Agilent 8000 Dissolution Sampling Station

Operator's Manual

Agilent Technologies

Notices

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Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

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1 Safety

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The Agilent 8000 has been designed and tested 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 Agilent 8000 involves the use of aqueous liquids and various pharmaceutical dosage forms. 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 8000 contains electrical circuits, devices, and components operating at dangerous voltages. Contact with these circuits, devices, and components can cause death, serious injury, or painful electric shock.

Panels or covers that are retained by fasteners which require the use of a tool for removal may be opened only by Agilent-trained, Agilent-qualified, or Agilent-authorized service engineers. Consult the manuals or product labels supplied with the 8020 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.

Warning

WARNING

A ‘Warning’ message appears in the manual when failure to observe instructions or precautions could result in death or injury.

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

Caution

CAUTION

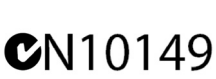
A ‘Caution’ message appears in the manual when failure to observe instructions could result in damage to equipment (Agilent supplied and / or other associated equipment).

Note

NOTE

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 standards of safety. 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. All Agilent products that are subject to the WEEE directive shipped after August 13, 2005 are compliant with the WEEE marking requirements. Such products are marked with the "crossed out wheelie bin" WEEE symbol in accordance with European Standard EN 50419. For more information on collection, reuse, and recycling systems, please contact your local/regional waste administration, your local distributor, or Agilent.
	Indicates the product complies with regulatory compliance requirements of New Zealand and Australia.

2
Introduction

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The 8000 Dissolution Sampling Station provides an unattended solution for automated sampling from a dissolution apparatus. The instrument may be configured to control any instrument setup with a USP apparatus 1 (Baskets), 2 (Paddles), 3 (Reciprocating Cylinder), 5 (Paddle over Disk), 6 (Rotating Cylinder), or 7 (Reciprocating Holder) offered by Agilent Technologies, Inc. The firmware can store up to 15 different sampling programs. Dissolution apparatus parameters are entered as part of the 8000 program. These parameters are downloaded to the dissolution apparatus when beginning a test with the 8000.

The 8000 fail-safe sample delivery uses either the 810 Peristaltic Pump or 806 Syringe Pump optionally coupled with the automated 808 Filter Changer. 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.

The 8000 may be configured with a replacement media (RM) module which replenishes any sample volume removed with fresh media. Sample is delivered into test tubes or pre-capped HPLC autosampler vials for direct transfer of samples to an HPLC system. Sample trays are available in a variety of sizes to accommodate various sizes of vials or test tubes.

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

8000 with Peristaltic Pump

The 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 8000. Sampling is carried out automatically and takes into account all relevant variables in the sample flow path such as tubing length, tension, and diameter. The volume calibration may be performed manually or automatically using an autocalibration block supplied with the unit. Samples may be delivered into open test tubes or pre-capped autosampler vials.

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** > **7**.

Serial Number Format

The serial number contains 10 characters and follows this syntax:

CC1234xxxx

Syntax Code	Meaning	Description
CC	Country of origin	2 alpha characters matching the required trade designation for the country of origin
12	Year of manufacture	‘09’ for 2009, ‘10’ for 2010, etc.
34	Week of manufacture	‘01’ for week 1 to ‘52’ for week 52

3
Setting Up the 8000

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Unpacking of 8000 and Components

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.

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

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

Unpacking Your 8000

Figure 1 Agilent 8000 Dissolution Sampling Station

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

1 Carefully remove the 8000 and accessory kit(s) from their shipping cartons. Remove all cushioning material and tape.

2 Place the 8000 on a clear, dry, level section of the bench top close to the dissolution apparatus. The preferred placement of the 8000 is on the right side of the dissolution apparatus.

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

Unpacking / Setup of 8000 & Peristaltic Pump

Environmental Requirements for Peristaltic Pump Installation

- Altitude: max 2000m;
- Humidity: max relative humidity 80% for temperatures up to 31 ºC decreasing linearly to 50% relative humidity at 40 ºC
- Indoor use only
- Temperature: 5 ºC to 40 ºC
- Main supply voltage fluctuations are not to exceed ± 10% of the nominal supply voltage
- Operating conditions: 3 mins ON Max; 5 mins OFF Min

Figure 2 Peristaltic Pump

Installation

1. Carefully remove the peristaltic pump from its shipping carton. Remove all cushioning and tape.
2. Place the peristaltic pump on a clear, dry, level section of the bench top between the 8000 and the dissolution apparatus.
3. Remove the two screws on top of the pump. Lift off the plastic cover and set it aside.
4. Remove the cartridges from the pump by pressing down the levers on the right side. Lift the cartridges up and away from the pump.

5 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.

6 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.

7 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.

8 Repeat Steps 5 - 7 for each remaining cartridge.

9 Refit the cover and replace the two screws. If the cover is not replaced correctly, the pump will not operate.

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

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

apparatus:

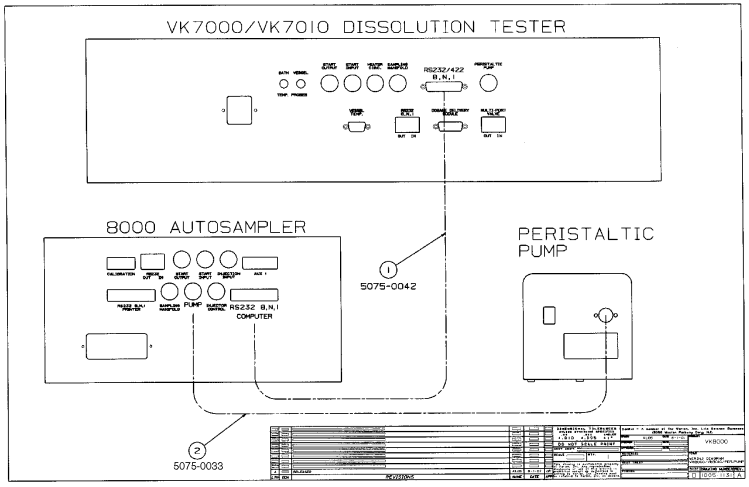

Figure 3 Cable Connections for 8000, Peristaltic Pump, and VK 7000 / 7010

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

12 If the system configuration includes the 705-DS, connect the 9-to-25 pin cable to the RS232 port on the dissolution apparatus and the RS232 COMPUTER port on the 8000 rear panel.

Otherwise, connect the RS232 cable (#1, P/N 5075-0042) between the RS232 port on the dissolution apparatus and the RS232 COMPUTER port on the 8000 rear panel.

13 The 8000 is shipped with all sample tubing attached to the valves inside 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.

14 If your system configuration includes the 705-DS, connect the resident probes (see Figure below) to the tubing and attach the lines to the tubing on one side of the appropriate peristaltic pump cartridges.

Otherwise, connect the tubing from the dissolution apparatus sample cannulas to the tubing on one side of the appropriate peristaltic pump cartridges.

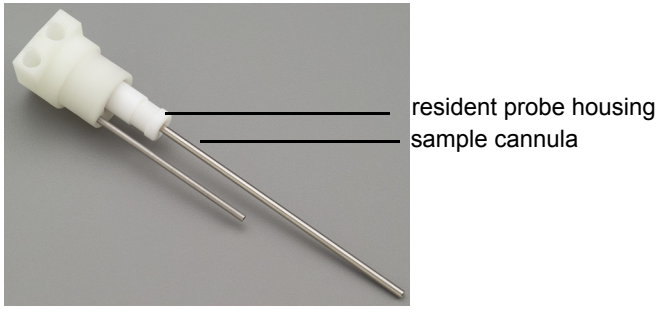

Figure 4 Resident Probe

15 Connect another length of tubing between the remaining side of the peristaltic pump cartridges and the tubing coming from the left positions of the 8000 solenoid valves. Ensure each cartridge has identical color tubing connected at both the inlet and the outlet.

16 Connect the remaining length of tubing coming from the top positions of the 8000 solenoid valves to the return lines on the dissolution apparatus. Ensure each line is attached to its identical color.

WARNING **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.**

17 For a system that includes a 705-DS, connect the return lines to the return cannulas of the resident probes.

Unpacking / Setup of 8000 & Syringe Pump

Figure 5 806 Syringe Pump

The syringe pump is shipped in individual packaging.

1 Carefully lift the unit out of the box.

2 Remove any cushioning material.

3 Place the 806 Syringe Pump on a clean, dry, level section of the bench top between the 8000 and the dissolution apparatus.

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

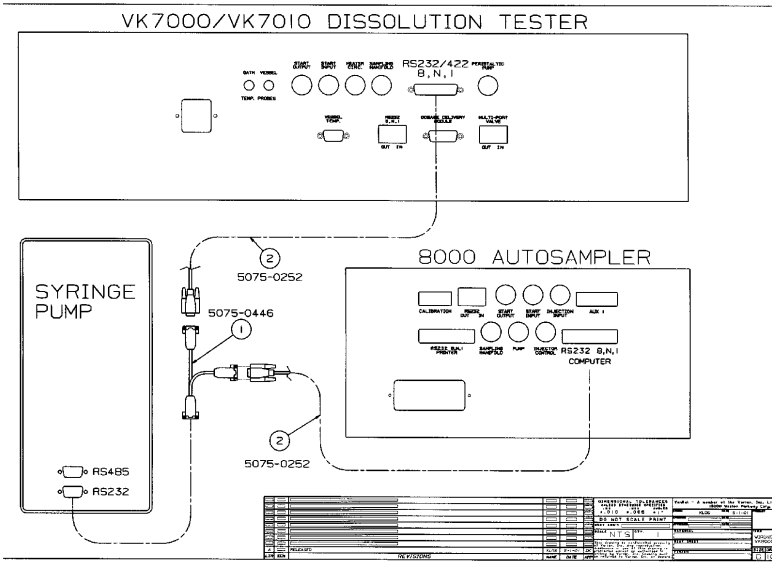

Figure 6 Cable Connections for 8000, Syringe Pump, and VK 7000 / 7010

5 Connect the single end of the Y cable (#1, P/N 5075-0446) to the RS232 port on the syringe pump.

6 Connect an RS232 cable (#2, P/N 5075-0252) between the RS232 COMPUTER port on the 8000 and one extension of the Y cable attached to the syringe pump.

