify an appropriate manual prime time and purge time have been entered via the Main Menu. See “4 Manual Prime Time (peristaltic pump)” on page 59 and “5 Manual Purge Time (peristaltic pump)” on page 60.

To clean the system, complete the following steps:

- Step 1. Place the rinse tray on the vessel table of the dissolution apparatus.
- Step 2. Fill the rinse tray with an appropriate cleaning solution, usually water.
- Step 3. Fill the rinse chamber of the media rinse reservoir with an appropriate cleaning solution, usually water.
- Step 4. Lower the sampling cannulas. See the appropriate dissolution apparatus operator's manual for information on how to operate the sampling cannulas.
- Step 5. On the VK 8000, press **CLEAN SYSTEM**. The Cleaning Systems Selections screen displays.

```
***CLEANING SYSTEMS SELECTIONS***  
1 START CLEAN          2 ENABLE AUTO CLEAN  
  
TIME: 08/29/04 08:28:46  ELAPSE: 000:00:00
```

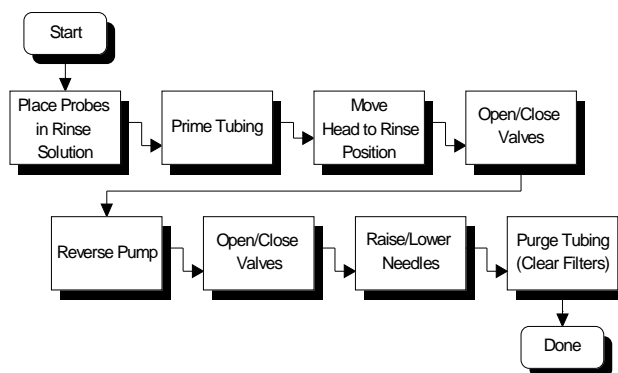
To start the cleaning process immediately, see “Start Immediately” on page 97. To program the auto clean function, see “Programmed Clean” on page 97.

Start Immediately

From the Cleaning Systems Selections screen, select option **1**, Start Clean. The VK 8000 immediately starts to clean the system by priming the lines. Once the system completes the priming, the needle manifold jogs up and down while opening and closing the valves. This motion rinses the needles in the VK 8000 rinse chamber. Then the system purges the cleaning solution from the sample lines.

The following figure is a generalized flow diagram of the clean cycle (see Figure 14, "The Cleaning Process," below). *You should use this function often.*

FIGURE 14. The Cleaning Process



Programmed Clean

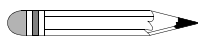
To run a program concurrently with the sampling program which rinses the needles in a predetermined cleaning solution contained in the rinse chamber, complete the following steps:

- Step 1. Ensure the rinse chamber of the media rinse reservoir is filled with the cleaning solution.

- Step 2. From the Cleaning Systems Selections screen, select option **2**, Enable Auto Clean. Option 3, Disable Auto Clean, displays on the Cleaning Systems Selections screen and option 2 changes to Program Auto Clean.

```
***CLEANING SYSTEMS SELECTIONS***  
1 START CLEAN          2 PROGRAM AUTO CLEAN  
3 DISABLE AUTO CLEAN  
TIME: 08/29/04        ELAPSE: 000:00:00
```

Note

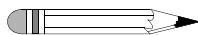


Select option **3**, Disable Auto Clean, to escape the automatic clean function and return to the original Cleaning Systems Selections screen. Select option **1**, Start Clean, from either screen to escape the automatic clean function and immediately start the cleaning process.

- Step 3. Select option **2**, Program Auto Clean. The Program Auto Clean Variables screen displays.

```
***PROGRAM AUTO CLEAN VARIABLES***  
1 CLEAN FREQUENCY    2 DRAWING MEDIA TIME  
3 PUSH FORWARD TIME  
TIME: 08/29/04 08:28:46 ELAPSE: 000:00:00
```

Note

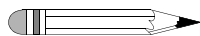


Since the cleaning program runs concurrently with the sampling program, the value entered for the clean frequency should be smaller than the sample timepoint.

