



Dissolution Testing and Analysis

# DISSOLUTION SYSTEMS SOURCE BOOK

2017-2018 Edition



Agilent Technologies

# AGILENT SITES AND SERVICES FOR YOUR DISSOLUTION WORKFLOW



Agilent Dissolution Systems Digital Source Book

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[dissolution.hotline@agilent.com](mailto:dissolution.hotline@agilent.com)

Dissolution Discussion Group (DDG)

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# Welcome

Agilent Technologies, Inc. is well known within the pharmaceutical community for its broad portfolio of instruments and supplies, and now offers a variety of dissolution and pharmaceutical testing equipment. Agilent's unique position as a leader in analytical instruments allows us to meet all your needs for equipment, software, and reporting packages, qualification documentation and services, training and postsale support – anywhere you operate around the globe.

The latest edition of the Dissolution Source Book provides a detailed view of this portfolio, including dissolution apparatus, automated systems, calibration and verification tools, dissolution software, analytical UV-Vis and HPLC integration and physical testing. Here you will find in-depth product descriptions, regulatory information, useful tips, specifications and ordering details for thousands of Agilent dissolution products.

There is also a digital version of this Dissolution Source Book. The Dissolution Systems Digital Source Book contains many videos as well as links to white papers, webinars, posters, and presentations. Access the digital version at **[www.nxtbook.com/nxtbooks/agilent/dissolution\\_sourcebook/index.php](http://www.nxtbook.com/nxtbooks/agilent/dissolution_sourcebook/index.php)**

Agilent chemists are always available to assist you with dissolution questions.

Contact our Dissolution Hotline at **[dissolution.hotline@agilent.com](mailto:dissolution.hotline@agilent.com)**.

More information is available by visiting **[www.agilent.com/lifesciences/dissolution](http://www.agilent.com/lifesciences/dissolution)** or by contacting your local Agilent representative.

# Table of Contents

<b>1</b>	<b>Market Solutions and Industry Information ..... 3</b>	<b>4</b>	<b>Qualification Tools ..... 85</b>
	Market Solutions..... 4		280-DS Mechanical Qualification System ..... 86
	Industry Information ..... 8	<b>5</b>	<b>Automated Dissolution Sampling Systems and Accessories ..... 89</b>
<b>2</b>	<b>Dissolution Apparatus and Accessories 11</b>		850-DS Dissolution Sampling Station ..... 90
	Apparatus 1,2,5,6 and Intrinsic –	<b>6</b>	<b>Automated UV Dissolution Systems..... 95</b>
	708-DS Dissolution Apparatus ..... 12		UV Dissolution Systems..... 96
	dissoGUARD and dissoShield ..... 22		Cary 8454 UV Dissolution Systems..... 100
	708-DS Accessories ..... 24		UV-Vis ChemStation Software..... 107
	Baskets, Paddles and Shafts ..... 24		Cary 60 UV Dissolution System ..... 111
	Vessels ..... 26		Cary WinUV Dissolution Software ..... 117
	Dissolution Accessories..... 33	<b>7</b>	<b>Content Uniformity..... 125</b>
	Baskets, Paddles, Shafts..... 33	<b>8</b>	<b>HPLC Solutions and Software ..... 131</b>
	Dissolution Vessels..... 40		Agilent InfinityLab LC Series..... 132
	Conversion Kits..... 43		Integrating Dissolution and HPLC ..... 134
	Capsule Wire Weights and Sinkers Baskets ..... 45	<b>9</b>	<b>Disintegration Apparatus ..... 135</b>
	Sampling and Temperature Measurement..... 47		100 Automated Disintegration Apparatus ..... 136
	Filtration..... 50	<b>10</b>	<b>Accessories and Replacement Parts for Legacy Products..... 139</b>
	GE Whatman Filter Plates..... 52	<b>11</b>	<b>Service and Qualification ..... 163</b>
	Evaporation Covers ..... 53	<b>12</b>	<b>Educational Services and Industry Support..... 169</b>
	Transdermal Delivery Systems –	<b>13</b>	<b>Index ..... 181</b>
	USP Apparatus 5,6, and 7 ..... 54		
	Enhancer Cell..... 57		
	Intrinsic Dissolution Apparatus..... 59		
	Verification Tools ..... 61		
	Water Baths and Heater/Circulators ..... 62		
	Apparatus 3 – BIO-DIS Reciprocating Cylinder..... 63		
	Apparatus 7 – Reciprocating Holder Apparatus 7 ..... 69		
	400-DS Apparatus..... 75		
<b>3</b>	<b>Dissolution Software..... 81</b>		
	Dissolution Workstation Software..... 82		

## Market Solutions and Industry Information

# Market Solutions

## Agilent Solutions for the Pharmaceutical Industry

### About Agilent

Agilent Technologies is the world's premier measurement company. Through the company's acquisition of Varian, Inc. in 2010, we expanded our already extensive product portfolio for the pharmaceutical industry. The former VanKel Technology Group, which Varian acquired in 2001, offered many instruments for testing and evaluating pharmaceutical dosage forms including dissolution and disintegration. These products and accessories are now fully integrated in the worldwide Agilent distribution network.

Agilent's history spans back to 1939 when Bill Hewlett and Dave Packard started HP and helped shape the technology industry from what is now Silicon Valley in California. Agilent began operating in 1999 as an independent company, but retained the historical HP commitment to innovation and contribution, uncompromising integrity, teamwork, trust and respect for the individual.

### Practical Solutions for Pharmaceutical Testing

With a rich history in supporting the pharmaceutical industry, Agilent offers solutions for drug discovery, development, and manufacturing. The addition of the dissolution business furthers Agilent's support of the pharmaceutical industry through a portfolio of leading dissolution instrumentation and services. Being part of a company that provides the leading UV-Vis and HPLC solutions to the pharmaceutical industry allows us to offer complete workflow solutions, from dissolution apparatus, sampling devices, analytical instruments and the software to control them.

We manufacture dissolution instrumentation to test nearly every dosage form produced. Our staff of application chemists can assist you in selecting the right apparatus and accessories for your method. Whether in R&D or QA/QC, when analyzing those samples, we offer industry leading UV-Vis technology through the Cary 60 and Cary 8454 spectrophotometers. We can help you automate your workflow with offline or online solutions. Should your methodology require HPLC analysis, we have you covered there as well. The Agilent InfinityLab LC Series, with its flexible, modular design, ensures configurations ideally suited to meet your application requirements.







### Workflow Enhancements

We strive to provide solutions for every type of dissolution user, from routine applications to early drug development. Our equipment is designed to be easy to use, flexible and modular in nature. As the workload increases, we offer greater degrees of automation, both in the dissolution test run and sample collection as well as the data analysis and reporting. Purchasing a dissolution system from Agilent ensures you have one vendor to turn to should you have questions or require assistance, resulting in less downtime and better utilization of your equipment.

### Quality

At Agilent, we believe that our customers define quality. They do this every day with the products and services they purchase. Customers buy based on perceived value, that is, they measure the benefits against the costs and select the product and experience that provides superior value. We, therefore, define quality as customer-perceived value.

Agilent products are designed to meet or exceed current published pharmacopeia, as well as FDA and ASTM, requirements at the time of manufacture. Our goal is to supply you with the highest quality pharmaceutical testing solutions on the market. Agilent's quality management system provides you the assurance that our company has the requisite quality system in place to support your activities around the globe.

### Agilent Technologies Quality Policy

Agilent will earn customer loyalty by providing products, services and interactions of the highest quality and greatest value. To achieve this result, we will:

1. Ensure that all of our products comply with applicable safety and regulatory requirements.
2. Ensure our products meet or exceed their published specifications.
3. Maintain and continually improve the effectiveness of our product and service business management systems to conform at a minimum to ISO 9001 Quality Management Standard or more stringent or legally required standards as dictated by specific markets.
4. Continually monitor and improve customers' total experience.
5. Establish quality requirements for suppliers, partners, and contractors and hold them accountable to comply.
6. Treat customers in accordance with Agilent's Standards of Business Conduct and Privacy policies.

### **Conforming to ISO 9001:2008**

Agilent is committed to maintaining our product and service Business Management Systems by conforming to the requirements of ISO 9001:2008. Agilent's product development, manufacturing, and service/support operations meet the applicable ISO requirements. In achieving ISO 9001:2008 certification, Agilent has demonstrated to third-party auditors that we have certain processes in place and under control.

These processes involve activities including:

- Calibration
- Continuous process improvement
- Corrective action
- Customer satisfaction
- Document and record control
- Incoming quality control/In-process inspection/Final inspection
- Internal audits
- Inventory management
- Management review/Management involvement/Resource management
- Procurement control
- Statistical process control
- Training/Certification
- Organization structure/Organization change

Also, Agilent maintains a company-wide ISO 14001 certificate for our Environmental Management System. If you require a copy of an ISO certificate related to a particular Agilent product, please visit our Quality Policy & Resources webpage at **[www.agilent.com/quality/index.shtml](http://www.agilent.com/quality/index.shtml)**.



## The Agilent Service Advantage: Helping You Focus On What You Do Best

Agilent brings a worldwide network of highly skilled, experienced professionals committed to your success. Our factory-trained field service engineers combine regulatory training along with product maintenance and support knowledge to properly install and qualify your dissolution apparatus. Whether it is Installation or Operational Qualification (IQ/OQ), Performance Verification Testing (PVT, or PQ), or Mechanical Qualification (MQ), we can assist you with initial installations or routine qualification services. We offer customized service agreements based on your specific needs and supported by one of our 65 global service centers.

The image shows a stack of five identical forms titled "MECHANICAL QUALIFICATION REPORT SHEET - PUMPLE APPARATUS". Each form is numbered 1 through 5, corresponding to the "Form Number" field in the header. The forms are dated from 10/20/10 to 10/20/11. Each form contains a header section with personal and contact information, a "Test Results" section with checkboxes for various skills, and a large table for recording test results. The forms are fanned out, showing the top of each one.

**Form 1 (Top):**

Form Number: 01 of 05  
 Name: [Blank]  
 Address: [Blank]  
 City: [Blank]  
 State: [Blank]  
 Zip: [Blank]  
 Phone: [Blank]  
 Email: [Blank]  
 Date: 10/20/10

**Test Results:**

Test Name: [Blank]  
 Test Date: [Blank]  
 Test Location: [Blank]  
 Test Results: [Blank]