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

Otherwise, 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.

8 A system configuration that includes a non-Agilent dissolution apparatus, requires use of an adapter (P/N 5075-0852, see following Figure). This adapter should be attached to the #2 port of the Y-cable in place of the cable connected to the dissolution apparatus.

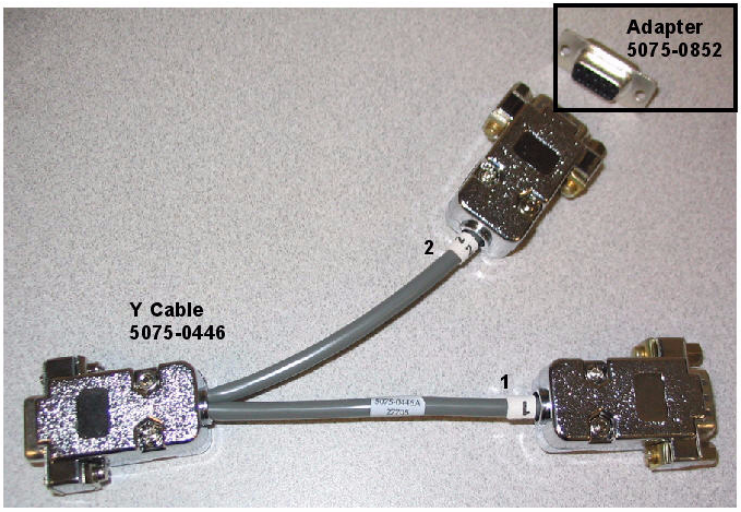

Figure 7 Y Cable 5075-0446 and Adapter 5075-0852

9 The 8000 is shipped with all sample tubing attached to the valves inside the dispensing arm.

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

10 If the system configuration includes the 705-DS, connect the resident probes to the sample tubing and attach the lines to the left port (labeled IN) of each syringe starting with Position 1.

Otherwise, connect the tubing from the dissolution apparatus sampling cannulas to the left port (labeled IN) of each syringe starting with Position 1.

11 Connect a separate length of tubing between the right port (labeled OUT) of each syringe to the tubing coming from the left positions of

the 8000 solenoid valves. Ensure each line is attached to its identical color.

12 Connect the remaining length of tubing from the top positions of the 8000 solenoid valves to the return lines on the dissolution apparatus. Ensure each line is attached to its identical color.

WARNING **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.**

13 If the system configuration includes the 705-DS, connect the return lines to the return cannulas of the resident probes.

Unpacking / Setup of 8000, Syringe Pump, and Filter Changer

Environmental Requirements for Filter Changer Installation

- Altitude max.2000m;
- Humidity max relative humidity 80% for temperatures up to 31 ºC decreasing linearly to 50% relative humidity at 40ºC;
- Indoor use only
- Temperature: 5 ºC to 40 ºC;
- Mains supply voltage fluctuations are not to exceed ± 10% of the nominal supply voltage.
- Operating conditions 8 mins ON Max; 5 mins OFF min

Installation

Figure 8 808 Filter Changer

The filter changer is shipped in individual packaging.

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

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

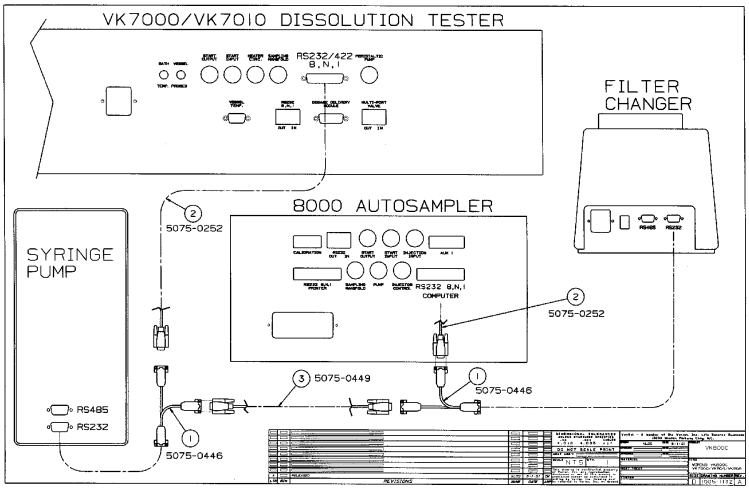

Figure 9 Cable Connections for 8000, Syringe Pump, Filter Changer, and VK 7000 / 7010

5 Connect the single end of a Y cable (#1, P/N 5075-0446) to the RS232 port on the filter changer.

6 Connect an RS232 cable (#2, P/N 5075-0252) between the RS232 COMPUTER port on the 8000 and one extension of the Y cable attached to the filter changer.

7 Connect a 9-9 pin RS232 cable (#3, P/N 5075-0449) from the remaining extension of the Y cable attached to the filter changer to one extension of a separate Y-cable.

8 Connect the single end of the second Y cable (#1, P/N 5075-0446) to the RS232 port on the syringe pump.

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

Otherwise, 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.

10 A system configuration that includes a non-Agilent dissolution apparatus, requires use of an adapter (P/N 5075-0852, see following Figure). This adapter should be attached to the #2 port of the Y-cable in place of the cable connected to the dissolution apparatus.

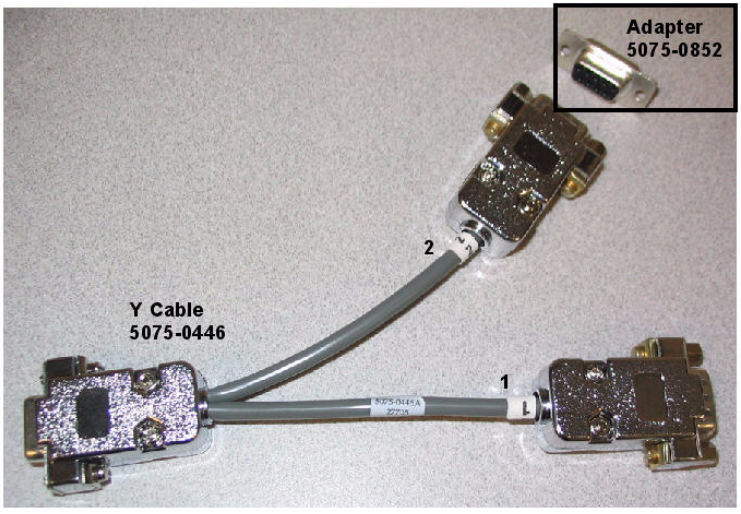

Figure 10 Y Cable 5075-0446 and Adapter 5075-0852

11 The 8000 is shipped with all sample tubing attached to the valves inside the dispensing arm.

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

12 If the system configuration includes the 705-DS, connect the resident probes to the sample tubing and attach the lines to the left port (labeled IN) of each syringe starting with Position 1.

Otherwise, connect the tubing from the dissolution apparatus sampling cannulas to the left port (labeled IN) of each syringe

starting with Position 1.

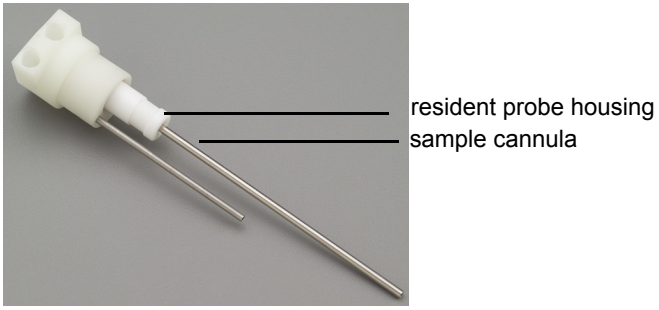

Figure 11 Resident Probe Housing and Sample Cannula

13 Connect a separate length of tubing from the right port (labeled OUT) of each syringe to the top inlet ports of the filter changer starting with the port closest to the carousel.

14 Connect another separate length of tubing lines from the lower side ports of the filter changer to the tubing coming from the left positions of the 8000 solenoid valves. Ensure each line is attached to its identical color.

15 Connect the tubing coming from the top positions of the 8000 solenoid valves to the return lines of the dissolution apparatus. Ensure each line is attached to its identical color.

WARNING **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.**

16 If the system configuration includes the 705-DS, connect the return lines to the return cannulas of the resident probes.

17 To install the catch basin for the filters, slide the side of the basin containing the opening over the screw mounted on the front of the filter changer.

Setup of 8000 and Components

Installing 8000 Full Flow Filters

The 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 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.

WARNING

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.

Full Flow Filters are not for use with Apparatus 3 / 7 configurations.