Step 4. Select each option and enter the appropriate parameters as necessary based on tubing length, tubing diameter, and system dead volumes.

Option	Function
1 Clean Frequency	Select option 1 , Clean Frequency. Enter an interval of up to 99 minutes and press ENTER . The cleaning begins at this time. Note: Ensure the clean frequency is set earlier than the first sample timepoint.
2 Drawing Media Time	Select option 2 , Drawing Media Time. Enter an interval of up to 999 seconds to control the length of time the cleaning solution is drawn from the rinse chamber and press ENTER .
3 Push Forward Time	Select option 3 , Push Forward Time. Enter an interval of up to 999 seconds to indicate the length of time the solution is moved through the return lines and press ENTER .

Note



Appropriate parameters for each of the above options depends on the length and diameter of the tubing as well as the needle volume. Do not allow the cleaning solution to reach the dissolution apparatus. Once the pump reverses, the cleaning solution is expelled in the rinse chamber.

At the time set for the clean frequency (see “1 Clean Frequency” above), the VK 8000 drive unit moves to the rinse chamber and lowers the needles. The peristaltic pump draws the cleaning solution into the needles and sample lines for the length of time defined as the drawing media time (see “2 Drawing Media Time” above). The valves close and the pump pushes the cleaning solution into the return lines for the programmed push forward time (see “3 Push Forward Time” above). Ensure the length of time entered for the push forward time does not push the cleaning solution far enough to reach the dissolution apparatus or sample contamination can occur. The peristaltic pump reverses and the cleaning solution is pulled back through the sample lines. The pump reverses again, the valves open and the cleaning solution is expelled into the rinse chamber. The VK 8000 activates the valves several times to clean the valves and needles.

Clean System Function with Syringe Pump

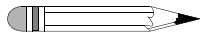
To clean the system, place the rinse tray fitted with cleaning solution, usually water, on the vessel table of the dissolution apparatus and immerse all six or eight sampling cannulas. Press **CLEAN SYSTEM**. The VK 8000 immediately starts to clean the system.

Syringe Refurbishing

The following instructions are for the Syringe Refurbishing Kit (P/N 15-5900) for use with Luer syringes (P/N 1003-0145).

The refurbishing kit contains

- white seal
- O-ring



Note

Ensure the white seal remains clean. Keep the seal free from dirt and dust.

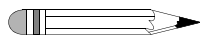
Removing a Leaking Syringe

Complete the following instructions to remove the leaking syringe from the syringe pump:

- Step 1. Lay the syringe pump on its back.
- Step 2. On the VK 8000, press **MENU > 7 > 6** (pause as unit initializes) **> 3**.
- Step 3. Enter **100** and press **ENTER**. The syringe plungers move to their lowest position. The menu remains on the VK 8000 display screen for later use.
- Step 4. Unscrew the locking screw at the base of the leaking syringe.
- Step 5. Remove the screw and gently remove the plunger from the syringe barrel.

- Step 6. Unscrew the syringe barrel by turning the metal fitting on top of the syringe barrel counterclockwise until the syringe comes free.

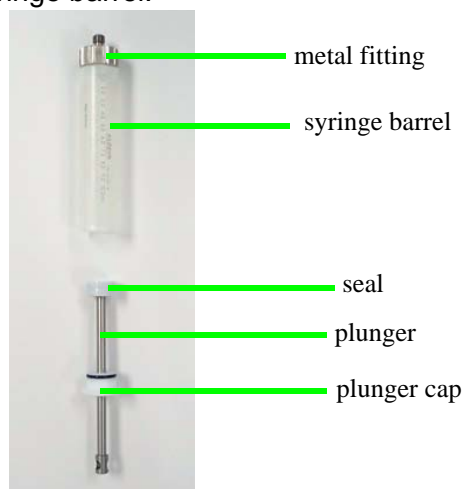
Replacing the Seal



Note

The seal and O-ring can be replaced up to ten times before the glass syringe needs to be replaced.