**Table:**

Test Name	Test Date	Test Location	Test Results
1. Pump Assembly	10/20/10	10/20/10	10/20/10
2. Pump Disassembly	10/20/10	10/20/10	10/20/10
3. Pump Repair	10/20/10	10/20/10	10/20/10
4. Pump Maintenance	10/20/10	10/20/10	10/20/10
5. Pump Inspection	10/20/10	10/20/10	10/20/10
6. Pump Testing	10/20/10	10/20/10	10/20/10
7. Pump Calibration	10/20/10	10/20/10	10/20/10
8. Pump Adjustment	10/20/10	10/20/10	10/20/10
9. Pump Replacement	10/20/10	10/20/10	10/20/10
10. Pump Installation	10/20/10	10/20/10	10/20/10
11. Pump Operation	10/20/10	10/20/10	10/20/10
12. Pump Troubleshooting	10/20/10	10/20/10	10/20/10
13. Pump Safety	10/20/10	10/20/10	10/20/10
14. Pump Documentation	10/20/10	10/20/10	10/20/10
15. Pump Training	10/20/10	10/20/10	10/20/10
16. Pump Maintenance	10/20/10	10/20/10	10/20/10
17. Pump Inspection	10/20/10	10/20/10	10/20/10
18. Pump Testing	10/20/10	10/20/10	10/20/10
19. Pump Calibration	10/20/10	10/20/10	10/20/10
20. Pump Adjustment	10/20/10	10/20/10	10/20/10
21. Pump Replacement	10/20/10	10/20/10	10/20/10
22. Pump Installation	10/20/10	10/20/10	10/20/10
23. Pump Operation	10/20/10	10/20/10	10/20/10
24. Pump Troubleshooting	10/20/10	10/20/10	10/20/10
25. Pump Safety	10/20/10	10/20/10	10/20/10
26. Pump Documentation	10/20/10	10/20/10	10/20/10
27. Pump Training	10/20/10	10/20/10	10/20/10
28. Pump Maintenance	10/20/10	10/20/10	10/20/10
29. Pump Inspection	10/20/10	10/20/10	10/20/10
30. Pump Testing	10/20/10	10/20/10	10/20/10
31. Pump Calibration	10/20/10	10/20/10	10/20/10
32. Pump Adjustment	10/20/10	10/20/10	10/20/10
33. Pump Replacement	10/20/10	10/20/10	10/20/10
34. Pump Installation	10/20/10	10/20/10	10/20/10
35. Pump Operation	10/20/10	10/20/10	10/20/10
36. Pump Troubleshooting	10/20/10	10/20/10	10/20/10
37. Pump Safety	10/20/10	10/20/10	10/20/10
38. Pump Documentation	10/20/10	10/20/10	10/20/10
39. Pump Training	10/20/10	10/20/10	10/20/10
40. Pump Maintenance	10/20/10	10/20/10	10/20/10
41. Pump Inspection	10/20/10	10/20/10	10/20/10
42. Pump Testing	10/20/10	10/20/10	10/20/10
43. Pump Calibration	10/20/10	10/20/10	10/20/10
44. Pump Adjustment	10/20/10	10/20/10	10/20/10
45. Pump Replacement	10/20/10	10/20/10	10/20/10
46. Pump Installation	10/20/10	10/20/10	10/20/10
47. Pump Operation	10/20/10	10/20/10	10/20/10
48. Pump Troubleshooting	10/20/10	10/20/10	10/20/10
49. Pump Safety	10/20/10	10/20/10	10/20/10
50. Pump Documentation	10/20/10	10/20/10	10/20/10
51. Pump Training	10/20/10	10/20/10	10/20/10
52. Pump Maintenance	10/20/10	10/20/10	10/20/10
53. Pump Inspection	10/20/10	10/20/10	10/20/10
54. Pump Testing	10/20/10	10/20/10	10/20/10
55. Pump Calibration	10/20/10	10/20/10	10/20/10
56. Pump Adjustment	10/20/10	10/20/10	10/20/10
57. Pump Replacement	10/20/10	10/20/10	10/20/10
58. Pump Installation	10/20/10	10/20/10	10/20/10
59. Pump Operation	10/20/10	10/20/10	10/20/10
60. Pump Troubleshooting	10/20/10	10/20/10	10/20/10
61. Pump Safety	10/20/10	10/20/10	

280-DS MQ Report

## Industry Information

### **Apparatus, Pharmacopeia, and Regulatory Affairs Overview**

The design of dissolution apparatus is specified by the various pharmacopeias from around the world. In addition, both the FDA and ASTM, as well as other regulatory groups, have called for tighter mechanical specifications. The apparatus is routinely operated in facilities regulated by federal agencies, such as the US Food and Drug Administration, which require laboratories to operate under good manufacturing practices (GMPs).

Agilent's dissolution apparatus are developed to operate under GMP environments which require installation, operational, and ongoing performance or mechanical qualifications to verify that the systems are operating as intended. We also provide several software tools that simplify compliance in the dissolution lab. Agilent offers extensive documentation and services that provide full instrument qualifications, including the most recent guidance on mechanical qualification of dissolution apparatus.

We provide the instruments and accessories to test essentially all types of dosage forms, including tablets, capsules, semisolids, transdermal patches, microspheres, implants, etc. Our equipment is designed to easily work with immediate, modified, delayed, or extended release products. Our designs adhere to compendial guidelines. We also offer some noncompendial designs when the traditional methodologies are not suitable for some unique drug release characteristics.



The Agilent 708-DS Dissolution Apparatus and 850-DS Sampling Station are designed with compliance in mind.

## Applications and Testing Capabilities of Agilent Dissolution Apparatus

Dissolution Apparatus	Description	Common Products Types
<b>Stirred Vessel Methods</b>		
The basket and paddle dissolution apparatus are the most commonly used throughout the world. These methods traditionally require the placement of individual dosage forms into 1L glass vessels containing a fixed volume of fluid referred to as dissolution medium.		
Agilent 708-DS Dissolution Apparatus for Rotating Basket (USP Apparatus 1)	Shaft with attached mesh basket fabricated from stainless steel; the dosage form is contained within the basket, lowered into media and rotated typically at 50-100 rpm.	<ul style="list-style-type: none"> <li>• Capsules</li> <li>• Tablets</li> <li>• Floating dosage forms</li> <li>• Modified release products</li> <li>• Beads</li> <li>• Suppositories</li> </ul>
Agilent 708-DS Dissolution Apparatus for Rotating Paddle (USP Apparatus 2)	Paddle blade fixed to the bottom of a shaft fabricated from stainless steel or PTFE coating; the dosage form is introduced directly to the media and the shaft is rotated typically at 50-75 rpm.	<ul style="list-style-type: none"> <li>• Tablets</li> <li>• Capsules</li> <li>• Hydrogels</li> <li>• Powders</li> <li>• Suspensions</li> <li>• Microparticles</li> </ul>
Agilent 708-DS Dissolution Apparatus for Paddle over Disk (USP Apparatus 5)	Rotating paddle apparatus with the addition of a transdermal system attached to a stainless steel screen and ring assembly; placed at the bottom of the vessel.	<ul style="list-style-type: none"> <li>• Transdermal patches</li> </ul>
Agilent 708-DS Dissolution Apparatus for Rotating Cylinder (USP Apparatus 6)	Rotating dissolution apparatus that utilizes a rotating cylinder upon which a transdermal patch is placed; cylinder provides mixing by convection principles.	<ul style="list-style-type: none"> <li>• Transdermal patches</li> </ul>
<b>Reciprocating Methods</b>		
The dosage form is placed within a chamber through which media flows in alternating directions, or on/within numerous holders specifically designed for novel extended release dosage forms. The cylinders or holders typically reciprocate in 300 mL vessels although both larger and smaller outer vessels are available.		
Agilent BIO-DIS Reciprocating Cylinder Apparatus (USP Apparatus 3)	Mimicking the pH changes of the GI tract, glass cylinders containing the dosage form between capped screens of varying mesh sizes reciprocate 10 cm within 300 mL vessels containing media for a designated time period before the dosage form is transported to another row of media (six rows are available, more with a change of trays).	<ul style="list-style-type: none"> <li>• Capsules</li> <li>• Beads</li> <li>• Chewables</li> <li>• Veterinary products</li> <li>• Enteric coated products</li> <li>• Extended, modified or sustained release formulations</li> </ul>
Agilent Reciprocating Holder Apparatus and 400-DS Dissolution Apparatus (USP Apparatus 7)	Holders designed for sustained or extended release, including small-volume or combination products, reciprocate through a distance of 2 cm in volumes ranging from 300 mL down to as little as 3 mL.	<ul style="list-style-type: none"> <li>• Transdermal systems</li> <li>• Osmotic pumps</li> <li>• Implants</li> <li>• Drug-eluting stents</li> <li>• High-potency, low-dose systems</li> </ul>
<b>Alternative Applications</b>		
Additional configurations were developed to provide drug release information for the API and topical formulations.		
Agilent Intrinsic Apparatus	Stainless steel die containing a pellet of pure drug substance with a constant surface area to determine the intrinsic dissolution rate; used in early drug development for API characterization.	<ul style="list-style-type: none"> <li>• Pure drug substances</li> </ul>
Agilent Enhancer Cell or Vertical Diffusion Cell	Cells consists of a chamber containing dosage form with synthetic or natural membrane representing skin to test biorelevance using small-volume vessels and miniature paddles.	<ul style="list-style-type: none"> <li>• Ointments</li> <li>• Creams</li> <li>• Gels</li> <li>• Transdermal</li> </ul>
Agilent Peak Vessel	The Peak Vessel contains an inverted peak in the base of the vessel to displace disintegrated particles in the unstirred zone, preventing cone formation.	<ul style="list-style-type: none"> <li>• Beads</li> <li>• Products exhibiting coning problems</li> </ul>





Agilent Technologies  
708-DS Dissolution Apparatus

2



Dissolution Apparatus and Accessories

## USP Apparatus 1, 2, 5, 6 and Intrinsic

### DID YOU KNOW?

#### See the 708-DS in Action!

View the interactive demo and find out how your laboratory can be more productive!

<http://4-next.net/agilent>

### Agilent 708-DS Dissolution Apparatus

The 708-DS Dissolution Apparatus solidifies our commitment to provide an ideal platform for laboratories to standardize their dissolution testing. This instrument is designed to deliver consistent performance and results while conforming to current internationally harmonized pharmacopeial specifications for basket, paddle, rotating cylinder, paddle over disk and intrinsic dissolution tests.

The instrument's versatile dissolution platform can be configured for your needs today as well as tomorrow. The intelligent design accommodates all requirements from basic manual testing to automated configurations for high-throughput sampling and online analysis. The 708-DS is designed to accommodate a variety of vessel sizes and accessories based on the dosage form being tested. The apparatus allows for advanced usage options including automated dosage delivery, in-vessel temperature monitoring, automated sampling and in situ fiber optic analysis. The 708-DS can be configured for either 6- or 8-position testing based on your application.



Interactive demo of 708-DS Dissolution Apparatus - experience at <http://4-next.net/agilent>





Hands-free evaporation cover suspension supports easy media addition.

Providing a new standard for reliability and reproducibility in dissolution testing, the rugged platform conforms to either the USP Performance Verification Test (PVT) or the most rigorous enhanced mechanical qualification (MQ) standards as recommended by the ASTM, US FDA, and many worldwide regulatory agencies. The advanced design serves to minimize or eliminate variability, allowing for monitoring subtle changes attributed to dosage forms, not the dissolution apparatus. In fact, particular attention was given to simplifying the measurement of critical parameters, allowing for optimal alignment while minimizing vibration.

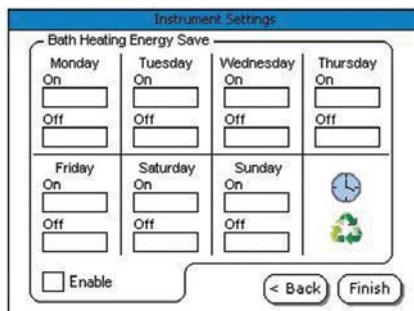
## DID YOU KNOW?

### 708-DS Enhancements

- Expanded method storage
- Power-saving function
- Individual username and password access with configurable access levels
- Visual guidance for manual dosage introduction and sampling

- Flexible sampling options: easy access to all vessels ensures quick, simple manual sampling through the evaporation cover or the convenient manual sampling bracket. Alternatively, automate your sampling using the programmable, hands-free manifold and the 850-DS Dissolution Sampling Station.
- Accurately measure and record individual vessel temperatures manually with the handheld temperature probe or automate this process with the AutoTemp feature.
- Automate your dosage delivery with the Dosage Delivery Module (DDM), or introduce samples manually through the evaporation cover with helpful on-screen prompts. Using the DDM feature allows you to precisely drop samples simultaneously or sequentially at a predetermined interval.
- Customize your instrument with interchangeable dissolution accessory components, including paddles, baskets, rotating cylinder, and small-volume options. The common upper shafts support interchangeable baskets and paddles, yet maintain the correct height to save time when switching configurations.
- Easily navigate the touch screen panel to setup, store and operate up to 35 methods on the easy-to-read color display. The intuitive interface with screen-locking security features also offers multiple languages, including English, Spanish, Japanese, Chinese and more.
- Hands-free evaporation cover suspension offers a simple way to add media to the vessels, place dosage forms in the vessel, manually sample and measure physical parameters. The evaporation covers automatically travel with the apparatus drive unit using either the alignment posts or DDM assemblies.
- Ensure proper vessel alignment with the 708-DS TruAlign vessel. The incorporated collar allows for better centering and vessel verticality than traditional glass-lipped vessels. There is an indicator tab on the collar allowing for greater reproducibility to minimize variability between dissolution runs.