Power and Network Connections

WARNING

The electrical connection at the back of the 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 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 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 8000. Turn on the 8000. The system monitor illuminates. The system monitor displays the initial status screen and then changes to the Ready screen.

```
8000 FRACTION COLLECTOR
PROGRAM REVISION x.xx
INITIALIZING....PLEASE WAIT
TIME: 01/01/12    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.

```
READY

PRG# 01 R-M: ENABLED          VOLUME: 5 mL
TIME: 01/01/12    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 grommeted corner holes which fit over the four locating pins.

WARNING **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.

1. From the Ready screen, press **MENU**.
2. Select option **7**, Manual Operation.
3. Select option **4**, Goto Rows.
4. Enter **4** to move the dispensing arm to Row 4. The dispensing arm moves forward to allow access to the rear of the 8000.
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.

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.
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 (Peristaltic Pump only)” on page 37.

Installing and Connecting the Autocalibration Block (Peristaltic Pump only)

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.
2. Connect the nine-pin RS232 cable between the CALIBRATION port on the 8000 rear panel and the RS232 port on the side of the autocalibration block.
3. Press **H** to move the dispensing arm to the home position.
4. Press **ESC** three times to return to the Ready screen.

Installing the RM Module

Internal Unit

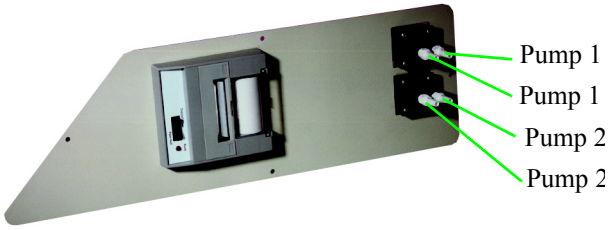

Figure 12 Internal Media Replacement Module

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

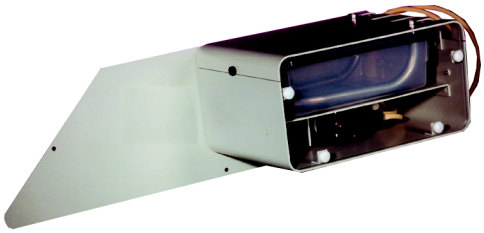

Figure 13 External Media Replacement Module

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

Loading Filters (Filter Changer only)

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.
2. Remove the cap from the end of the tube to expose the long, thin exit nozzle of the end filter.
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.
4. Repeat Steps 2 - 4 to load additional tubes of filters.

WARNING **Use only Agilent-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 (Filter Changer Only)

1. Remove all tubes of filters from the carousel of the filter changer.
2. From the 8000 Ready screen, press **MENU**. The Main Menu displays.
3. Select option **7**, Manual Operation. The Manual Operations screen displays.
4. Select option **6**, Syringe/Filter.
5. From the Operate Syringe/Filter Changer screen, select option **5**, Filter Changer. The Filter Changer Manual Control screen displays.
6. Select option **3**, Change Filters.
7. Enter **8** as the number of filters to change and press **ENTER**. The filters expel from the filter changer.
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.
9. Press **ESC**. The Filter Changer Manual Control screen displays.

10 Load the new tubes of filters into the carousel of the filter changer. See "Loading Filters (Filter Changer only)" on page 40.

11 Select option **3**, Change Filters.

12 Enter **8** as the number of filters to change and press **ENTER**. The filters expel from the filter changer.

13 When the filter changer stops expelling filters, select option **3**, Change Filters, again.

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.

15 Press **ESC** four times to return to the Ready screen.

Hidden Key Functions

Table 1 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 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 8000 with other Agilent equipment, the baud rate must be set to 9600 baud (see "Printer Operation and Communications" on page 103).
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 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 "DISSO Options Screen" on page 69.

Table 1 Hidden Key Functions

Key Sequence	Function
MENU > **0** > **D**	Use this key sequence to enable or disable the multiple sample option. The asterisk (*) displays next to the current selection. Note: For use with APP 3/7 (Apparatus 3 / 7) systems only.
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.
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 8000 prior to setting the syringe pump parameters (see "3 SET SYRINGE PUMP" on page 48.
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. Note: This option is not available for APP 3/7 (Apparatus 3 / 7) systems.

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4
Operating the 8000

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Operating the 8000 with Apparatus 1 / 2

8000 Keypad Options

The keypad on the 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 14, “8000 Keypad,” below. A discussion about each of the main function keys follows.

Figure 14 8000 Keypad

The front panel options include the following:

Table 2 Front Panel Options (Apparatus 1 / 2)

Option	Function
ESC	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. Note: 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.
MENU	Use this option to set the clock, alarms, DISSO 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 8000.
PRINT	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.
CAL	Use this option to calibrate the 8000 to ensure that sample volumes are accurately and precisely taken. Note: The CAL key on the 8000 can be used only if the peristaltic pump is installed on your system.
PROG	Use this option to set program parameters.
START PROG	Use this option to start a program.
MANUAL SAMPLE	Use this option to collect a sample from the dissolution vessels on command without a program.
OPEN VALVES	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.
 (PROBES UP / DOWN)	Press  (**PROBES UP / DOWN**) to raise or lower the sampling cannulas on the dissolution apparatus. Note: Not available with APP 3/7 systems.

Table 2 Front Panel Options (Apparatus 1 / 2)

Option	Function
PUMP OFF PUMP FWD PUMP REV	PUMP OFF, PUMP FWD, and PUMP REV work exclusively with the Agilent 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.
LOCK KBRD	Press **LOCK KBRD** to lock the keypad. Press **LOCK KBRD** again to unlock the keypad.

8000 Menu Options - Apparatus 1 / 2

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	4 MANUAL PRIME TIME
1 SET CLOCK/ALARMS	5 MANUAL PURGE TIME
2 SET DISSO	6 CONTROL DISSO
3 START OUTPUT DELAY	7 MANUAL OPERATION

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

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

Following is a description of the Main Menu screen options:

Table 3 Main Menu Options (Apparatus 1 / 2)

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 51.
2 Set DISSO	Use this option to set the DISSO parameters. See "Main Menu Option 2 - Set DISSO" on page 53.
3 Start Output Delay (peristaltic pump)	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 8000 rear panel. Select option **3**, Start Output Delay. Enter a delay length of up to 99:59 minutes for the 8000 TTL output and press **ENTER**. The Main Menu displays. Note: This output signal can be used to start other instrumentation, such as a dissolution apparatus, after the program on the 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. 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 52.
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" on page 55.
4 Manual Prime Time (peristaltic pump)	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 **4**, Manual Prime Time. Enter a value for the priming time from 1 to 99 seconds and press **ENTER**. The Main Menu displays. 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 8000.

Table 3 Main Menu Options (Apparatus 1 / 2)

Option	Function
4 Manual Prime Vol. (syringe pump)	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. Select option **4**, Manual Prime Vol. Enter a value for the priming volume and press **ENTER**. The Main Menu displays. 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 8000.
5 Manual Purge Time (peristaltic pump)	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. 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. 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 8000.
5 Manual Purge Vol. (syringe pump)	If your system configuration includes the syringe pump, use this option to set a purge volume that ensures all stranded medium is properly expelled. 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. 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 8000.
6 Control DISSO	Use this option to remotely control the dissolution apparatus from the 8000. See “Main Menu Option 6 - Control DISSO” on page 57.
7 Manual Operation	Use this option to manually control the 8000. See “Main Menu Option 7 - Manual Operation” on page 57.

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:

Table 4 Set Clock and Alarms Options (Apparatus 1 / 2)

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.

Table 4 Set Clock and Alarms Options (Apparatus 1 / 2)

Option	Function
4 Calib. Compl Alarm	Use this option to set an alarm to sound when autocalibration is complete and all lines are purged. 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. Press any key to silence the alarm after it sounds. Note: This option is only available if your system configuration includes the peristaltic pump.
5 Prg Compl Alarm	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. 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. Press any key to silence the alarm after it sounds.
6 Start Output Delay	Note: Option 6 displays only when the syringe pump is enabled. 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 8000 rear panel. Select option **6**, Start Output Delay. The Start Output Delay screen displays. Enter a delay length of up to 99:59 minutes for the 8000 TTL output and press **ENTER**. The Set Clock and Alarms screen displays. Note: This output signal can be used to start other instrumentation, such as a dissolution apparatus, after the program on the 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. When the syringe pump is disabled, this option displays under the Main Menu. See “3 Start Output Delay (peristaltic pump)” on page 49.

Main Menu Option 2 - Set DISSO

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

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

NOTE DISSO applies to all dissolution apparatus.

Following is a description of the DISSO Parameters screen options:

Table 5 Disso Parameters Options (Apparatus 1 / 2)

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 DISSO" on page 57). Optionally, select option **2**, Program, to set an RPM to be used as a default for programmed operation (see "Starting a 8000 Program" on page 66). Enter the desired RPM and press **ENTER**. The DISSO 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 DISSO 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 DISSO Parameters screen displays.