- Step 1. If applicable, pull back the plunger and carefully remove it from the syringe barrel.



- Step 2. Remove the old seal from the plunger by carefully cutting into the seal until the seal peels easily away. Discard the old seal.



- Step 3. Remove and discard the O-ring.
- Step 4. Place the new O-ring from the refurbishing kit onto the plunger.
- Step 5. Place the new seal on a hard, flat surface.
- Step 6. Push the plunger into the seal.

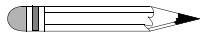


- Step 7. Ensure the seal is tight at all points around the plunger.
- Step 8. Replace the plunger (see “Replacing the Syringe” on page 103).
- Step 9. Clean the syringe (see “Cleaning the Syringes” on page 104).

Replacing the Syringe

Complete the following steps to replace the syringe:

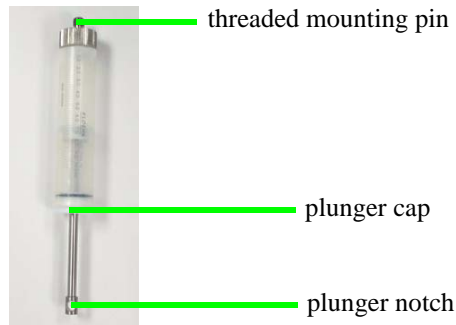
- Step 1. *Wet the plunger seal* and insert the seal into the syringe barrel (see photo on page 101). Ensure the plunger cap is firmly in place inside the syringe barrel.



Note

If the plunger seal is not wetted before it is inserted into the syringe, it does not seal properly and will leak.

- Step 2. Pull back the plunger after it is inserted.



- Step 3. Align the plunger notch with the pin drive.
- Step 4. Turn the metal fitting on top of the syringe barrel clockwise so the threaded mounting pin screws into place under the solenoid valve.
- Step 5. Screw in the locking screw at the base of the plunger.
- Step 6. Use pliers to firmly tighten the metal fitting at the top of the syringe barrel.
- Step 7. Press **4** to dispense the syringes and move the syringe plungers to their highest position.
- Step 8. Press **ESC** until the Ready screen displays.

Cleaning the Syringes

To clean the syringes, use the appropriate cleaning solution based on the product being tested. Use the rinse tray provided with the dissolution apparatus to hold the cleaning solution and ensure the sampling cannulas are submerged into the cleaning solution.

Syringes should be cleaned after each test using one of the following procedures:

50% Methanol or 10% Bleach Cleaning Procedure

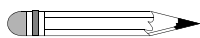
- Step 1. From the VK 8000 Ready screen, press **MENU** > **7**. The Manual Operations screen displays.
- Step 2. Select option **6**, Syringe/Filter. The Operate Syringe/Filter Changer screen displays.
- Step 3. Select option **1**, Valve to Input, to ensure the valve is set to input.
- Step 4. Select option **3**, Syringe Fill.
- Step 5. Enter **100** and press **ENTER**. The syringes fill completely with cleaning solution.
- Step 6. Allow the solution to remain in the syringes for ten minutes.
- Step 7. Select option **4**, Syringe Dispense. The cleaning solution expels from the syringes.
- Step 8. Replace the cleaning solution in the rinse tray with ultrapure water.
- Step 9. Repeat steps 3 - 7 a minimum of ten times to flush the syringes thoroughly.
- Step 10. When the cleaning procedure is complete, press **ESC** until the Ready screen displays.