# DISSOLUTION APPARATUS AND ACCESSORIES



Control the heater/circulator by programming the on/off cycles for energy efficiency.

- Decrease cleaning time with the quick-connect fittings and angled water bath that supports complete draining.
- The heater/circulator is freestanding to minimize vibration. The self-priming unit is quiet and designed to fit beneath the base plate to conserve valuable bench space.
- Conserve energy by programming an automatic sleep schedule for the heater/circulator when not in use.
- Control access and prevent unwanted changes to instrument settings and methods with the different user levels provided by the 708-DS firmware.
- Improve traceability to all system activity using the individual user name and password access feature.
- Using easy-to-install conversion kits, the 708-DS is designed to accept 100 and 200 mL vessels, the 250 mL Chinese Pharmacopoeia vessel, and standard 1L vessels. The 2L model can incorporate a 2L vessel as well as smaller volume vessels with conversion kits.



The 708-DS is easily configured for USP Apparatus 1, 2, 5, and 6 as well as Intrinsic Dissolution or Enhancer (Immersion) Cell use.

## DID YOU KNOW?

### Is Compliance Important to You?

Agilent's Dissolution Workstation Software provides control of up to four dissolution apparatus from one PC. This software can operate any Agilent dissolution apparatus and sampling systems, as well as systems from Varian and VanKel.

See page 81 for more information about Dissolution Workstation Software.

### Designed with Compliance in Mind

The recessed head with unobstructed access on the 708-DS makes setting and verifying physical parameters easier than ever, which is especially critical for Mechanical Qualification.

Agilent has not only raised the standard for dissolution instrumentation with the 708-DS, but the 280-DS Mechanical Qualification System simplifies the apparatus qualification procedure. Our solution also includes the traditional AIQ compliance services and electronic documentation consisting of IQ, OQ, PQ and/or MQ using Agilent's ACE software platform. In addition to these traditional offerings, Agilent provides training and familiarization, SOP templates and guidance, educational seminars, technical and application related support, and much more.

### Online Dissolution and Analysis

Modular detection and automation components can easily be integrated to accomplish a UV analytical finish during dissolution testing. Agilent offers online UV Dissolution capabilities with the Cary 8454 and Cary 60 UV-Vis Spectrophotometers with either multicell or fiber optic configurations. See page 95 for more details.



Multicell UV Dissolution System, including the 708-DS Dissolution Apparatus, 850-DS Dissolution Sampling Station and Cary 60 UV-visible Spectrophotometer.

## DID YOU KNOW?

When recording the physical parameters of the dissolution apparatus, during Mechanical Qualification, for example, it is important to measure parameters with the actual shafts and vessels used when performing the dissolution tests. Record the accessory serial numbers and position within the apparatus for complete traceability.

Agilent's 708-DS does not require the use of surrogate shafts or vessels to perform these measurements during an OQ, PQ, or MQ.

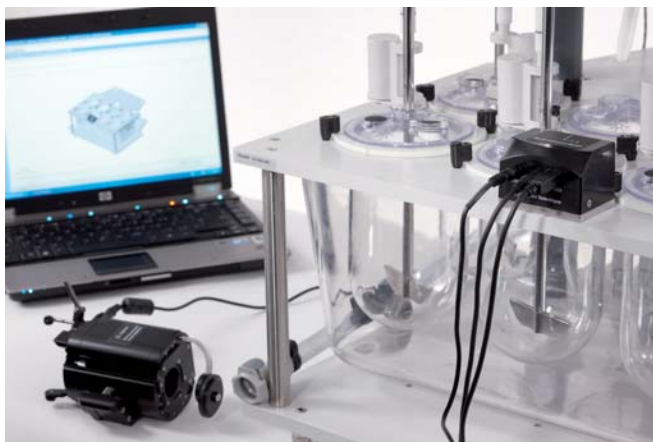
## Standard 708-DS Configuration

Because the 708-DS is designed for configurability, you have the ability to select the exact options you need for your instrument. A standard 708-DS includes:

- 708-DS Dissolution Apparatus
- Vessel plate level adjustment tools
- Receptor shafts with locking collars (6 or 8)
- Evaporation covers (6 or 8)
- Verified basket/paddle shafts and height setting devices
- Baskets (6 or 8)
- Vessels (6 or 8)
- Level
- Heater/circulator
- Safety manual and technical documentation CD

## Optional features include:

- Dosage Delivery Modules (DDM)
- AutoTemp In-vessel Temperature Monitoring
- Autosampling with automated manifold
- Low actinic - red vessels
- Individually verified vessels and baskets
- VF molded vessels
- Built-in printer



Take physical parameter measurements of the 708-DS using the Agilent 280-DS Mechanical Qualification System. See pages 86, 87 to learn more about the 280-DS.

**DID YOU KNOW?****Dosage Delivery Modules**

Equip your 708-DS with DDM to simplify dropping your dosage form when using paddles. Methods can be programmed to automatically start simultaneously or sequentially. The DDM option saves analyst time and prevents costly timing errors. This feature is especially valuable when automated sampling systems are configured.

**708-DS Dissolution Apparatus Bundles**

In order to simplify ordering, product numbers are available for the most common 708-DS configurations. Each bundle includes a 708-DS, 1L TruAlign clear glass vessels, interchangeable paddle and basket shafts, and baskets. Options to further customize each apparatus gives you the flexibility to support your specific testing needs.

Should you have any questions about configuring your apparatus, contact your local Agilent representative or contact us directly via the Dissolution Hotline at [dissolution.hotline@agilent.com](mailto:dissolution.hotline@agilent.com).

**708-DS Dissolution Apparatus (6-position)**

Description	Part No.
708-DS Dissolution Apparatus, 1L, 6-position	G7910A
Includes printer, handheld temperature probe, 1L vessels, interchangeable verified electropolished paddle and basket shafts, baskets, evaporation covers and complete accessories for 6 positions.	
<b>Options for G7910A</b>	
Dosage Delivery Modules (DDMs)	G7910A #101
DDMs and sampling manifold	G7910A #102
DDMs, sampling manifold and temperature monitoring	G7910A #103
Sampling manifold without temperature monitoring	G7910A #104
Sampling manifold with temperature monitoring	G7910A #105
Note: Only one (1) selection may be chosen from options #101-105 for G7910A (not a required selection).	
Low actinic - red vessels	G7910A #110
Delete handheld temperature probe	G7910A #115
Delete basket shafts and baskets	G7910A #120
Delete paddle shafts	G7910A #125
PTFE-coated paddle shafts	G7910A #126
PEEK paddles	G7910A #127
Note: Only one (1) selection may be chosen from options #125-127 for G7910A (not a required selection).	
VF molded vessels	G7910A #130
708-DS Dissolution Apparatus, 2L (includes 1L vessels)	G7910A #140
Verified accessories	G7910A #145
Delete 708-DS printer	G7910A #890
Add Installation Service	G7910A #44K
Add Familiarization Service	G7910A #44L

Note: For complete qualification services offering, see page 163.

## DID YOU KNOW?

### Documentation Options

When configuring a system, consider what other equipment it will be integrated with in your laboratory. If you plan to include an 850-DS, there is no need to duplicate a printer on both instruments. If the 708-DS could also be used for manual sampling, you may include G7913A #880 to add this option. The thermal printers used with the 708-DS utilize a medical-grade paper that lasts up to 25 years!

The 708-DS can be ordered to allow the use of 2L vessels. This configuration is typically used when greater volume is required to achieve sink conditions. If there is a chance you may need this capability, we highly recommend ordering this option at the time you purchase the 708-DS. We do not recommend this upgrade to be performed in the field. All of the automated features (DDM, AutoTemp and automated sampling) can be used on the 2L 708-DS. The 1L vessels as well as the other small-volume conversion kits can also be used.



708-DS Dissolution Apparatus equipped with DDM, Sampling and AutoTemp options.



**DID YOU KNOW?****Hydrodynamic Disturbances**

Avoid hydrodynamic disturbances caused by resident dwelling probes. The sampling manifold only lowers the probes during sampling – lifting the probes between timepoints. By mimicking the manual procedure for sampling, the semi-automated system simplifies your method transfer and validation.



Non-resident sampling cannulas in a TruAlign vessel on the 708-DS

**708-DS Dissolution Apparatus (8-position)**

Description	Part No.
708-DS Dissolution Apparatus, 8-position	G7911A
Includes printer, handheld temperature probe, 1L vessels, interchangeable verified electropolished paddle and basket shafts, baskets, evaporation covers and complete accessories for 8 positions.	
<b>Options for G7911A</b>	
Dosage Delivery Modules (DDMs)	G7911A #101
DDMs and sampling manifold	G7911A #102
DDMs, sampling manifold and temperature monitoring	G7911A #103
Sampling manifold without temperature monitoring	G7911A #104
Sampling manifold with temperature monitoring	G7911A #105
Note: Only one (1) selection may be chosen from options #101-105 for G7911A (not a required selection).	
Low actinic - red vessels	G7911A #110
Delete handheld temperature probe	G7911A #115
Delete basket shafts and baskets	G7911A #120
Delete paddle shafts	G7911A #125
PTFE-coated paddle shafts	G7911A #126
PEEK paddles	G7911A #127
Note: Only one (1) selection may be chosen from options #125-127 for G7911A (not a required selection).	
VF molded vessels	G7911A #130
708-DS Dissolution Apparatus, 2L, (includes 1L vessels)	G7911A #140
Verified accessories	G7911A #145
Delete 708-DS printer	G7911A #890
Add Installation Service	G7911A #44K
Add Familiarization Service	G7911A #44L

Note: For complete qualification services offering, see page 163.

## DID YOU KNOW?

### Temperature Monitoring

Verify and monitor individual vessel temperatures prior to starting a test with the AutoTemp option, which records all the vessel temperatures at once, or via the handheld temperature probe to measure and record the vessel temperatures one at a time. When using the AutoTemp feature, once the set temperature is reached, the apparatus can begin the test automatically without analyst intervention.



Manual temperature measurement using 708-DS temperature probe

The 708-DS Dissolution Apparatus can pair with an 850-DS Sampling Station as well as one of Agilent's spectrophotometers to create an automated solution that best fits your needs. The 708-DS and 850-DS system provides an unattended, repeatable semi-automated solution for your laboratory. See page 96 for online UV dissolution system options.

## 708-DS Dissolution Apparatus and 850-DS Sampling Station

Description	Part No.
<b>Options for G7913A</b>	
708-DS Dissolution Apparatus and 850-DS Sampling Station	G7913A
Includes 708-DS Dissolution Apparatus with DDMs, sampling manifold, vessels, paddles, baskets, accessories and 850-DS Sampling Station with 16x100 mm sample tray.	
Add temperature monitoring to 708-DS	G7913A #105
Low actinic - red vessels	G7913A #110
Delete basket shafts and baskets	G7913A #120
Delete paddle shafts	G7913A #125
PTFE-coated paddle shafts	G7913A #126
PEEK paddles	G7913A #127
Note: Only one (1) selection may be chosen from options #125-127 for G7913A (not a required selection).	
VF Molded Vessels	G7913A #130
708-DS Dissolution Apparatus, 2L, (includes 1-Liter vessels)	G7913A #140
Verified accessories	G7913A #145
Sample tray, 96-position, 2 mL, for HPLC vials (no conversion required)	G7913A #210
Sample kit, 108-position, 2 mL, includes tray and needle block assembly	G7913A #211
Sample kit, 100-position, 2 mL, includes tray and needle block assembly	G7913A #212
Sample kit, 96-well plate, includes tray and needle block assembly	G7913A #213
Add Dissolution Workstation Software cable kit	G7913A #220
Note: Dissolution Workstation Software (G4974AA) or Software Bundle with PC (G9264AA) ordered separately, see page 84.	
Add 708-DS printer	G7913A #880
Add printer to 850-DS	G7913A #881
Add Installation Service	G7913A #44K
Add Familiarization Service	G7913A #44L
Note: For complete qualification services offering, see page 163.	