Table 5 Disso Parameters Options (Apparatus 1 / 2)

Option	Function
4 Set Bath Temp **4** Vessel Temp	If your system configuration includes a dissolution apparatus with a water bath, select option **4**, Set Bath Temp. If your system configuration includes a dissolution apparatus with Direct Vessel Heating (DVH), select option **4**, Vessel Temp. 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 DISSO Parameters screen displays.
5 Com Port ID	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 8000 can start individual units. Enter the communication port identification number and press **ENTER**. The DISSO Parameters screen displays.
6 DDM or Basket	Select option **6**, DDM or Basket, to select the apparatus type. The Select Basket or Paddle of DISSO screen displays. If using baskets, select option **1**, Basket. The DISSO Parameters screen displays. If using paddles and sequential delivery, select option **2**, Paddle. The Dosage Delivery Mode of DISSO screen displays. Select option **1**, Sequential, enter a time interval for the dosage drop and press **ENTER**. The DISSO Parameters screen displays. Note: Only use the sequential delivery option if your dissolution apparatus is equipped with clutches. If using paddles and simultaneous delivery, select option **2**, Paddle. The Dosage Delivery Mode of DISSO screen displays. Select option **2**, Simultaneous. The DISSO Parameters screen displays.
7 Print Freq	The dissolution apparatus status prints at each sample time point. 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 time points. Enter a print frequency and press **ENTER**. The DISSO Parameters screen displays. The print frequency timer restarts after each sample time point. Note: The status does not print if the specified print frequency is less than three minutes from the sample time point; the sample time point takes precedence.

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

This section is applicable only to systems including a syringe pump.

NOTE

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

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:

Table 6 Set Syringe Pump Parameters (Apparatus 1 / 2)

Option	Function
1 Syringe Size	Use this option to set the syringe size. Select option **1**, Syringe Size. Select the syringe size that corresponds with the Kloehn syringes loaded into the syringe pump. The Set Syringe Pump Parameters screen displays.
2 Plunger Speed	Use this option to configure the syringe pump plunger to operate at a specific speed. 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.

Table 6 Set Syringe Pump Parameters (Apparatus 1 / 2)

Option	Function
3 Prime Loss Volume	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 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. 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. If the tubing length between the sampling cannulas and sampling valves is changed, adjust the prime loss volume accordingly.
4 Aspirt. Dwell Time	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. Select option **4**, Aspirt. 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.
5 Full Stroke (hidden option)	Use this option to configure the number of steps the stepper motor makes to draw the syringe plunger its maximum stroke length. 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. 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: $\frac{\text{target volume (mL)}}{x} = \frac{\text{avg volume dispensed (mL)}}{19300}$
6 Pump Current (hidden option)	Use this option to configure the pump current. The use of more viscous media requires a higher pump current. 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.

Main Menu Option 6 - Control DISSO

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

```
***DISSO 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 8000 to the dissolution apparatus:

Table 7 Disso Control/Monitor Options (Apparatus 1 / 2)

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.
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 p or q 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:

Table 8 Manual Operations Options (Apparatus 1 / 2)

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 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 41.

Table 8 Manual Operations Options (Apparatus 1 / 2)

Option	Function
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:

Table 9 Operate Syringe/Filter Changer Options (Apparatus 1 / 2)

Option	Function
1 Valve to Input	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. 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.
2 Valve to Output	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. 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.

Table 9 Operate Syringe/Filter Changer Options (Apparatus 1 / 2)

Option	Function
3 Syringe Fill	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 ("1 Valve to Input" on page 59). 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.
4 Syringe Dispense	Use this option to dispense medium from the syringes. Select option **4**, Syringe Dispense. The syringes dispense the previously drawn medium (see *"3 Syringe Fill"* above).
5 Filter Changer	Use this option to manually operate the filter changer. Select option **5**, Filter Changer. The Filter Change Manual Control screen displays. To open the filter clamp, select option **1**, Open Clamp. To close the filter clamp, select option **2**, Close Clamp. 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. Press **ESC** to return to the Operate Syringe/Filter Changer screen.
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" on page 55. 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.

Creating a Sample Program

NOTE

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

To program the dissolution apparatus with the 8000, you must enable external control on the dissolution apparatus and log out. For more information, see the applicable Operator's Manual for your dissolution apparatus.

1 From the Ready screen, press **PROG** to program the 8000.

2 Enter a program number and press **ENTER**. The Program Variables screen displays, as shown on page 61. Each option is explained on the following pages.

NOTE

The 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	4 HEADERS
1 SET DISSO PARAMETERS	5 PRIME TIME
2 SAMPLE TIME POINTS	6 PURGE TIME
3 SAMPLE VOLUME	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	4 HEADERS
1 SET DISSO PARAMETERS	5 PRIME VOLUME
2 SAMPLE TIME POINTS	6 PURGE VOLUME
3 SAMPLE 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 64.

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 64.

Following is a description of the Program Variables screen options:

Table 10 Program Variables Options (Apparatus 1 / 2)

Option	Function
1 Set DISSO Parameters	Use this option to set the dissolution apparatus parameters. Select option **1**, Set DISSO Parameters. The DISSO Parameters screen displays. See "Main Menu Option 2 - Set DISSO" on page 53 for a description of the DISSO Parameters screen options.
2 Sample Time Points	Use this option to enter the sample time points. See "Program Option 2 - Sample Time Points" on page 65.
3 Sample Volume	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. Note: The maximum volume accepted is 14 mL.

Table 10 Program Variables Options (Apparatus 1 / 2)

Option	Function
4 Headers	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. 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.
5 Prime Time (peristaltic pump)	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. 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.
5 Prime Volume (syringe pump)	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. Select option **5**, Prime Volume. Enter a value for the priming volume and press **ENTER**. The Program Variables screen displays. 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.
6 Purge Time (peristaltic pump)	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. 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. 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.

Table 10 Program Variables Options (Apparatus 1 / 2)

Option	Function
6 Purge Volume (syringe pump)	If your system configuration includes the syringe pump, use this option to set a purge volume that ensures all stranded medium is properly expelled. 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. 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.
7 R-M (peristaltic pump)	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. Note: If the RM option is not installed, select option **2**, Disable.
7 Filter Chg (syringe pump and filter changer)	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. 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. 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.
7 R-M (syringe pump)	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. 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. 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.

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:01/01/12  09:37:14          ELAPSE:000:00:00
```

NOTE

This screen accepts sampling times and saves them for execution when the program is run. Time points 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 time point is requested.

The following conventions are used with this screen:

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

NOTE

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

- To add additional sample time points, press **ENTER** until a new row time displays. Enter the additional sample time point.
- If more than ten sample time points are needed, use the link program feature. See “Starting a 8000 Program” on page 66.
- To correct an entry, press **BACKSPACE** to go to the previous character position and re-enter the correct value.

- If a shorter sample time point 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 time point you wish to discard. All successive time points are eliminated.
- Press **ESC** to save all new values and return to the Program Variables screen.

NOTE

Sample time points 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 time points are at least six minutes apart.

Starting a 8000 Program

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 8000 program.

If using a dissolution apparatus with the 8000, you must enable external control on the dissolution apparatus and log out.