Acid/Base Cleaning Procedure

- Step 1. Fill the rinse tray with 0.1N NaOH.
- Step 2. From the VK 8000 Ready screen, press **MENU** > **7**. The Manual Operations screen displays.
- Step 3. Select option **6**, Syringe/Filter. The Operate Syringe/Filter Changer screen displays.
- Step 4. Select option **1**, Valve to Input, to ensure the valve is set to input.
- Step 5. Select option **3**, Syringe Fill.
- Step 6. Enter **100** and press **ENTER**. The syringes fill completely with cleaning solution.
- Step 7. Allow the solution to remain in the syringes for ten minutes.
- Step 8. Select option **4**, Syringe Dispense. The cleaning solution expels from the syringes.
- Step 9. Replace the cleaning solution in the rinse tray with ultrapure water.
- Step 10. Repeat steps 5 - 9 to flush the syringe.
- Step 11. Change the cleaning solution in the rinse tray to 0.1N HCl and repeat steps 5 - 9.
- Step 12. Replace the cleaning solution in the rinse tray with ultrapure water.
- Step 13. Repeat steps 5 - 9 a minimum of ten times to flush the syringes thoroughly.
- Step 14. When the cleaning procedure is complete, press **ESC** until the Ready screen.

System Cleaning Procedure with Syringe Pump and Filter Changer (optional)

To clean the VK 8000, syringe pump, and filter changer system, use the appropriate cleaning solution based on the product being tested. Remove the paddles or basket shafts. Use the rinse tray provided with the dissolution apparatus to hold the cleaning solution and ensure the sampling cannulas are submerged into the cleaning solution. Complete the following steps to set up the cleaning procedure:



Note

Ensure the RM option is disabled using the hidden key function **MENU > 0 > R.**

- Step 1. From the Ready screen, press **PROG** to program the VK 8000.
- Step 2. Enter a program number (1 - 15) to use for this cleaning program and press **ENTER**. The Program Variables screen displays.
- Step 3. Select option **1**, Set VK 70xx Parameters.
- Step 4. Enter the following parameters:

Selection	Response
1 Set Spindle RPM	Enter 50 and press ENTER .
2 Final Spin Length	Enter 0 and press ENTER .
3 Ini/Final Vessel Temp	Select option 2 , Disable, for each selection.
4 Set Bath Temp	Enter 37.3 and press ENTER . <i>Note: it is not necessary to set the water bath temperature if using a VK 7030.</i>
5 Com Port ID	Enter 01 and press ENTER .
6 DDM or Baskets	Select option 2 , Paddles. Select option 2 , Simultaneous.
7 Print Freq	Enter 000 and press ENTER .

- Step 5. Press **ESC > Y**. The Program Variables screen displays.

Step 6. Enter the following parameters:

Selection	Response
2 Sample Time Points	Row 0: Enter 000:05 and press ENTER . Row 1: Enter 000:10 and press ENTER . Row 2: Enter 000:15 and press ENTER . Row 3: Enter 000:00 and press ENTER .
3 Sample Volume	Enter a sample volume based on the size vial used in the VK 8000 sample tray and press ENTER . Ensure rows 0 - 2 in the sample tray contain empty vials.
4 Set Headers	Enter the requested information as applicable. Press ESC to return to the Program Variables screen.
5 Prime Volume	Enter 10 and press ENTER .
6 Purge Volume	Enter 15 and press ENTER .
7 Filter Chg	This option is only applicable if your system configuration includes a filter changer. Set the number of samples per filter to 1 and press ENTER .

Step 7. Press **ESC** until the Ready screen displays.

Step 8. Press **START PROG**.

Step 9. Enter the program number for this cleaning program and press **ENTER**.

Step 10. Press **1 > 1 > 1 > 1** to start the cleaning program.

After the VK 8000 pulls three rows of samples for cleaning purposes, complete the following steps to ensure the needles are completely purged of cleaning solution:

Step 1. From the Ready screen, press **MENU > 7 > 4 > R**.

Step 2. Press **ESC**. The Manual Operations screen displays.

Step 3. Select option **3**, Open/Close Valves, to open the valves.

Step 4. Select option **2**, Lower Valves, to lower the needles.