**DID YOU KNOW?****Need an Upgrade?**

If you're looking to improve productivity and automate your 708-DS, an upgrade kit is available to add the necessary components. Contact your Agilent Service representative and reference part number K1002-02045 to add the internal upgrade for DDM, sampling and temperature measurement.

**708-DS Dissolution Apparatus - Upgrade Options**

Description	Part No.
<b>708-DS Dissolution Apparatus - Printer Options</b>	
Thermal printer assembly, for use with 708-DS	K1005-05160
<b>708-DS Dissolution Apparatus – Options</b>	
DDM assembly, for use with 708-DS	1005-1897
708-DS alignment post, for use in place of DDM with manifold	1005-1898
708-DS evaporation cover plug, white, for use in place of DDM	1200-1012
<b>708-DS Dissolution Apparatus - Motorized Manifold Options</b>	
708-DS manifold, sampling only, 8-position, 1L	K1001-01172
708-DS manifold, sampling only, 8-position, 2L	K1001-01176
708-DS manifold, sampling/temperature, 8-position, 1L	K1001-01184
708-DS manifold, sampling/temperature, 8-position, 2L	K1001-01188
Resident sampling kit, 6-position, 900 mL	K1001-01193
Resident sampling kit, 8-position, 900 mL	K1001-01194
Resident sampling kit, 6-position, 500 mL	K1001-01195
Resident sampling kit, 8-position, 500 mL	K1001-01196
<b>708-DS Dissolution Apparatus - Temperature Probe</b>	
708-DS vessel temperature probe, handheld	K1005-01568

The screenshot shows the 'Instrument Settings' menu. Under 'Tolerances', 'Temperature Tolerance' is set to 0.5 °C and 'Speed Tolerance' is set to 0.5 RPM. Under 'Vessels', there are radio buttons for 2000ml, 1000ml (selected), 200ml, and 100ml. A 'Number Active' field is set to 5. There are checkboxes for 'Enable Alarms and Errors' and 'Enable DDM', both of which are checked. Navigation buttons at the bottom include '< Back', 'Next >', and 'Finish'.

Specific settings and features within the 708-DS firmware such as tolerances, vessel volumes and alarms – are easily adjusted to meet your laboratory's exact requirements.

The screenshot shows the 'Paddles/Baskets Sampling Depth' menu. Under 'Paddles', there are settings for 900 ml (555) and 500 ml (845), each with a 'Save' button. Under 'Baskets', there are settings for 900 ml (540) and 500 ml (772), each with a 'Save' button. On the right, there is a 'Restore Defaults' button, a 'Current Position' display showing 0, and a 'Manifold' section with up and down arrow buttons. Navigation buttons at the bottom include 'Cancel', '< Back', 'Next >', and 'Finish'.

The ability to specify an exact depth for the manifold means that each sample is withdrawn from the same USP location within the dissolution vessel. This adds to the reproducibility and consistency for every test performed – a critical consideration for dissolution testing.

## dissoGUARD Surveillance System



dissoGUARD Software

Merel, an Agilent dissolution partner, offers dissoGUARD, a powerful dissolution surveillance system that offers a real-time view of your dissolution vessels. A dedicated camera is located beneath each vessel location, and illumination is controlled via the software. The system gives you the ability to store videos, export pictures and archive videos for future analysis, track the position of dosage forms, timing and location of sampling cannulas, behavior of particles in-vessel and more. The PRO version enables users to evaluate physical parameters such as centering, wobble and paddle rotation speed. dissoGUARD can be retrofitted to any Agilent 708-DS.

Designed to support the Agilent 708-DS Dissolution Apparatus, dissoGUARD adds unmatched visibility into the dissolution vessel environment.

To learn more about this system, visit [www.dissoguard.com](http://www.dissoguard.com), or contact your Agilent representative.

### dissoGUARD

Description	Part No.
dissoGUARD Surveillance System for Agilent 708-DS, includes 7 embedded cameras, G7988A 1 external camera, software and accessories.	
dissoGUARD PRO Software, provides monitoring of RPM, Wobble and Centering throughout the dissolution test.	G7988A#100
Add Installation Service	G7988A#44K
Add Familiarization Service	G7988A#44L



dissoGUARD System with 708-DS



dissoGUARD System with amber lighting

## dissoSHIELD



dissoSHIELD offers multiple viewing ports for visibility

The dissoSHIELD option can be added to any 708-DS dissolution apparatus to protect light-sensitive products during the dissolution run and shield the bath from UV light by enclosing the area beneath the vessel plate. This allows the use of conventional clear glass – no need to purchase special vessels. The dissoSHIELD allows visibility to the vessels through three hinged doors on the front and sides and can be used with or without dissoSHIELD. When used with dissoGUARD, the special dynamic red lighting allows visibility of the vessels while protecting the light-sensitive products being tested.

### dissoSHIELD

#### Description

dissoSHIELD, 708-DS Bath Shield for light protection  
To be used when dissoGUARD is installed on a 708-DS.

#### Part No.

G7988A#120



dissoGUARD System with dissoSHIELD



## 708-DS Accessories

### Baskets, Paddles and Shafts



Two-piece interchangeable paddle/basket shafts with receptor shafts and 40-mesh baskets

For Apparatus 1 (baskets) and Apparatus 2 (paddles) dissolution testing, Agilent's variety of quality accessories can support your laboratory needs while maintaining compliance with regulatory standards.

#### Two-piece Interchangeable Paddle/Basket Shafts

Switching between paddles and baskets is simple with Agilent's two-piece interchangeable paddle/basket shafts. Rather than resetting the height of the individual shafts when you change between paddles and baskets, the upper receptor shaft stays securely in place, while the lower interchangeable paddle or basket shaft can be switched for your specific testing needs. The paddle and basket shaft assemblies are designed with height offsets so that the proper height is maintained after the changeover.

These shafts are manufactured to meet or exceed the USP specifications. They are precisely engineered, minimizing the risk of cross threading and ensuring a secure connection. In addition, the attachment area remains out of the media so there is less chance for contamination and corrosion. Each component is serialized for traceability.

The 708-DS can also be used with single-piece basket and paddle shafts. The minimum shaft length required is 21 inches.

#### DID YOU KNOW?

Agilent's paddle and basket shafts now come as Verified Accessories with individual certificates of conformance (COCs) that document actual measured values of all critical dimensions, the measurement device used for certification and its traceability. Additionally, a wide variety of additional Verified Accessories are available, including various baskets, and vessels to meet your needs for Mechanical Qualification. For individual baskets and vessels, many of the verified accessories are denoted with a V at the end of the part number.



(Left to right) 40-mesh basket, Teflon-coated basket, gold-plated basket, 20-mesh basket, 10-mesh basket, suppository basket, 3-fin basket, mini basket, and bolus basket





Upper shaft receptor and lower paddle piece

**708-DS Accessories - Paddles, Basket Shafts and Baskets**

Description	Part No.
<b>Two-Piece Paddle/Basket Shafts with individual Certificate of Conformance</b>	
<b>Upper Receptor Shafts</b>	
Upper receptor shaft, 21 in. (total length when assembled)	14-3613
<b>Lower Interchangeable Paddle and Basket Shafts</b>	
Paddle, lower interchangeable, PTFE-coated	14-3602
Paddle, lower interchangeable, electropolished stainless steel	14-3603
Basket shaft, lower interchangeable, 3-clip, USP	14-3631
Basket shaft, lower interchangeable, O-ring	13-3632
Paddle, lower interchangeable, PTFE-coated, for 2L	13-3604
Paddle, lower interchangeable, stainless steel, for 2L	13-3605
Basket shaft, lower interchangeable, 3-clip, for 2L	13-3634
Paddle, lower interchangeable, PEEK	13-3606
Mini basket shaft, lower interchangeable, stainless steel, O-ring	13-3636
Mini paddle, lower interchangeable, PTFE-coated	13-3607
Mini paddle, lower interchangeable, stainless steel	13-3608
<b>Baskets</b>	
Basket, USP, 40-mesh	12-2100
Basket, USP, 40-mesh, includes individual CoC	12-2100V
Basket, mini, 40-mesh	12-2102
<b>Locking rings</b>	
Shaft locking ring, for all models	12-2096

For a complete listing of available baskets, see pages 33, 34, 35, 36, 37, 38, 39.

**DID YOU KNOW?****An Easy Way to Save**

Replace your entire set of accessories with convenient 6-packs of select paddle, basket, and receptor shafts. Keep your system running smoothly by regularly refreshing key components.

Description	Part No.
Paddle, lower, PTFE-coated, 6/pk	16-3602
Paddle, lower, electropolished stainless steel, 6/pk	16-3603
Receptor, 21 in. total, 6/pk	16-3613
Basket, lower, 3-clip, 6/pk	16-3631

## Vessels for 708-DS

### DID YOU KNOW?

#### More Than Great Products

Quality equipment is just one component of your work. We believe education is critical to ensuring correct results. For this reason, we offer numerous educational programs geared to various functions within your company. See page 169 for more information.

Agilent's patented TruAlign vessels for the 708-DS precisely align the vessel every time. Each vessel is individually turned on a lathe to precisely locate the vessel center. Only TruAlign vessels have a collar incorporated onto the vessel around the ground glass groove, maintaining accurate centering and verticality alignment with the dissolution apparatus. An indicator tab on the collar provides reproducible vessel orientation while the serial number offers easy identification.

TruAlign vessels for the 708-DS are available in 100 mL and 200 mL, 1L and 2L sizes. They are available in clear or low actinic – red for light-sensitive products. TruAlign vessels are also available as Peak vessels to prevent cone formation. Individual Certificates of Conformance (CoC) can be obtained by ordering the verified versions of these vessels.



An individually serialized 1L TruAlign vessel

## DID YOU KNOW?

Learn more about  
Agilent's VF Molded Vessels at:  
**[www.agilent.com/lifesciences/vfvessels](http://www.agilent.com/lifesciences/vfvessels)**

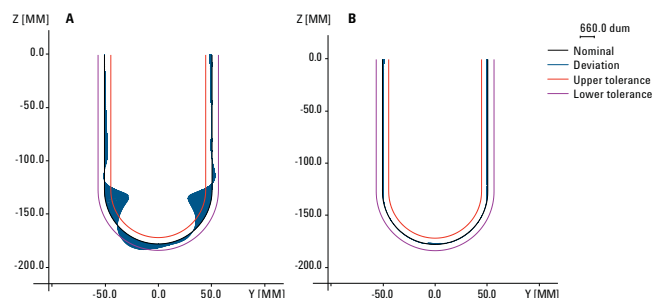
## VF Molded Vessels

Agilent has also introduced molded TruAlign vessels which are vacuum formed (VF) and offer the tightest precision available to reduce position-to-position variability and improve uniformity. With specifications over 10 times more stringent than standard vessels, this option eliminates inconsistencies and removes vessel irregularity as a possible cause for failure. TruAlign VF vessels are offered as 1L clear glass only (available with or without an individual Certificate of Conformance).