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: 01/01/12      15:02:30   ELAPSE: 000:00:04
```

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: 01/01/12        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 40) to alert the analyst when the first program completes and the second program begins.

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:

Table 11 Select Start Mode Options (Apparatus 1 / 2)

Option	Function
1 Start Now	Select option **1**, Start Now. The DISSO Options screen displays. See "DISSO Options Screen" on page 69.
2 Delayed Start	Select option **2**, Delayed Start. The DISSO Options screen displays. See "DISSO Options Screen" on page 69.
3 Remote Start	This option is designed for use with the 8000 coupled with non-Agilent 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 "Creating a Sample Program" on page 61 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.

DISSO Options Screen

DISSO OPTIONS	
1 LOAD & RUN DISSO	2 RUN WO/ LOADING
3 RUN 8000 ONLY	4 SET DISSO
TIME: 01/01/12 08:09:51	ELAPSE: 000:00:00

Following is a description of the DISSO Options screen options:

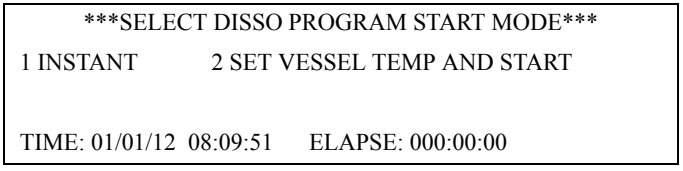
Table 12 Disso Options (Apparatus 1 / 2)

Option	Start Now Function	Delayed Start Function
1 Load & Run DISSO	Use this option to upload all saved parameters to the dissolution apparatus and start the program. Select option **1**, Load & Run DISSO. The Select DISSO Program Start Mode screen displays. See "Select DISSO Program Start Mode Screen" on page 70.	
2 Run WO/ Loading	Use this option to program and run the 8000 without loading and overriding dissolution apparatus settings. Select option **2**, Run WO/ Loading. The Select DISSO Program Start Mode screen displays. See "Select DISSO Program Start Mode Screen" on page 70.	

Table 12 Disso Options (Apparatus 1 / 2)

Option	Start Now Function	Delayed Start Function
3 Run 8000 Only	Select option **3**, Run 8000 Only, to immediately start the 8000 only. The 8000 executes the program currently selected. This option is used when other instrumentation, such as a dissolution apparatus, is connected to the 8000 through the START OUTPUT jack on the rear of the instrument.	Select option **3**, Run 8000 Only, to start the 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 DISSO 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 41. This option is used when other instrumentation, such as a dissolution apparatus, is connected to the 8000 through the START OUTPUT jack on the rear of the instrument.
4 Set DISSO	Use this option to modify or review the current program parameters. Select option **4**, Set DISSO. The Set DISSO Parameters screen displays. See "Main Menu Option 2 - Set DISSO" on page 53 for a description of the DISSO Parameters screen options.	

Select DISSO Program Start Mode Screen



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

Table 13 Select Disso Program Start Mode Options (Apparatus 1 / 2)

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 41. Press **ESC** to cancel the delayed start.
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 41. Press **ESC** to cancel the delayed start.

Operating the 8000 with Apparatus 3 / 7

8000 Keypad Options

The keypad on the 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 15, “8000 Keypad,” below. A discussion about each of the main function keys follows.

Figure 15 8000 Keypad

The front panel options include the following:

Table 14 Front Panel Options (Apparatus 3 / 7)

Option	Function
ESC	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. 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.
MENU	Use this option to set the clock, alarms, Apparatus 3 / Apparatus 7 parameters, start output delay / syringe pump parameters, manual prime time / volume, manual purge time / volume as well as to remotely control the Apparatus 3 / 7 and manually control the 8000. See “8000 with Apparatus 3 / 7 - Menu Options” on page 74.
PRINT	Press **PRINT** to record the batch information, print the dip and drain 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 103.
CAL	Use this option to calibrate the 8000 to ensure that sample volumes are accurately and precisely taken. See “Volumetric Calibration (Peristaltic Pump only)” on page 97.
PROG	Use this option to set program parameters. See “Creating a Sample Program” on page 61.
START PROG	Use this option to start a program. See “Starting a Program” on page 91.
MANUAL SAMPLE	Use this option to collect a sample from the dissolution vessels on command without a program. See “Manual Sample” on page 95.
OPEN VALVES	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.
PUMP OFF PUMP FWD PUMP REV	PUMP OFF, PUMP FWD, and PUMP REV work exclusively with the Agilent peristaltic pump. When the syringe pump is connected, they are disabled.

Table 14 Front Panel Options (Apparatus 3 / 7)

Option	Function
CLEAN SYTEM	Use this option to keep the valves, needles, and fluid lines clean. See "Clean System with Peristaltic Pump" on page 106 or "Clean System Function with Syringe Pump" on page 111.
LOCK KBRD	Press **LOCK KBRD** to lock the keypad. Press **LOCK KBRD** again to unlock the keypad.

8000 with Apparatus 3 / 7 - Menu Options

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	4 MANUAL PRIME TIME
1 SET CLOCK/ALARMS	5 MANUAL PURGE TIME
2 SET APP 3/7	6 CONTROL APP 3/7
3 START OUTPUT DELAY	7 MANUAL OPERATION

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

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

Following is a description of the Main Menu screen options:

Table 15 Main Menu Options (Apparatus 3 / 7)

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 77.
2 Set APP 3/7	Use this option to set the Apparatus 3 / 7 parameters. See "Main Menu Option 2 - Set DISSO" on page 53.
3 Start Output Delay (peristaltic pump)	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 8000 rear panel. Select option **3**, Start Output Delay. Enter a delay length of up to 99:59 minutes for the 8000 TTL output and press **ENTER**. The Main Menu displays. Note: This output signal can be used to start other instrumentation, such as an Apparatus 3 / 7, after the program on the 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. 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 52.
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" on page 80.
4 Manual Prime Time (peristaltic pump)	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 **4**, Manual Prime Time. Enter a value for the priming time from 1 to 99 seconds and press **ENTER**. The Main Menu displays. 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 8000.

Table 15 Main Menu Options (Apparatus 3 / 7)

Option	Function
4 Manual Prime Vol. (syringe pump)	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. Select option **4**, Manual Prime Vol. Enter a value for the priming volume and press **ENTER**. The Main Menu displays. 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 8000.
5 Manual Purge Time (peristaltic pump)	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. 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. 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 8000.
5 Manual Purge Vol. (syringe pump)	If your system configuration includes the syringe pump, use this option to set the a purge volume that ensures all stranded medium is properly expelled. Select option **5**, Manual Purge Vol. Enter a value for the purge volume that ensures at least two strokes of the plunger and press **ENTER**. The Main Menu 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. 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 purge volume values. It is used only with the MANUAL SAMPLE and CLEAN SYSTEM keys on the 8000.
6 Control APP 3/7	Use this option to remotely control the Apparatus 3 / 7 from the 8000. See “Main Menu Option 6 - Control APP 3/7” on page 82.
7 Manual Operation	Use this option to manually control the 8000. See “Main Menu Option 7 - Manual Operation” on page 83.

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:

Table 16 Set Clock and Alarms 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 time 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.

Table 16 Set Clock and Alarms Options

Option	Function
4 Calib. Compl Alarm	Use this option to set an alarm to sound when autocalibration is complete and all lines are purged. 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. Press any key to silence the alarm after it sounds. Note: This option is only available if your system configuration includes the peristaltic pump.
5 Prg Compl Alarm	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. 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. Press any key to silence the alarm after it sounds.
6 Start Output Delay	Note: Option 6 displays only when the syringe pump is enabled. 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 8000 rear panel. Select option **6**, Start Output Delay. The Start Output Delay screen displays. Enter a delay length of up to 99:59 minutes for the 8000 TTL output and press **ENTER**. The Set Clock and Alarms screen displays. Note: This output signal can be used to start other instrumentation, such as an Apparatus 3 / 7, after the program on the 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. When the syringe pump is disabled, this option displays under the Main Menu. See "3 Start Output Delay (peristaltic pump)" on page 49.

Main Menu Option 2 - Set APP 3/7

From the Main Menu, select option **2**, Set APP 3/7. Enter a program number and press **ENTER**. The Set APP 3/7 Parameters screen displays.

SET APP 3/7 PARAMETERS	
1 DIPPING SPEED (DPM)	2 SAMPLES PER ROW
3 HOLD DIP TIME	4 SET BATH TEMP
5 COM PORT ID	6 PRINT FREQUENCY

Following is a description of the Set APP 3/7 Parameters screen options:

Table 17 Set App 3/7 Parameters Options (Apparatus 3 / 7)

Option	Function
1 Dipping Speed (DPM)	Select option **1**, Dipping Speed (DPM). Enter the desired DPM and press **ENTER**. The Set APP 3/7 Parameters screen displays.
2 Samples Per Row	Select option **2**, Samples Per Row. Enter the desired number of samples to be taken from each row and press **ENTER**. The Set APP 3/7 Parameters screen displays.
3 Hold Dip Time	Select option **3**, Hold Dip Time. Enter a hold dip time and press **ENTER** to advance to each remaining row. After a hold dip time is entered for the final row, the Set APP 3/7 Parameters screen displays.
4 Set Bath Temp	Select option **4**, Set Bath Temp. Enter the desired water bath temperature and press **ENTER**. The Set APP 3/7 Parameters screen displays.

Table 17 Set App 3/7 Parameters Options (Apparatus 3 / 7)

Option	Function
5 Com Port ID	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 8000 can start individual units. Enter a communication port identification number and press **ENTER**. The Set APP 3/7 Parameters screen displays.
6 Print Frequency	The Apparatus 3 / 7 status prints at each sample time point. Select option **6**, Print Frequency, to set additional times to print the Apparatus 3 / 7 status between sample time points. This option should be reserved for use when there is more than 30 minutes between sample time points. Enter a print frequency and press **ENTER**. The Set APP 3/7 Parameters screen displays. The print frequency timer resets after each sample time point. Note: The status does not print if the specified print frequency time falls within three minutes of the sample time point; the sample time point takes precedence.

Once all values have been entered, press **ESC**. A confirmation screen displays. Press **Y** to send the newly entered parameters to the Apparatus 3 / 7 and override the existing settings.

Main Menu Option 3 - Set Syringe Pump

This section is applicable only to systems including a syringe pump.

NOTE Ensure the syringe pump is enabled prior to setting the syringe pump parameters (see MENU > 0 > P under "Hidden Key Functions" on page 41.

From the Main Menu, select option **3**, Set Syringe Pump. Select option **2** to disable the syringe pump or 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:

Table 18 Set Syringe Pump Parameters Options (Apparatus 3 / 7)

Option	Function
1 Syringe Size	Use this option to set the syringe size. Select option **1**, Syringe Size. Select the syringe size that corresponds with the Kloehn syringes loaded into the syringe pump. The Set Syringe Pump Parameters screen displays.
2 Plunger Speed	Use this option to configure the syringe pump plunger to operate at a specific speed. 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.
3 Prime Loss Volume	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 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. 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. If the tubing length between the sampling cannulas and sampling valves is changed, adjust the prime loss volume accordingly.

Table 18 Set Syringe Pump Parameters Options (Apparatus 3 / 7)

Option	Function
4 Aspirt. Dwell Time	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. Select option **4**, Aspirt. 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.
5 Full Stroke (hidden option)	Use this option to configure the number of steps the stepper motor makes to draw the syringe plunger its maximum stroke length. 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. If the volume dispensed by the syringe is outside of the required specifications based on a 10 mL syringe size, the full stroke value can be adjusted using the following calculation and solving for x: $\frac{\text{target volume (mL)}}{x} = \frac{\text{avg volume dispensed (mL)}}{19300}$
6 Pump Current (hidden option)	Use this option to configure the pump current. The use of more viscous media requires a higher pump current. 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.

Main Menu Option 6 - Control APP 3/7

From the Main Menu, select option **6**, Control APP 3/7. The APP 3/7 Control/Monitor screen displays.