- Step 5. Select option **1**, Lift Valves, to raise the needles.
- Step 6. Repeat steps 4 and 5 a minimum of four times to completely expel the cleaning solution from the needles.
- Step 7. Select option **3**, Open/Close Valves, to close the valves.
- Step 8. Select option **4**, Goto Rows.
- Step 9. Press **H** to move the dispensing arm to the home position.
- Step 10. Press **ESC** until the Ready screen displays.

Cleaning the Filter Changer Drip Tray

- Step 1. Slide up and remove the filter catch basin from the screw mount on the front of the filter changer.
- Step 2. Pull the drip tray forward completely to remove it from under the filter changer.
- Step 3. Empty any accumulated liquid from the tray and wipe it clean.
- Step 4. Replace the tray under the filter changer by sliding it forward along the tracks until it stops.
- Step 5. Replace the filter catch basin.

Cleaning the Media Replacement Pump

It is necessary to clean the media replacement pump. The following instructions are a general cleaning procedure. Additional cleaning may be required depending on the media used.

- Step 1. From the Ready screen, press **MENU** > **7**.
- Step 2. Select option **4**, Goto Rows. The Select Destinations screen displays.
- Step 3. Press **6** to move the dispensing arm to row 6.
- Step 4. Remove the rinse reservoir, empty any fluid and replace the reservoir.
- Step 5. Press **H** to return the dispensing arm to the home position.
- Step 6. Fill a 1L beaker or vessel with warm water.
- Step 7. Place the source tube in the warm water.
- Step 8. Place the return line in an empty beaker or vessel.
- Step 9. Press **ESC** to return to the Manual Operations screen.
- Step 10. Select option **5**, Turn On R-M Pump.
- Step 11. Allow the pump to run until the source beaker is empty.
- Step 12. Select option **5**, Turn Off R-M Pump.
- Step 13. Repeat steps 2 - 12 using ultrapure water in place of the warm water.
- Step 14. Select option **5**, Turn On R-M Pump.
- Step 15. Purge the system by removing the source line from the ultrapure water and allowing the pump to run until water no longer flows through the return line.

- Step 16. Select option **5**, Turn Off R-M Pump.
- Step 17. From the Manual Operations screen, select option **4**, Goto Rows.
- Step 18. Press **6** to move the dispensing arm to row 6.
- Step 19. Remove the rinse reservoir, empty any fluid, and replace the reservoir.
- Step 20. Press **H** to return the dispensing arm to the home position.
- Step 21. Press **ESC** until the Ready screen displays.

If additional cleaning is required, repeat the above procedure replacing the warm water with diluted alcohol (1:10).

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 properly inked portion of the ribbon by pressing the printer toggle switch into the *Paper feed* position. If the printing is still faint, replace the cartridge.

To install the cartridge, complete the following steps:

- 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 a 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. Remove the paper roll.
- Step 5. Using scissors, cut the paper feeding to the printer.
- Step 6. 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 7. Unroll several inches of paper on the new roll.
- Step 8. If it is jagged, cut a straight edge on the paper roll to facilitate the entry of the paper into the printer.
- Step 9. 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 10. 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 11. Release the printer toggle switch.
- Step 12. Turn the paper roll to take up any slack in the paper feeding to the printer. Place the paper roll in 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.

Toggle 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 114 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 back on.

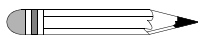
Printer Self Test

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 8000.
- Step 2. Press and hold the printer toggle switch in the *Paper feed* position.
- Step 3. Turn on the VK 8000.
- Step 4. Hold the printer toggle switch until printing begins. The printer prints a list of the current configuration settings and 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

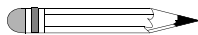
Note



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 8000.
- Step 2. Press and hold the printer toggle switch in the *OnLine / Off Line* position while turning the VK 8000 back on. Hold the printer toggle switch in the *OnLine / Off Line* position for 6 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 toggle switch selects **NEXT** to advance to the next menu item. Pressing the right side of the toggle switch selects **OK** to accept what is stated on the current 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 on the following page.

Note



The printout is easier to read if the print 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.

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Chapter 10 **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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