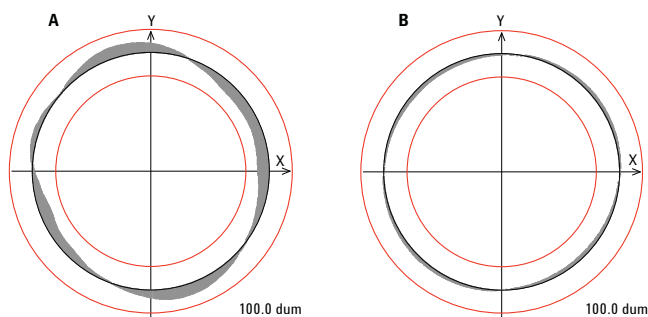
## Conversion Kits

The 708-DS Dissolution Apparatus can also support small-volume dissolution. Each position will require a conversion kit to hold a 100 or 200 mL vessel in position. The conversion kits are designed to be used with either mini paddles, mini baskets, or Enhancer (Immersion) Cells (see pages 57, 58).

Special conversion kits, available in sets of 6 and 8, are also available for the Chinese Pharmacopeia (CP) 250 mL vessel. These kits include the 250 mL vessel designed according to CP specifications, vessel adapter ring, two-piece mini paddle, evaporation cover, height setting device and manifold conversion block (see page 29 for complete details).



Variation in vessel shape between standard vessels tested by Agilent (A) and Agilent VF molded vessels (B), which exceed USP vessel tolerances. The center of the three lines indicates the ideal shape of the cylinder and hemisphere. The two lines drawn on both sides represent  $\pm 0.3$  mm from the center line.



Variation in roundness between a standard vessel (A) and an Agilent VF molded vessel (B). The center of the three lines indicates the ideal shape of the cylinder and hemisphere. The two lines drawn on both sides represent  $\pm 0.3$  mm from the center line.

## DID YOU KNOW?

Agilent offers you the convenience of ordering all your dissolution accessories online at [www.chem.agilent.com/store](http://www.chem.agilent.com/store)

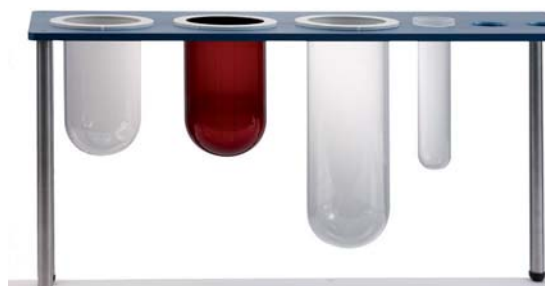
## 708 Accessories - Vessels and Conversion Kits

Description	Part No.
<b>TruAlign Vessels for 708-DS Dissolution Apparatus</b>	
TruAlign vessel, 100 mL	12-5145
TruAlign vessel, low actinic - red, 100 mL	12-5146
TruAlign vessel, 200 mL	12-5147
TruAlign vessel, low actinic - red, 200 mL	12-5148
TruAlign vessel, 1L	12-5149
TruAlign vessel, 1L, with certificate	12-5149V
TruAlign vessel, low actinic - red, 1L	12-5152
TruAlign vessel, low actinic - red, 1L, with certificate	12-5152V
TruAlign Peak vessel, 1L	12-5153
TruAlign Peak vessel, 1L, with certificate	12-5153V
TruAlign Peak vessel, low actinic - red, 1L	12-5154
TruAlign vessel, 2L	12-5157
TruAlign vessel, 2L, with certificate	12-5157V
TruAlign vessel, low actinic - red, 2L	12-5158
TruAlign vessel, low actinic - red, 2L, with certificate	12-5158V
TruAlign Peak vessel, 2L	12-5159
TruAlign vessel, flat bottom, 200 mL (one per position)	12-5170

(Continued)



1L TruAlign Peak vessel



(Left to right) 1L TruAlign vessel, 1L low actinic - red TruAlign vessel, 2L TruAlign vessel and 200 mL TruAlign vessel

**708-DS Accessories – Vessels and Conversion Kits**

Description	Part No.
<b>TruAlign VF Molded Vessels for 708-DS Dissolution Apparatus</b>	
TruAlign VF molded vessel, clear, 1L	12-1501
TruAlign VF molded vessel, clear, 1L with certificate	13-0010
<b>Small Volume TruAlign Vessel Conversion Kits for 708-DS</b>	
TruAlign vessel 100/200 mL conversion kit (includes vessel adapter and evaporation cover)	12-6368
TruAlign vessel, 250 mL conversion kit, for Chinese Pharmacopeia (includes vessel, adapter, two-piece mini paddle, evaporation cover and manifold adapter), set of 6	12-1450
TruAlign vessel, 250 mL conversion kit, for Chinese Pharmacopeia (includes vessel, adapter, two-piece mini paddle, evaporation cover and manifold adapter), set of 8	12-1451
Height gauge sphere, 15 mm, for small volume vessels	K4040-00495



250 mL Vessel Kit (CP)

**DID YOU KNOW?**

A 708-DS Dissolution Apparatus can easily convert to a small-volume apparatus. For example, to convert a 6-position, 1L 708-DS for 200 mL testing with paddles, simply order the parts in the table on the right. Once installed, a simple adjustment to the sampling manifold is also necessary that requires no additional parts or service call.

**Small-volume Conversion Ordering Example**

Quantity	Description	Part No.
6	TruAlign vessel, 200 mL	12-5147
6	TruAlign vessel 100/200 mL conversion kit (includes vessel adapter and evaporation cover)	12-6368
6	Mini paddle, lower interchangeable, stainless steel	13-3608

## DID YOU KNOW?

### Adapting to Changing Needs

Have your laboratory needs changed? Are you ready to upgrade to an automated sampling system? While it's strongly recommended to prepare for this situation when initially ordering your instrument, to add sampling capabilities to your 708-DS, choose the 708-DS upgrade kit and sampling manifold that best fits your needs based on features and vessel volume.

Contact your Agilent representative about scheduling installation of these items:

[www.agilent.com/chem/contactus](http://www.agilent.com/chem/contactus)

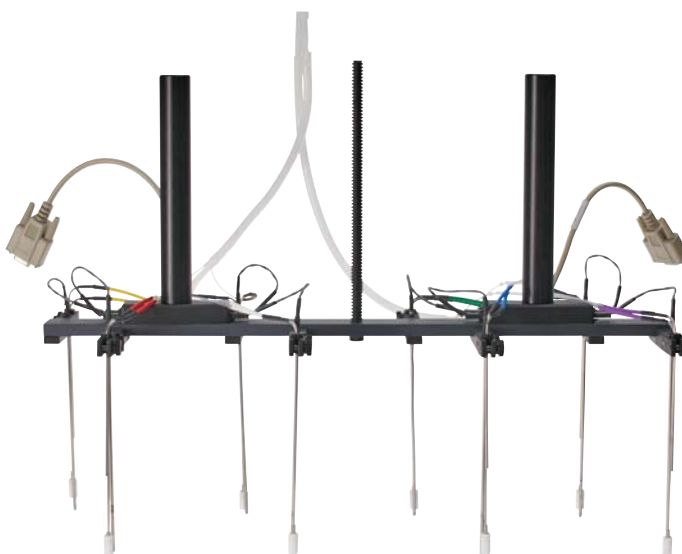
## 708-DS Accessories

In addition to vessels, paddles, baskets and shafts, Agilent offers a variety of accessories specific to the 708-DS platform. These accessories include replacement tubing assemblies for sampling and return cannulas, sampling and resident probe sampling manifold Adapting to Changing Needs kits, evaporation covers and more.

### 708-DS Accessories

Description	Part No.
<b>708-DS Upgrade Kit</b>	
708-DS internal upgrade for DDM, sampling, temperature	K1002-02045
<b>Replacement Tubing Assemblies for 708-DS Manifold</b>	
Tubing assembly, for 1L 708-DS, sample and return cannulas, 6-position	1005-1920
Tubing assembly, for 1L 708-DS, sample and return cannulas, 8-position	1005-1921
Tubing assembly, for 2L 708-DS, sample and return cannulas, 6-position	1005-1922
Tubing assembly, for 2L 708-DS, sample and return cannulas, 8-position	1005-1923
<b>Sampling Manifolds for 708-DS</b>	
708-DS manifold, sampling only, 8-position, 1L	K1001-01172
708-DS manifold, sampling only, 8-position, 2L	K1001-01176
708-DS manifold, sampling/temperature, 8-position, 1L	K1001-01184
708-DS manifold, sampling/temperature, 8-position, 2L	K1001-01188

(Continued)



708-DS Sampling Manifold



**708-DS Accessories****Resident Probe Sampling Kits for 708-DS**

Resident sampling kit, 6-position, 900 mL	K1001-01193
Resident sampling kit, 8-position, 900 mL	K1001-01194
Resident sampling kit, 6-position, 500 mL	K1001-01195
Resident sampling kit, 8-position, 500 mL	K1001-01196

**Evaporation Covers**

708-DS evaporation cover, standard, for CP/USP sampling	K1005-05225
708-DS evaporation cover, low loss for use with resident sampling probes	K1005-05218
708-DS alignment post, for use in place of DDM with manifold	1005-1898
708-DS evaporation cover plug, white, for use in place of DDM	1200-1012
708-DS evaporation cover plug, black, flat	12-6370
708-DS evaporation cover, for blank position	K1400-00210

(Continued)



Standard evaporation cover for 708-DS. Opaque design allows use with light-sensitive products.

## DID YOU KNOW?

### Manual Sampling Bracket

A manual sampling bracket option is available for the 708-DS Dissolution Apparatus. This bracket gives users the ability to sample manually from each vessel position in an efficient and repeatable manner. The bracket attaches to the front of the apparatus and is available with the option to use resident sampling probes (which reside in the evaporation cover) or an existing manifold. The manifold option takes full advantage of the instrument's capability to achieve a reproducible sampling position at each timepoint.

## 708-DS Accessories

### Miscellaneous Accessories for 708-DS

Heater/circulator, 115/230V	G7986A
Water bath temperature probe	67-0300
708-DS vessel temperature probe, handheld	K1005-01568
DDM assembly, for use with 708-DS	1005-1897
Thermal printer assembly, for use with 708-DS	K1005-05160
Thermal printer paper, for use with 708-DS, 10 rolls/pk	12-9988
Thermal printer paper, for use with 708-DS, 100 rolls/pk	12-9989
Cannula rinse cup, with shaft clip	17-1340
Cannula rinse cup carrying tray	17-1345
Acrylic rinse tray, for 708-DS	17-1351
Storage rack for two-piece paddle/basket shafts	12-1352
Sample tubing rinse kit	17-1341
Storage rack for one-piece paddle/basket shafts	12-1350
Manual sampling bracket, for use with manifold, 708-DS	17-3151
Manual sampling bracket, resident probes, 708-DS	17-3152
Baskets, 3-fin (for pretest mixing)	12-1049



Two-piece interchangeable basket/paddle shaft storage rack



Heater/Circulator



Built-in printer for the 708-DS

## Dissolution Accessories

### Baskets, Paddles and Shafts

#### DID YOU KNOW?

##### Legacy Products

Agilent continues to support customers with accessories for legacy products. See pages 140, 141 for a complete listing of accessories that are compatible with the 709-DS, 705-DS, 7000/7010 and 7025/7030 V-Series.

##### Ordering

Order Agilent parts and supplies for current as well as legacy instruments at [www.chem.agilent.com/store](http://www.chem.agilent.com/store)

For Apparatus 1 (baskets) and Apparatus 2 (paddles) dissolution testing, Agilent's variety of quality accessories can support your laboratory's needs while maintaining compliance with regulatory standards. In keeping with the most current guidance for mechanical qualification, Agilent offers Verified Dissolution Accessories including baskets, paddles and shafts with certificates of conformity with actual component measurements for all critical dimensions using traceable devices.