```
***APP 3/7 CONTROL/MONITOR***
1 DIP    2 STOP    3 GO TO ROW    4 HOME
SET RPM: 50                     ACTUAL RPM: 000.0
SET BATH TEMP: 37.5             ACTUAL TEMP: 37.2
```

The following options are commands communicated from the 8000 to the Apparatus 3 / Apparatus 7:

Table 19 App 3/7 Control/Monitor Options

Option	Function
1 Dip	Select option **1**, Dip, to begin dipping.
2 Stop	Select option **2**, Stop, to stop dipping and raise the cannulas.
3 Go To Row	Select option **3**, Go To Row, to move the drive unit to a specific row. Enter a row number and press **ENTER**. The Apparatus 3 / 7 drive unit moves to the indicated row.
4 Home	Select option **4**, Home, to move the drive unit to the home position.

Press **ESC** to return to the Main Menu.

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:

Table 20 Manual Operations (Apparatus 3 / 7)

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 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 41.
5 Turn On (Off) R-M Pump	Ensure TURN ON R-M PUMP displays as option 5. This indicates the replacement media option is disabled. If TURN OFF R-M PUMP displays, select option **5**. TURN ON R-M PUMP displays. Note: The replacement media option must be disabled or the instrument will not operate properly.
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:

Table 21 Operate Syringe/Filter Changer Options

Option	Function
1 Valve to Input	The syringe pump contains a valve to control the direction of the flow of medium. Use this option to move the valve to the input position to manually input or fill the syringe with medium. 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.
2 Valve to Output	The syringe pump contains a valve to control the direction of the flow of medium. Use this option to move the valve to the output position to manually output or purge the syringe of medium. 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.
3 Syringe Fill	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). 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.
4 Syringe Dispense	Use this option to dispense medium from the syringes. Select option **4**, Syringe Dispense. The syringes dispense the previously drawn medium (see "3 Syringe Fill" above).

Table 21 Operate Syringe/Filter Changer Options

Option	Function
5 Filter Changer	Use this option to manually operate the filter changer. Select option **5**, Filter Changer. The Filter Change Manual Control screen displays. To open the filter clamp, select option **1**, Open Clamp. To close the filter clamp, select option **2**, Close Clamp. 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. Press **ESC** to return to the Operate Syringe/Filter Changer screen.
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" on page 55. 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.

Creating a Sample Program

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

1 From the Ready screen, press **PROG** to program the 8000.

2 Enter a program number and press **ENTER**. The Program Variables screen displays, as shown below.

NOTE The 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	4 HEADERS
1 SET APP 3/7 PARAMETERS	5 PRIME TIME
2 SAMPLE TIME POINTS	6 PURGE TIME
3 SAMPLE VOLUME	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	4 HEADERS
1 SET APP 3/7 PARAMETERS	5 PRIME VOLUME
2 SAMPLE TIME POINTS	6 PURGE VOLUME
3 SAMPLE VOLUME	7 FILTER CHG or R-M

NOTE

Option 7 displays as Filter Chg when your system configuration includes the syringe pump and filter changer. See “7 Filter Chg (syringe pump and filter changer)” on page 51.

If your system configuration includes the syringe pump but not a filter changer, option 7 displays as R-M. See “7 R-M (syringe pump)” on page 51.

Following is a description of the Program Variables screen options:

Table 22 Program Variables Options (Apparatus 3 / 7)

Option	Function
1 Set APP 3/7 Parameters	Use this option to set the Apparatus 3 / 7 parameters. Select option **1**, Set APP 3/7 Parameters. The Set APP 3/7 Parameters screen displays. See "Main Menu Option 2 - Set DISSO" on page 53 for a description of the Set APP 3/7 Parameters screen options.
2 Sample Time Points	Use this option to enter the sample time points. See "Program Option 2 - Sample Time Points" on page 90.
3 Sample Volume	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. Note: The maximum volume accepted is 14 mL.
4 Headers	Select option **4**, Headers. The Batch # Selections screen displays. For each option, enter the desired information and press **ENTER**. The Program Variables screen displays. 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.
5 Prime Time (peristaltic pump)	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. 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.
5 Prime Volume (syringe pump)	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. Select option **5**, Prime Volume. Enter a value for the priming volume and press **ENTER**. The Program Variables screen displays. 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.

Table 22 Program Variables Options (Apparatus 3 / 7)

Option	Function
6 Purge Time (peristaltic pump)	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. 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. 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.
6 Purge Volume (syringe pump)	If your system configuration includes the syringe pump, use this option to set a purge volume that ensures all stranded medium is properly expelled. 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. 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.
7 R-M (peristaltic pump)	If your system configuration includes the peristaltic pump, select option **7**, R-M. The Replacement Media Option screen displays. Select option **2**, Disable. The Program Variables screen displays. Note: The replacement media option is not available for use with the Apparatus 3 / 7. The replacement media option must be disabled or the instrument will not operate properly.

Table 22 Program Variables Options (Apparatus 3 / 7)

Option	Function
7 Filter Chg (syringe pump and filter changer)	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. 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. 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.
7 R-M (syringe pump)	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 **2**, Disable. The Program Variables screen displays. Note: The replacement media option is not available for use with the Apparatus 3 / 7. The replacement media option must be disabled or the instrument will not operate properly.

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:01/01/12  09:37:14                ELAPSE:000:00:00
```

NOTE

This screen accepts sampling times and saves them for execution when the program is run. Time points are requested in order of execution starting with collection row number 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 time point is requested.

The following conventions are used with this screen:

- Review previously entered sample time points by pressing **ENTER** to scroll through the entries.
- After all desired sample time points have been entered, enter **000:00** for the last sample time point and press **ENTER**. If the maximum of ten sample time points are entered, you do not have to enter 000:00 for the last sample time point.
- To add additional sample time points, press **ENTER** until a new row time displays. Enter the additional sample time point.
- If more than ten sample time points are needed, use the link program feature. See "Starting a Program" on page 91.
- To correct an entry, press **BACKSPACE** to go to the previous character position and re-enter the correct value.
- If a shorter sample time point 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 time point you wish to discard. All successive time points are eliminated.
- Press **ESC** to save all new values and return to the Program Variables screen.

NOTE

Sample time points 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 time points are at least six minutes apart.

Starting a Program

1. From the Ready screen, press **START PROG** to start a program or modify a program already operating.
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: 01/01/12        15:02:30        ELAPSE: 000:00:04
```

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: 01/01/12        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" on page 51) to alert the analyst when the first program completes and the second program begins.

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.

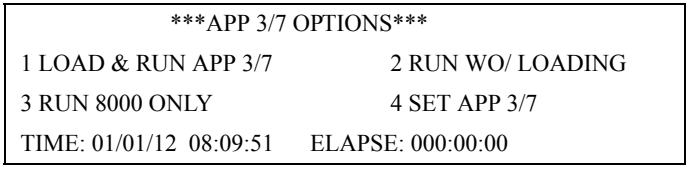
```
          ***SELECT START MODE***
1 START NOW                 2 DELAYED START
3 REMOTE START              4 MODIFY PROGRAM
PROG#: 1 R-M: DISABLED      VOL: 5 ml
```

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

Table 23 Select Start Mode Options (Apparatus 3 / 7)

Option	Function
1 Start Now	Select option **1**, Start Now. The APP 3/7 Options screen displays.
2 Delayed Start	Select option **2**, Delayed Start. The APP 3/7 Options screen displays.
3 Remote Start	This option is designed for use with the 8000 coupled with non-Agilent instruments. 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. "Creating a Sample Program" on page 61 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 settings, select the desired start mode (option 1 - 3) to start the program.

APP 3/7 Options Screen



Following is a description of the APP 3/7 Options screen options:

Table 24 App 3/7 Options

Option	Start Now Function	Delayed Start Function
1 Load & Run APP 3/7	Select option **1**, Load & Run APP 3/7, to upload all saved parameters to the Apparatus 3 / 7 and start the program.	Select option **1**, Load & Run APP 3/7, to upload all saved parameters to the Apparatus 3 / 7. Enter the start time in 24-hour format and press **ENTER**. Enter the start date and press **ENTER**. 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 41. At any time prior to the scheduled start of the program, press **ESC** to cancel the delayed start.
2 Run WO/ Loading	Select option **2**, Run WO/ Loading, to start the program and run the 8000 without loading and overriding the Apparatus 3 / 7 settings.	Select option **2**, Run WO/ Loading, to run the 8000 without loading and overriding the Apparatus 3 / 7 settings. Enter the start time in 24-hour format and press **ENTER**. Enter the start date and press **ENTER**. 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 41. At any time prior to the scheduled start of the program, press **ESC** to cancel the delayed start.
3 Run 8000 Only	Select option **3**, Run 8000 Only, to immediately start the 8000 only. The 8000 executes the program currently selected. This option is used when other instrumentation, such as an Apparatus 3 / 7, is connected to the 8000 through the START OUTPUT jack on the rear of the instrument.	Select option **3**, Run 8000 Only, to start the 8000 only. Enter the start time in 24-hour format and press **ENTER**. Enter the start date and press **ENTER**. Once the start date and time are reached, the 8000 executes the program currently selected. 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 41. At any time prior to the scheduled start of the program, press **ESC** to cancel the delayed start.
4 Set APP 3/7	Use this option to modify or review the current program parameters. Select option **4**, Set APP 3/7. The Set APP 3/7 Parameters screen displays. See "Main Menu Option 2 - Set APP 3/7" on page 79 for a description of the Set APP 3/7 Parameters screen options.	

Manual Sample

From the Ready screen, press **MANUAL SAMPLE** to collect a sample from the dissolution apparatus 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:

Table 25 Manual Sampling 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.

Table 25 Manual Sampling Options

Option	Function
3 Set Volume	Select option **3**, Set Volume. Enter a sample 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 enter a volume larger 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 medium 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.
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 **2** to disable media replacement. The Manual Sampling screen displays. Note: The media replacement option is not available with the Apparatus 3 / 7. Ensure this option is disabled or the instrument will not operate properly.

Volumetric Calibration (Peristaltic Pump only)

NOTE The CAL key on the 8000 can be used only if the peristaltic pump is installed on your system. To calibrate the syringes in the 806 Syringe Pump, see "5 Full Stroke (hidden option)" under "Main Menu Option 3 - Set Syringe Pump" on page 80".

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 99 for specific operating procedures necessary to calibrate your 8000.

NOTE Ensure the cannula filters are in place during calibration.

Automatic Calibration

To perform automatic calibration, complete the following steps:

1. Ensure the sample cannulas of the dissolution apparatus are sufficiently submerged in water.
2. 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.
3. Ensure the supplied autocalibration block is firmly in place and connected to the rear panel jack labeled AUTO CALIBRATION.
4. From the Ready screen, press **CAL**. The dispensing arm moves forward to allow you to check the autocalibration block.

5 The 8000 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
```

6 Select option **2**, Automatic. 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. 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.

7 After the dispensing arm moves forward, remove the autocalibration block.

8 Clean and dry the separate portions of the autocalibration block.

9 Reconnect the top and bottom portions of the autocalibration block and replace it.

10 Press **ESC** to return the dispensing arm to the home position.

Manual Calibration

CAUTION Do not use any acidic media to calibrate your 8000. Be sure to rinse and dry the autocalibration block tips after completion.

NOTE We suggest calibrating with tap water. Deionized water does not work well with the autocalibration block which utilizes conductivity testing.

To perform the calibration yourself, complete the following steps:

1. Remove the sample tray.
2. Ensure the sample cannulas of the dissolution apparatus are sufficiently submerged in water.
3. 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.
4. Press **MENU**.
5. Select option **7**, Manual Operation.
6. Select option **4**, Goto Rows.
7. Enter **4** to move the dispensing arm to row 4.
8. Remove the media rinse reservoir.
9. Press **H** to return to the home position.
10. Press **ESC** three times to return to the Ready screen.
11. From Ready screen, press **CAL**. The dispensing arm moves forward to allow you to check the autocalibration block.
12. Remove the top portion of the autocalibration block and place it on its side to prevent damage.
13. Place clean, empty 10 mL calibration tubes in the bottom portion of the autocalibration block.
14. Select option **1**, Manual. The dispensing arm moves over the autocalibration block and primes the lines according to the manual prime settings.

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: 01/01/12 21:56:40 ELAPSE: 000:00:00

16 Press **OPEN VALVES**. The first calibration tube begins filling.

17 Observe the first calibration tube and press **OPEN VALVES** again when 10 mL is reached.

18 Repeat Steps 17 and 18 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.

19 Press any key to silence the alarm.

20 After the dispensing arm moves forward, remove and clean the calibration tubes.

21 Reconnect the top and bottom portions of the autocalibration block.

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.

23 Press **MENU**.

24 Select option **7**, Manual Operation.

25 Select option **4**, Goto Rows.

26 Enter **4** to move the dispensing arm to row 4.

27 Replace the media rinse reservoir in front of the autocalibration block.

28 Press **H** to return to the home position.

29 Press **ESC** three times to return to the Ready screen.

Checking the Calibration - Volume Accuracy

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

1. Place an appropriate number of 10 mL calibration tubes in row 9 of the 8000 sample tray.
2. Ensure the sample cannulas of the dissolution apparatus are sufficiently submerged in water.
3. From the Ready screen, press **MANUAL SAMPLE**.
4. Enter the following parameters:

Table 26 Volume Accuracy Parameter Options

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	Ensure the RM option is disabled.

5. Verify the values for each parameter which are shown at the bottom of the display screen for this manual program.
6. If the values are correct, select option **1**, Start, to start the sampling procedure. The 8000 dispenses 10 mL into the calibration tubes in row 9 of the sample tray.
7. Check the volume in each tube to ensure the 8000 is dispensing 10 mL ± 0.5 mL from each position.
8. If the volumes are not correct, repeat the calibration of the 8000 according to the procedure described under "Automatic Calibration" on page 97 as appropriate.

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

Daisy Chaining

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

1 Connect the master 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 8000. Connect the START OUTPUT jack of the second 8000 to the START INPUT jack of the second dissolution apparatus. Daisy chain successive units using the same technique.

2 Set the desired program for each 8000 independently.

3 For each of the remote units:

NOTE Ensure the communication port identification number for each linked 8000 increases incrementally (see “4 Set Com Port ID” under “Printer Operation and Communications” on page 103.

- 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 DISSO or APP 3/7. The program loads and the Ready screen displays.

4 For the master 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 DISSO or APP 3/7. The program starts.

Each unit starts running the program you entered.

NOTE Ensure no start output delays have been set on any of the 8000s. Depending on your configuration, see "3 Start Output Delay (peristaltic pump)" under "8000 Menu Options - Apparatus 1 / 2" on page 48 or "6 Start Output Delay" under "Main Menu Option 1 - Set Clock/Alarms" on page 51.

Printer Operation and Communications

NOTE Ensure the printer type is set to impact for the instrument to operate properly (MENU > 0 > E under "Hidden Key Functions" on page 41)

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:

Table 27 Print Selections 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.
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 time points entered in option 2, Sample Time Points, under the Program Variables screen.
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 8000 can start individual units. Enter the communication port identification number and press **ENTER**. The Print Selections screen displays.
5 Set Baud Rate	Select option **5**, Set Baud Rate, to set the baud rate for your system. If you are using the 8000 with other Agilent 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 41.

5
Maintenance and Troubleshooting

Preventive Maintenance 106
Report Center Impact Printer 119

Preventive Maintenance

WARNING **The 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 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. To prolong proper functionality of the 8000 system, it is recommended to perform a cleaning cycle after each dissolution test program.

NOTE Prior to beginning the clean system function, verify an appropriate manual prime time and purge time have been entered via the Main Menu.

Apparatus 1 and 2

1. Place the rinse tray on the vessel table of the dissolution apparatus.
2. Fill the rinse tray with an appropriate cleaning solution, usually water.
3. Fill the rinse chamber of the media rinse reservoir with an appropriate cleaning solution, usually water.
4. Lower the sampling cannulas. See the appropriate dissolution apparatus operator's manual for information on how to operate the sampling cannulas.

5 On the 8000, press **CLEAN SYSTEM**. The Cleaning Systems Selections screen displays.

```
***CLEANING SYSTEMS SELECTIONS***
1 START CLEAN                2 ENABLE AUTO CLEAN

TIME: 01/01/12 08:28:46      ELAPSE: 000:00:00
```

To start the cleaning process immediately, see "Start Immediately" on page 108. To program the auto clean function, see "Programmed Clean" on page 108.

Apparatus 3 / 7

1 Place the appropriate number of outer media tubes in Row 1 of the Apparatus 3 / 7.

2 Fill each outer media tube with an appropriate cleaning solution, usually water.

3 From the Main Menu, select option **6**, Control APP 3/7. See "6 CONTROL APP 3/7" on page 74.

4 Select option **3**, Goto Row.

5 Enter **1** and press **ENTER** to move the drive unit to Row 1 which contains the outer media tubes filled with cleaning solution.

6 Select option **1**, Dip, to lower the agitator shafts and begin dipping. A slow dipping speed, such as 5 DPM, is recommended. See "1 DIPPING SPEED (DPM)" on page 79 for information about how to set the dipping speed.

7 Once dipping has started, press **CLEAN SYSTEM** on the 8000. The Cleaning Systems Selections screen displays.

```
***CLEANING SYSTEMS SELECTIONS***
1 START CLEAN                2 ENABLE AUTO CLEAN

TIME: 01/01/12  08:28:46     ELAPSE: 000:00:00
```

To start the cleaning process immediately, see "Start Immediately" on page 108. To program the auto clean function, see "Programmed Clean" on page 108.

Start Immediately

From the Cleaning Systems Selections screen, select option **1**, Start Clean. The 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 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:

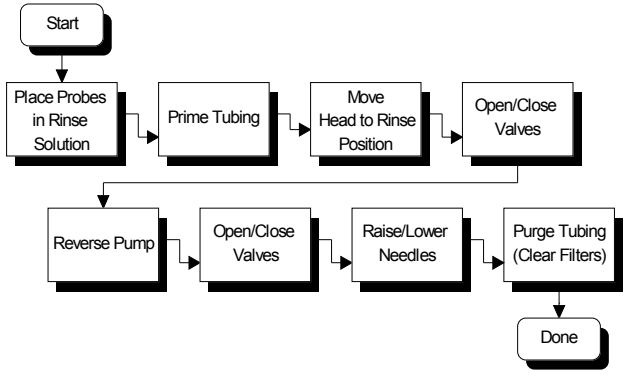


Figure 16 The Cleaning Process

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:

1. Ensure the rinse chamber of the media rinse reservoir is filled with the cleaning solution.
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: 01/01/12	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.

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: 01/01/12 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 time point.

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

Table 28 Program Auto Clean Variables

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 time point.
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 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).

NOTE 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 8000 activates the valves several times to clean the valves and needles.