#### Basket Shafts

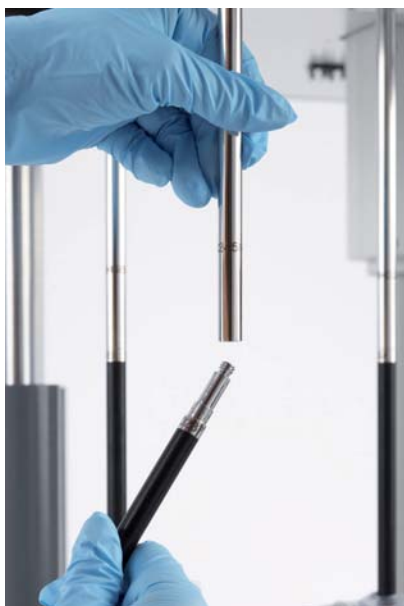
Whether you need electropolished stainless steel, PTFE-coated, gold-plated or mini basket shafts, Agilent provides these individually serialized accessories. Basket shaft options include 3-clip shafts to meet standard USP design, O-ring for automated systems, or conical to support air bubble dispersion. A range of basket shaft lengths to accommodate various models and volume configurations are available.

#### Baskets

From the standard USP 40-mesh stainless steel basket, to custom baskets with varying mesh sizes, to baskets specific to small or large dosage forms, Agilent supports your Apparatus 1 needs. Unless otherwise noted, all baskets fit the standard basket shafts.



(Left to right) Standard 3-clip shaft, conical 3-clip shaft, standard O-ring shaft, conical O-ring shaft, PTFE-coated 3-clip shaft, gold-plated 3-clip shaft and mini shaft



Upper shaft receptor and lower interchangeable paddle piece

## Paddles

All paddles are serialized and designed to meet USP specifications for Apparatus 2. Select from electropolished stainless steel, PTFE-coated or the biocompatible, chemically inert PEEK (polyetheretherketone) paddles in a range of sizes. Additionally, mini and mega paddles for small- and large-volume dissolution testing are available.

## Two-piece Interchangeable Paddle/Basket Shafts

Switching between paddles and baskets is simple with Agilent's two-piece interchangeable paddle/basket shafts. Rather than resetting the height of the individual shafts when you change between paddles and baskets, the upper receptor shaft stays securely in place, while the lower interchangeable paddle or basket shaft can be switched for your specific testing needs. The paddle and basket shaft assemblies are designed with height offsets so that the proper height is maintained after the changeover.

These shafts are manufactured to meet or exceed the USP specifications and precisely engineered, minimizing the risk of cross threading and ensuring a secure connection. In addition, the attachment area remains out of the media so there is less chance for contamination and corrosion. Further, each component is serialized for traceability.

The 708-DS can also be used with single-piece basket and paddle shafts. The minimum shaft length required is 21 inches.



(Left to right) Electropolished stainless steel paddle, PTFE-coated paddle, PEEK paddle, electropolished mini paddle, and PTFE-coated mini paddle


## Certificates of Conformity

There is some confusion regarding what constitutes a Certificate of Conformance or Certificate of Analysis (CoC, CoA). Simply stating a component meets USP requirements is not sufficient. Each critical parameter for each individual accessory should be measured and documented. According to ASTM E2503: "3.1 Analyst Responsibilities: Verify the vessel, basket, and paddle dimensions on receipt through measurement or Certificate of Analysis (CoA) or Certificate of Conformity (CoC)"

- 4.3 Apparatus Setup: During apparatus installation or after replacement of parts or components, verify that the description and critical dimensions for each part meet the original description and dimension. After this statement, a more detailed description is given for vessels, paddles and basket/shaft dimensions.
- 4.3.3 Paddle Dimensions: In the absence of a CoA or CoC, an appropriate measuring device is used to measure the relevant dimensions of the paddle. Examples of dimensions to be determined on each paddle should include but are not limited to: shaft diameter, blade height, blade thickness, total blade length, length of flat portion on bottom of blade, radius of the angle on the top outer edge of the top of the blade, radius of the outside edge of the blade, difference between the distance from the midline of the shaft to the top outer edge for the two sides, and difference between the heights of both sides of the paddles at the outside top.

Verification in GMP applications means documentation. If you measure it, you document it. Without documentation (of the actual measurements) you cannot prove anything.

Agilent Technologies, Inc.  
Dissolution Systems


**Agilent Technologies**

### Certificate of Conformance

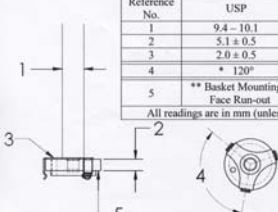
**12-1438V, VK Verified Spine On/Off SoftBasketClip**  
Part Number - Part Description

Serial Number: \_\_\_\_\_ Material: **Stainless Steel**

The accuracy of this part was determined by reference comparison to working standards traceable to the National Institute of Standards and Technology (NIST). Any limitations or remarks pertaining to this instrument or calibration are shown below.

Reference No.	USP	Inspection Range	Actual	Pass/Fail
1	9.4 - 10.1	9.4 - 10.1	9.502	Pass
2	5.1 ± 0.5	4.6 - 5.7	5.068	Pass
3	2.0 ± 0.5	1.5 - 2.5	2.265	Pass
4	* 120°	118° - 122°	118.37°	Pass
5	** Basket Mounting Face Run-out	0.0 - 0.1	0.01	Pass

All readings are in mm (unless otherwise indicated)



\* Inspection Range is defined by Agilent Technologies; angular tolerance for this feature is not defined by USP.  
 \*\* This feature is verified based upon Agilent Technologies specification for assurance of minimal mounted basket wobble.

Equipment Used:

Instrument	Model Number	Serial Number	Accuracy	Due Date
Brown & Sharpe CMM	Global Classic 7107	0109-1405	0.0025 mm	11-OCT-2014

Inspected By \_\_\_\_\_

Signature \_\_\_\_\_

Date \_\_\_\_\_

Certified By \_\_\_\_\_

Signature \_\_\_\_\_

Date \_\_\_\_\_

This certificate shall not be reproduced without written approval of Agilent Technologies, Inc.  
 K4350-00013B COC, Basket Shaft, USP

Certificate of Conformance for an Agilent basket shaft

## DID YOU KNOW?

### More Than Great Products

Quality equipment is just one component of your work. We believe education is critical to ensuring correct results. For this reason, we offer numerous educational programs geared to various functions within your company. See page 169 for more information.

## One-Piece Basket Shafts with Individual Certificate of Conformance

Description	Part No.
<b>21 - 24 in. (53 - 61 cm) Basket Shafts for 7000/7010, 705/708/709-DS</b>	
Basket shaft, USP 3-clip, 21 in.	13-3620
Basket shaft, O-ring, 21 in.	13-3621
Basket shaft, PTFE-coated, 21 in.	13-3622
Basket shaft, USP 3-clip, 24 in.	13-3629
Basket shaft, for bolus basket, 24 in.	13-3630
<b>Baskets</b>	
Note: Baskets are not supplied with a certificate of conformance (CoC) unless noted with a "V" in the part number.	
Basket, USP, 40-mesh	12-2100
Basket, USP, 40-mesh, includes individual CoC	12-2100V
Basket, mini, 40-mesh	12-2102
Basket, gold-plated, 40-mesh	12-2105
Basket, PTFE-coated, 40-mesh	12-2110
Basket, 3-fin assembly, 40-mesh	12-2115
Basket, 20-mesh, 864 m	12-2120
Basket, 20-mesh, with CoC	12-2120V
Basket, 10-mesh	12-2125
Basket, slotted, for suppository testing	12-2130
Basket, 450x2750-mesh, 1 µm	12-2140
Basket, 400x2800-mesh, 2 µm	12-2145

(Continued)



Close-up of standard 3-clip shaft and conical 3-clip shaft





Stationary basket

## Baskets

Description	Part No.
<b>Baskets</b>	
Basket, 325x2300-mesh, 5 µm	12-2146
Basket, 200x1400-mesh, 10 µm	12-2148
Basket, 165x800-mesh, 20 µm	12-2149
Basket, 325x325-mesh, 43 µm	12-2150
Basket, 270x270-mesh, 53 µm	12-2151
Basket, 150x150-mesh, 104 µm	12-2152
Basket, 100x100-mesh, 140 µm	12-2154
Basket, 50x50-mesh, 280 µm	12-2155
Bolus basket, 20x20-mesh, 864 µm	12-2180
Bolus basket, 40x40-mesh, 381 µm	12-2185
Basket, Metformin vertical sample holder, large	12-2165
Basket, Metformin vertical sample holder, small	12-2170

## Additional Baskets and Sample Holders

Stationary basket shaft (basket sold separately)	12-2065
Stationary basket, Felodipine quadrangular	12-2069
Float-A-Lyzer holder, for use with USP Apparatus 1	12-2066
Float-A-Lyzer holder, stationary, for use with USP Apparatus 2	12-2067
Float-A-Lyzer holder, for use with USP Apparatus 3	12-2068



Stationary basket, Felodipine quadrangular



(Left to right) 40-mesh basket, PTFE-coated basket and gold-plated basket



Float-A-Lyzer with holder and evaporation cover



Two-piece interchangeable basket/paddle shaft storage rack

## Two-piece Interchangeable Paddle/Basket Shafts

Description	Part No.
<b>Two-piece Interchangeable Paddle/Basket Shafts with Individual Certificate of Conformance</b>	
Paddle, lower interchangeable, PTFE-coated	14-3602
Paddle, lower interchangeable, electropolished stainless steel	14-3603
Basket shaft, lower interchangeable, 3-clip, USP	14-3631
Basket shaft, lower interchangeable, O-ring	13-3632
Upper receptor shaft, for 15 in. total shaft length	13-3612
Upper receptor shaft, 21 in. (total length when assembled)	14-3613
Upper receptor shaft, 24 in.	13-3614
Paddle, lower interchangeable, PTFE-coated, for 2L	13-3604
Paddle, lower interchangeable, stainless steel, for 2L	13-3605
Basket shaft, lower interchangeable, 3-clip, for 2L	13-3634
Paddle, lower interchangeable, PEEK	13-3606
Mini basket shaft, lower interchangeable, stainless steel, O-ring	13-3636
Mini paddle, lower interchangeable, PTFE-coated	13-3607
Mini paddle, lower interchangeable, stainless steel	13-3608
<b>Shaft Accessories</b>	
Storage rack for one-piece paddle/basket shafts	12-1350
Storage rack for two-piece paddle/basket shafts	12-1352
Shaft locking ring, for all models	12-2096

## DID YOU KNOW?

### An Easy Way to Save

Replace your entire set of accessories with convenient 6-packs of select paddle, basket, and receptor shafts. Keep your system running smoothly by regularly refreshing key components.

Description	Part No.
Paddle, lower, PTFE-coated, 6/pk	16-3602
Paddle, lower, electropolished stainless steel, 6/pk	16-3603
Receptor, 21 in. total, 6/pk	16-3613
Basket, lower, 3-clip, 6/pk	16-3631

**DID YOU KNOW?****Ordering**

Order Agilent parts and supplies for current as well as legacy instruments at [www.chem.agilent.com/store](http://www.chem.agilent.com/store).

**Paddle Shafts with Individual Certificate of Conformance**

Description	Part No.
<b>21 - 24 in. (53 - 61 cm) Paddle Shafts for use with 7000/7010E, 705/708/709-DS</b>	
Paddle, PTFE-coated, 21 in.	13-3594
Paddle, PTFE-coated, 24 in.	13-3596
Paddle, electropolished, 21 in.	13-3595
Paddle, electropolished, 24 in.	13-3597
Paddle, PEEK, 24 in.	13-3598
Mini paddle, PTFE-coated, 24 in.	13-3599
Mini paddle, electropolished, 24 in.	13-3600
Mega paddle, electropolished stainless steel, 24 in.	13-3601



Storage rack for one-piece paddle/basket shafts

## Dissolution Vessels

Agilent provides a variety of dissolution vessels for use with Agilent dissolution apparatus, as well as other equipment manufacturers. A wide variety of vessel types and volumes are available. Agilent's vessels are designed meet regulatory specifications, ensuring quality and consistency.



TruAlign vessel for the 708-DS with Certificate of Conformance (CoC)

## DID YOU KNOW?

### Verified Dissolution Accessories

Do you need vessels that are individually certified to meet with Mechanical Qualification guidelines? Agilent offers Verified Dissolution Accessories with a certificate of conformance that documents the actual measured values of all critical dimensions, the measurement device used for certification, and its traceability.

### TruAlign Vessels

The 708-DS uses TruAlign vessels which are individually turned on a lathe to locate the precise center of the vessel. A ground groove is cut into the vessel rim to incorporate a collar onto the vessel to maintain accurate centering and verticality alignment with the dissolution apparatus. An indicator tab on the collar provides reproducible vessel orientation while the serial number offers easy identification.

TruAlign vessels for the 708-DS are available in 100 and 200 mL, and 1 and 2L sizes. Low actinic - red, Peak, and Verified versions are also available for select volumes.

### VF Molded Vessels

Agilent also offers a molded vessel - in EaseAlign, TruCenter and TruAlign form - which are vacuum formed (VF) and provide the tightest precision available to reduce position-to-position variability and improve uniformity. With specifications over 10 times more stringent than standard vessels, this option eliminates inconsistencies and puts the focus on the dosage form. The VF vessels are offered as 1L clear glass only and are available with or without a Certificate of Conformance. For more information on VF vessels, take a look at our technical overview at [www.agilent.com/lifesciences/vfvessels](http://www.agilent.com/lifesciences/vfvessels).



1L TruAlign VF Molded Vessel

## DID YOU KNOW?

The Peak vessel was introduced to solve coning problems. Some dosage forms form a cone in the bottom of the vessel. The result is the media only comes in contact with the outer layer, slowing the dissolution process. Typically results are lower than anticipated. The Peak vessel disperses the cone exposing greater surface area. While the Peak vessel is not included in USP guidance, multiple methods using this accessory have been accepted by the FDA. As with any non-compendial accessory, proper justification is required for use.



1L TruAlign Peak Vessel

## TruAlign Vessels for 708-DS

Description	Part No.
TruAlign vessel, 100 mL	12-5145
TruAlign vessel, low actinic - red, 100 mL	12-5146
TruAlign vessel, 200 mL	12-5147
TruAlign vessel, low actinic - red, 200 mL	12-5148
TruAlign vessel, 250 mL, for Chinese Pharmacopeia	12-1452
TruAlign vessel, 1L	12-5149
TruAlign vessel, 1L, with certificate	12-5149V
TruAlign vessel, low actinic - red, 1L	12-5152
TruAlign vessel, low actinic - red, 1L, with certificate	12-5152V
TruAlign Peak vessel, 1L	12-5153
TruAlign Peak vessel, 1L, with certificate	12-5153V
TruAlign Peak vessel, low actinic - red, 1L	12-5154
TruAlign vessel, 2L	12-5157
TruAlign vessel, 2L, with certificate	12-5157V
TruAlign vessel, low actinic - red, 2L	12-5158
TruAlign vessel, low actinic - red, 2L, with certificate	12-5158V
TruAlign Peak vessel, 2L	12-5159
TruAlign vessel, flat bottom, 200 mL (one per position)	12-5170
TruAlign VF molded vessel, clear, 1L	12-1501
TruAlign VF molded vessel, clear, 1L with certificate	13-0010
Height gauge sphere, 15 mm, for small volume vessels	K4040-00495

## Small-volume TruAlign Vessel Conversion Kit for 708-DS Dissolution Apparatus

TruAlign vessel 100/200 mL conversion kit (includes vessel adapter and evaporation cover)	12-6368
TruAlign vessel, 250 mL conversion kit, for Chinese Pharmacopeia (includes vessel, adapter, two-piece mini paddle, evaporation cover and manifold adapter), set of 6	12-1450
TruAlign vessel, 250 mL conversion kit, for Chinese Pharmacopeia (includes vessel, adapter, two-piece mini paddle, evaporation cover and manifold adapter), set of 8	12-1451



## Conversion Kits

### DID YOU KNOW?

#### Sink Condition Requirements

In any dissolution test, it is imperative that there is sufficient media to meet sink requirements. The dissolution rate should not be inhibited by saturation. At the same time you must consider the detection limits of your analytical technique. Vessel volume adjustments can help to meet the appropriate conditions for your dissolution method.

### Small-volume Kits

Small-volume conversion kits are an excellent, cost-effective way to use your existing equipment for testing that requires a smaller volume of media. These kits allow the 708-DS to convert from the standard 1-Liter vessel to a smaller volume. Each position will require a conversion kit to hold the mini-vessel in position. These kits can also be used with Online UV dissolution systems when preparing standards for automated analyses. In this configuration, a single conversion kit is used in position 7 of the dissolution apparatus. The smaller volume allows you to prepare a smaller amount of standard, saving you money. The conversion kits are designed to be used with either mini paddles or mini baskets, which are sold separately.

100 and 200 mL conversion kits are available for the 708-DS, as well as the legacy 705-DS, 7000/7010, and 7025 Dissolution Apparatus. If you intend to use automated sampling options for these instruments with a small-volume conversion kit, you may need a modified or new sampling manifold to accommodate the change in vessel diameter and sampling position.

Small-volume conversion kits, sold individually or in packages, typically require:

- Mini vessel
- Mini paddle or mini-basket and basket shaft
- Evaporation cover
- Centering ring assembly or adapter

Shaft lengths and diameters, as well as vessel types, are noted with the part number descriptions.



708-DS conversion kit, 200 mL vessel with mini paddle

## DID YOU KNOW?

### Legacy Products

Agilent continues to support customers with accessories for legacy products. See pages 140, 141 for a complete listing of accessories that work with the 709-DS, 705-DS, 7000/7010 and 7025/7030 V-Series.

## Conversion Kits for 708-DS Dissolution Apparatus

Description	Part No.
TruAlign vessel 100/200 mL conversion kit (includes vessel adapter and evaporation cover)	12-6368
TruAlign vessel, 250 mL conversion kit, for Chinese Pharmacopeia (includes vessel, adapter, two-piece mini paddle, evaporation cover and manifold adapter), set of 6	12-1450
TruAlign vessel, 250 mL conversion kit, for Chinese Pharmacopeia (includes vessel, adapter, two-piece mini paddle, evaporation cover and manifold adapter), set of 8	12-1451

## Large-volume Configuration

If you potentially need to test using a larger volume (e.g., 2L), you need to buy your new 708-DS with this configuration. A 2L system is able to support 1L vessels; only a vessel change is required. A standard 1L system cannot be converted to a 2L system after purchase.



2L TruAlign Vessel



708-DS Dissolution Apparatus: 8-position, 2L model with motorized lift

## Capsule Wire, Weights and Sinker Baskets

Capsule wire, weights and sinker baskets are used to retain a solid dosage form at the bottom of the vessel for testing when the dosage form is buoyant. Depending on your dosage form a variety of options are available.

- The flexible capsule wire meets USP requirements and has a 0.032 in. diameter. The stainless steel wire is twisted around the dosage form to provide sufficient mass and to ensure the dosage form sinks to the bottom of the vessel.
- Sinker baskets are offered in a variety of mesh sizes and made of stainless steel. The press-on caps use O-rings to seal the basket once the dosage form is inserted. The Japanese Pharmacopoeia (JP) sinker basket is also available as an alternative.
- A three-prong capsule weight can be used to retain your capsule for testing. These weights fit traditional capsule sizes one through three, and are sold individually.



Capsule weight wire (top row), two versions of wire sinkers and a Japanese sinker (second row), mesh sinkers (third row) and 3-prong sinkers (fourth row)

## DID YOU KNOW?

### When to Use a Sinkers

Sinkers are used during a dissolution test to sink a dosage form that would otherwise float. The USP specifies that a small piece of non-reactive material, such as not more than a few turns of steel wire, can be attached to the dosage form to prevent floating. Other validated sinkers may also be used for this purpose.

## DID YOU KNOW?

Weights and sinker baskets may also be used for sticky dosage forms, as well as powders contained in capsule shells.

### Capsule Wire, Weights and Sinker Baskets

Description	Part No.
Capsule weight wire, 316 stainless steel, 0.032 in. dia., 50 ft.	12-3000
Capsule weight, 3-prong	12-3050
Capsule weight, robotic type, with magnetic cap	12-3055
Capsule weight, robotic type, with magnetic inserts in legs	12-3056
Sinker basket, with cover, 10-mesh, 1905 m	12-3060
Sinker basket, with cover, 8-mesh, 2591 m	12-3062
Sinker basket, with cover, 20-mesh, 864 m	12-3063
Sinker basket, with cover, 40-mesh, 381 m	12-3064
Sinker basket, with cover, 100-mesh, 140 m	12-3065
Sinker basket, with cover, 60-mesh, 229 m	12-3066
Sinker basket, with cover, 150-mesh, 104 m	12-3067
Sinker basket, with cover, 270-mesh, 53 m	12-3068
Sinker basket, with cover, 325-mesh, 45 m	12-3072
Sinker basket, Japanese Pharmacopoeia (JP)	12-3070

### Sinker Baskets Dimensions\*

Inside diameter	20.3 mm / 0.8 in.
Outside diameter (with cover)	25 mm / 0.98 in.
Inside height	11.7 mm / 0.46 in.
Outside height (without cover)	15 mm / 0.59 in.
Outside height (with cover)	20 mm / 0.79 in.

\*Excludes Japanese Pharmacopoeia sinker basket (p/n 12-3070)



Japanese Pharmacopoeia sinker basket (p/n 12-3070)

## Sampling and Temperature Measurement

For a quick, manual sampling solution, the Agilent cannula luer lock assembly is comprised of a bent cannula and a sampling syringe that are best used with the Full Flow Filters. The sampling cannulas are available two in different lengths based on the volume of media, 500 or 900 mL, from which you will sample. An adjustable gauge can be included with this assembly to ensure repeatable positioning for each sample.

Resident sampling kits are available to pull samples through a resident-dwelling probe when there is no automated manifold. Probes left in the media during a dissolution run will alter the hydrodynamics and may affect the rate of release. Therefore, it is critical that resident probe methods are validated against manual sampling to ensure the integrity of the dissolution test is intact.

For automated sampling, the motorized manifold of the 708-DS will lower and raise sampling cannulas at each timepoint when used with the 850-DS Dissolution Sampling Station. The standard sampling manifolds withdraw samples from the proper USP sampling point, halfway between the top of the paddle/basket and the top of the media. Full Flow Filters are recommended for use to prevent undissolved particles from contaminating the sample lines.

A sampling bracket may also be installed on the dissolution apparatus to simplify and improve consistency when manually sampling. This bracket is able to utilize the automated manifold or a resident sampling kit – either way, repeatable sampling is achieved with less time and effort.



Manual sampling on the 708-DS

The legacy 7025 and 7030 Dissolution Apparatus include individual sampling cannulas that may include temperature probes as well. The sampling depth of the cannulas is preset and stored in the firmware of the instrument based on the apparatus installed and volume. The cannulas are only submerged at the time of sampling to minimize hydrodynamic disturbance.

The 708-DS and legacy 709-DS also support an automated, non-resident manifold, which is included in those systems preconfigured for automated sampling. Any unit without the automated manifold can be retrofitted by our service organization. The exact depth of 64 different sampling locations is stored in the 708-DS firmware depending on vessel volume and USP apparatus installed.