Clean System Function with Syringe Pump

Apparatus 1 / 2

1. Place the rinse tray fitted with cleaning solution, usually water, on the vessel table of the dissolution apparatus.
2. Immerse all six or eight sampling cannulas.
3. Press **CLEAN SYSTEM**.
4. The 8000 immediately starts to clean the system.

Apparatus 3 / 7

To clean the system, immerse all sampling cannulas into a cleaning solution, usually water. Complete the following steps:

1. Fill one row of outer media tubes with the appropriate cleaning solution, usually water.
2. On the Apparatus 3 / 7, press **START DIP**.
3. Select option **3**, Goto Row.
4. Enter the row number which contains the cleaning solution and press **ENTER**. The drive unit moves to the selected row.
5. Select option **2**, Set Speed (DPM).
6. Enter **5** DPM and press **ENTER**.
7. Select option **1**, Start. The agitator shafts lower and begin dipping.
8. On the 8000, press **CLEAN SYSTEM**. The Cleaning Systems Selections screen displays and the cleaning procedure begins immediately.

9 Upon completion of the cleaning process, the 8000 dispensing arm and the Apparatus 3 / 7 drive unit return to the home position.

Syringe and Seal Replacement

NOTE

If the syringe seal eventually develops a leak, retighten the syringe by hand (18 - 21 oz-in, 1.3 - 1.5 Kg-cm).

If the seal eventually obstructs the media path, new seals are available for purchase (P/N K1002-00438).

1 Disconnect all sample tubes from the pump.

2 On the 8000, press **MENU** > **7** > **6** > **3** to partially extend the syringe plungers.

3 When the syringe plungers reach approximately 5 mL, turn off the pump.

4 Disconnect the power cord and communication cables from the pump.

5 Remove the syringe plunger thumb screw(s).

6 Using a #2 Phillips screwdriver, remove the 4 screws that secure the retainer block at the top of the syringes.

7 Carefully remove the syringe valve retainer block.

8 Flip the pump so that it is sitting on its top.

9 For improved access to the syringe ferrule, gently slide the syringe away from the pump while disengaging the plunger and valve from their locating pins.

CAUTION

The distance that the valve will move out of the pump is limited by the valve wires. Use care not to break or damage the valve wires.

10 Unscrew the syringe from the valve using care not to break the glass.

11 If there is a seal within the syringe port on the valve, extract it from the port.

12 Install the new seal into the syringe port, making sure that it lays flat in the bottom of the port and that the media path is not obstructed.

13 Install the syringe into the valve. Tighten by hand (18 - 21 oz-in, 1.3 - 1.5 Kg-cm).

14 Extend syringe plunger so that it is aligned with the plunger pin on the pump.

15 Carefully install the syringe and valve assembly onto the valve and plunger pins.

16 Replace the syringe valve retainer block and tighten the screws.

17 Reinstall the syringe plunger thumb screw(s).

18 Place the pump upright and connect the power cord and communication cables.

19 Turn on the pump.

NOTE The pump will initialize and compress all of the syringe plungers when turned on.

20 Connect all sample tubes to the pump.

21 Check for leaks using the 8000.

Cleaning the Syringes

To clean the syringes, use the appropriate cleaning solution based on the product being tested. Ensure the sampling cannulas of the dissolution apparatus 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

1 From the 8000 Ready screen, press **MENU** > **7**. The Manual Operations screen displays.

2 Select option **6**, Syringe/Filter. The Operate Syringe/Filter Changer screen displays.

3 Select option **1**, Valve to Input, to ensure the valve is set to input.

4 Select option **3**, Syringe Fill.

5 Enter **100** and press **ENTER**. The syringes fill completely with cleaning solution.

6 Allow the solution to remain in the syringes for ten minutes.

7 Select option **4**, Syringe Dispense. The cleaning solution expels from the syringes.

8 Replace the cleaning solution in the rinse tray with ultrapure water.

9 Repeat Steps 3 - 7 a minimum of ten times to flush the syringes thoroughly.

10 When the cleaning procedure is complete, press **ESC** until the Ready screen displays.

Acid / Base Cleaning Procedure

1 Fill the rinse tray with 0.1N NaOH.

2 From the 8000 Ready screen, press **MENU** > **7**. The Manual Operations screen displays.

3 Select option **6**, Syringe/Filter. The Operate Syringe/Filter Changer screen displays.

4 Select option **1**, Valve to Input, to ensure the valve is set to input.

5 Select option **3**, Syringe Fill.

6 Enter **100** and press **ENTER**. The syringes fill completely with cleaning solution.

7 Allow the solution to remain in the syringes for ten minutes.

8 Select option **4**, Syringe Dispense. The cleaning solution expels from the syringes.

9 Replace the cleaning solution in the rinse tray with ultrapure water.

10 Repeat Steps 5 - 9 to flush the syringe.

11 Change the cleaning solution in the rinse tray to 0.1N HCl and repeat Steps 5 - 9.

12 Replace the cleaning solution in the rinse tray with ultrapure water.

13 Repeat Steps 5 - 9 a minimum of ten times to flush the syringes thoroughly.

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 8000, syringe pump, and filter changer system, use the appropriate cleaning solution based on the product being tested. 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 by pressing **MENU** > **0** > **R**.

1 From the Ready screen, press **PROG** to program the 8000.

2 Enter a program number (1 - 15) to use for this cleaning program and press **ENTER**. The Program Variables screen displays.

3 Select option **1**, Set DISSO Parameters.

4 Enter the following parameters:

Table 29 Disso 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**. Note: It is not necessary to set the water bath temperature if using a dissolution apparatus with Direct Vessel Heating (DVH).
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**.

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

6 Enter the following parameters:

Table 30 Program Variables

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 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**.

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

8 Press **START PROG**.

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

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

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

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

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

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

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

5 Select option **1**, Lift Valves, to raise the needles.

6 Repeat Steps 4 and 5 a minimum of four times to completely expel the cleaning solution from the needles.

7 Select option **3**, Open/Close Valves, to close the valves.

8 Select option **4**, Goto Rows.

9 Press **H** to move the dispensing arm to the home position.

10 Press **ESC** until the Ready screen displays.

Cleaning the Filter Changer Drip Tray

1 Slide up and remove the filter catch basin from the screw mount on the front of the filter changer.

2 Pull the drip tray forward completely to remove it from under the filter changer.

3 Empty any accumulated liquid from the tray and wipe it clean.

4 Replace the tray under the filter changer by sliding it forward along the tracks until it stops.

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.

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

2 Select option **4**, Goto Rows. The Select Destinations screen displays.

3 Press **6** to move the dispensing arm to Row 6.

4 Remove the rinse reservoir, empty any fluid and replace the reservoir.

5 Press **H** to return the dispensing arm to the home position.

6 Fill a 1L beaker or vessel with warm water.

7 Place the source tube in the warm water.

8 Place the return line in an empty beaker or vessel.

9 Press **ESC** to return to the Manual Operations screen.

10 Select option **5**, Turn On R-M Pump.

11 Allow the pump to run until the source beaker is empty.

12 Select option **5**, Turn Off R-M Pump.

13 Repeat Steps 2 - 12 using ultrapure water in place of the warm water.

14 Select option **5**, Turn On R-M Pump.

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.

16 Select option **5**, Turn Off R-M Pump.

17 From the Manual Operations screen, select option **4**, Goto Rows.

18 Press **6** to move the dispensing arm to Row 6.

19 Remove the rinse reservoir, empty any fluid, and replace the reservoir.

20 Press **H** to return the dispensing arm to the home position.

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:

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.
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.
3. Push down on the right side of the ribbon cartridge (marked PUSH) and remove the old cartridge.
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.
5. Turn the cartridge knob (marked by an arrow) clockwise to stretch the ribbon taut.
6. Replace the cover.
7. Toggle the printer online by pressing the printer toggle switch to the *OnLine / Off Line* position. The Ready LED illuminates.
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

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.
2. Grasp the paper roll cover firmly by the grooves on the side and the front edge. Pull outward to remove the cover.
3. Press the printer toggle switch to *Paper feed* to advance the paper approximately one inch beyond the paper cutter.
4. Remove the paper roll.
5. Using scissors, cut the paper feeding to the printer.
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.
7. Unroll several inches of paper on the new roll.
8. If it is jagged, cut a straight edge on the paper roll to facilitate the entry of the paper into the printer.
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.
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.

11. Release the printer toggle switch.
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.

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.

14 Toggle the printer online by pressing the printer toggle switch to the *OnLine / Off Line* position. The Ready LED illuminates.

Toggling Your Printer Online

Complete these steps to toggle your printer online:

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.

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 122 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:

1 Turn off the 8000.

2 Press and hold the printer toggle switch in the *Paper feed* position.

3 Turn on the 8000.

4 Hold the printer toggle switch until printing begins. The printer prints a list of the current configuration settings and a continuous print test.

5 Press the printer toggle switch to the *OnLine / Off Line* position to stop the printing operation.

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.

1 Turn off the 8000.

2 Press and hold the printer toggle switch in the *OnLine / Off Line* position while turning the 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.

3 The printer should print: *** SETUP MENU *** and CONFIGURE... . [NEXT/OK]. If this message does not print, repeat Steps 1 through 3.

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...	

Obtaining Warranty and Other Services

To place a service order (warranty or other services), please contact your local Customer Care Center. Contact information can be found at www.agilent.com under your country using the Contact Us link. Place your service request using the displayed phone number or E-mail address.

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