Autosampling manifolds can also support the AutoTemp In-Vessel Temperature Sensing System to lower temperature probes at a specifically programmed time. Once the temperature is measured, the manifold removes the probes to avoid hydrodynamic disturbances. AutoTemp makes starting methods easy, particularly when combined with the Dosage Delivery Module (DDM) option. As soon as the desired temperature is reached, the values are recorded and the dosage forms are introduced. Like the Autosampling option, AutoTemp is available on new apparatus and may also be retrofitted to an existing instrument.



Resident cannula kit on the 708-DS

## Resident Sampling Kits/Accessories

Description	Part No.
Resident sampling kit, 6-position, 900 mL	K1001-01193
Resident sampling kit, 8-position, 900 mL	K1001-01194
Resident sampling kit, 6-position, 500 mL	K1001-01195
Resident sampling kit, 8-position, 500 mL	K1001-01196
Resident probe sample cannula, 500 mL	17-3330
Resident probe sample cannula, 900 mL	17-3335

Note: Resident sampling kits for the 7000/7010 or 705-DS must be used with the low-loss evaporation cover (p/n 12-6328)



**DID YOU KNOW?****For Your Sampling Needs**

Agilent offers a variety of height spacers to increase working space when performing manual sampling.

See pages 86, 87 for Verification Tools, including these spacers. Full Flow Filters are recommended for use with automated sampling options. See pages 46, 50, 51 for details.

**Manual Sampling Accessories**

Description	Part No.
Bent cannula with Luer Lock, for sampling from 900 mL in 1L vessels, 4.75 in.	12-3200
Bent cannula with Luer Lock, for sampling from 500 mL in 1L vessels, 7.75 in.	12-3210
Bent cannula with adjustable gauge, 4.75 in. (900 mL), 708-DS	12-3221
Bent cannula with adjustable gauge, 7.75 in. (500 mL), 708-DS	12-3222
Adjustable gauge kit, 708-DS	12-3223
Cannula, PEEK, for low-volume sampling	12-3219
Filter holder, 25 mm	12-3220
Glass syringe, 20 cc	12-3230
Manual sampling bracket, for use with manifold, 7000/7010	17-3150
Manual sampling bracket, for use with manifold, 708-DS	17-3151
Manual sampling bracket, resident probes, 708-DS	17-3152



Glass syringe and sampling cannulas



Manual sampling bracket mounted on the 708-DS

## Filtration

### DID YOU KNOW?

Filtration is critical to the dissolution test. Any small particles will continue to dissolve until the filtration step is completed. Agilent offers cannula filters as well as in-line filters to ensure that the dissolution process is complete at the time the sample is withdrawn.

Dissolution continues until a sample is filtered, so it is critical to filter at the specified timepoint. When using manual or automated sampling cannulas, you have the option to use one of the Agilent Full Flow Filters or conventional filter tips to ensure the integrity of your dissolution sample.

### Full Flow Filters

Made of either ultrahigh molecular weight polyethylene (UHMWPE) or the polyvinylidene fluoride (PVDF), the Full Flow Filter offers increased surface area to optimize filter life and prevent clogging. In those instances where chemical compatibility is an issue with UHMWPE, we offer PVDF filters. These are made of a low protein-binding material that can filter a wide variety of active drug substances. Both UHMWPE and PVDF filters can be used with 1/8 in. diameter cannulas and are available in packs of 100 or 1000.

### Conventional Filter Tips

Standard conventional filter tips are made of polyethylene fluoride and can also be used with 1/8 in. diameter cannulas.



Full Flow Filters

**DID YOU KNOW?****Cut Costs and Plan Ahead**

Save money by ordering our economical 1000 pack! Same high quality filters, just packaged in bulk.

**Filters and Filter Tips for Sampling Cannulas**

Description	Part No.
<b>Original Full Flow Filters</b>	
Full Flow Filter, UHMWPE, blue, 10 µm, 100/pk	17-4000
Full Flow Filter, UHMWPE, blue, 10 µm, 50/pk	17-4001
Full Flow Filter, UHMWPE, 1 µm, 100/pk	17-4003
Full Flow Filter, UHMWPE, 4 µm, 100/pk	17-4004
Full Flow Filter, UHMWPE, blue, 10 µm, 1000/pk	17-4005
Full Flow Filter, UHMWPE, white, 35 µm, 100/pk	17-4010
Full Flow Filter, UHMWPE, white, 35 µm, 50/pk	17-4011
Full Flow Filter, UHMWPE, white, 35 µm, 1000/pk	17-4015
Full Flow Filter, UHMWPE, red, 70 µm, 100/pk	17-4020
Full Flow Filter, UHMWPE, red, 70 µm, 50/pk	17-4021
Full Flow Filter, UHMWPE, red, 70 µm, 1000/pk	17-4025
Full Flow Filter, PVDF, green, 10 µm, 100/pk	17-4040
Full Flow Filter, PVDF, green, 10 µm, 1000/pk	17-4045
Full Flow Filter, PVDF, yellow, 35 µm, 100/pk	17-4050
Full Flow Filter, PVDF, yellow, 35 µm, 1000/pk	17-4055
<b>Filter Tips</b>	
Filter tip, PE, 2 µm, 100/pk	17-4100
Filter tip, PE, 5 µm, 100/pk	17-4110
Filter tip, PE, 10 µm, 100/pk	17-4120
<b>Inline Filtration</b>	
Inline filter, luer lock, 5 µm (for use with BIO-DIS)	3081-0004
Apparatus 3/7 inline filter housing, PEEK (for use with FF filters)	K1200-00855

Note: PE = polyethylene, PVDF = polyvinylidene fluoride, UHMWPE = ultrahigh molecular weight polyethylene



In-line filter housing (PEEK)

## GE Whatman Filter Plates



850-DS Dissolution Sampling System



Filter plates for the 850-DS

The filter plates are designed to group the filters in a single manageable plate for ease of use and automated exchange. Only the outer physical appearance was modified to a plate design – the internal product and contact components of the 25 mm disc filters remain unchanged.

Each filter plate consists of eight individual 25 mm filters configured for use with the Agilent 850-DS filter module option. Agilent recommends using each filter plate for a single timepoint to avoid clogging and potential carryover issues.

GE Whatman offers the 8-channel filter plates in 0.2  $\mu\text{m}$ , 0.45  $\mu\text{m}$  and 0.7  $\mu\text{m}$  pore sizes. Analysis of dissolution samples is increasingly carried out by HPLC and UHPLC. To protect highly sensitive UHPLC columns from potential blockage with undissolved particles, Agilent and GE Whatman have collaborated to develop filter plates with this finer 0.2  $\mu\text{m}$  pore size.

Dissolution filter selection is dependent on the specific method and the drug formulation under test. The volumetric accuracy of the 850-DS is dependent on the membrane type, the pore size, and the cannula filter (Full Flow Filter) being used. The accuracy is also dependent on the drug product and its concentration, the excipient load, and the dissolution media; other factors that can impact the volume accuracy are the prime volume, pumping speed, and dwell time (all flexible parameters of the 850-DS). Due to high pressures encountered with the use of sub-micron filters, the accuracy specifications for the 850-DS are not guaranteed for all filter types and drug products under certain conditions.

GE Whatman filters and filter plates are supplied by authorized GE Healthcare representatives such as Fisher Scientific and VWR networks worldwide.

A useful guide for validating your choice of filters is available from Agilent at **[www.agilent.com/lifesciences/filter\\_validation](http://www.agilent.com/lifesciences/filter_validation)**.

For questions related to the use, options, or availability of these filter plates, please contact Agilent Technologies Dissolution Hotline at **[dissolution.hotline@agilent.com](mailto:dissolution.hotline@agilent.com)**.

Agilent is happy to assist in resolving problems you may encounter with the 850-DS, the filter module, the filter plates, or any dissolution questions in general.

## Evaporation Covers

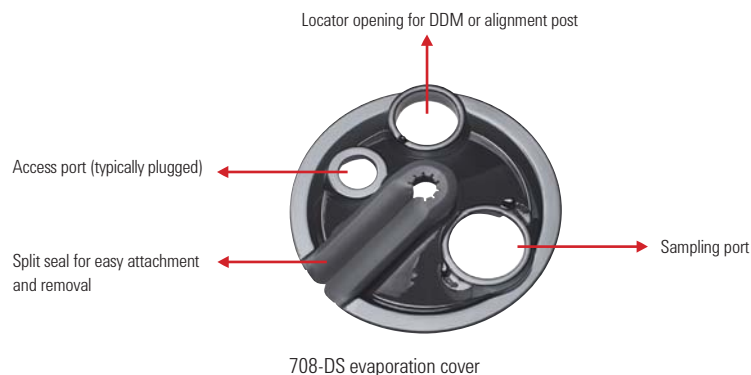
### DID YOU KNOW?

The standard evaporation cover on the 708-DS is designed to allow less than 1% evaporative loss over a 24-hour period under normal operating conditions. Agilent also offers other low loss covers that can reduce the loss even further.

Evaporation covers maintain volumetric accuracy of the media used during dissolution testing by slowing the amount of media lost to evaporation. A variety of evaporation covers are available to fit your apparatus and vessels. Evaporation plugs are used to minimize evaporation by sealing unused ports in the evaporation covers.

### Evaporation Covers and Accessories

Description	Part No.
708-DS alignment post, for use in place of DDM with manifold	1005-1898
708-DS evaporation cover plug, white, for use in place of DDM	1200-1012
708-DS evaporation cover plug, black, flat	12-6370
708-DS evaporation cover, for blank position	K1400-00210
DDM assembly, for use with 708-DS	1005-1897
708-DS evaporation cover, low loss for use with resident sampling probes	K1005-05218
708-DS evaporation cover, standard, for CP/USP sampling	K1005-05225



## Transdermal Delivery Systems – USP Apparatus 5, 6, and 7

### DID YOU KNOW?

The Agilent 708-DS can also support transdermal testing using USP Apparatus 5 and 6 accessories. This includes setup and storage of precise sampling manifold locations in the firmware based on vessel volume and the assembly installed. The 708-DS is easily converted to smaller volumes typically associated with transdermal testing as well.

See pages 43, 44 for more information about 708-DS volume conversion kits.

USP Apparatus 5 and 6 are commonly used for the testing of transdermal patches per USP General Chapter <724>.

### USP Apparatus 5 – Paddle Over Disk

The Paddle Over Disk assembly is used for the dissolution testing of transdermal patches, and is used with a standard dissolution apparatus, such as the 708-DS and paddles. The assembly is made of a stainless steel disk and PTFE locking ring that holds the removable, replaceable screens in place. Screens are provided with the ring assemblies but are also offered in a variety of other sizes that are sold separately.

Agilent also offers a transdermal patch holder system as an alternative to the traditional Apparatus 5 assembly. Also made of stainless steel, the O-ring assembly eliminates the need for adhesives to hold the patch. The clam-shell design secures the patch in place and exposes only the active release area of patches with an inactive perimeter around the release area.

### USP Apparatus 6 – Rotating Cylinder

The Rotating Cylinder assembly uses a stainless steel cylinder and includes four slots at the top for improved media circulation within the dissolution vessel. The two-piece design includes a removable extension for testing larger transdermal patches.

### USP Apparatus 7 – Reciprocating Holder

Transdermal delivery systems may also be tested with Apparatus 7 using a variety of sample holders. For more information on the instrumentation and holders available from Agilent, see page 71.



USP Apparatus 5 Paddle Over Disk

## Transdermal Delivery (compatible with all apparatus models)

Description	Part No.
<b>Paddle Over Disk</b>	
Paddle Over Disk assembly, with 35 mm opening, 40-mesh screen	12-4200
Paddle Over Disk assembly, with 35 mm opening, 40-mesh screen, with certificate	12-4200V
Paddle Over Disk assembly, 125 µm, EP	12-4201
Replacement screens, 125 µm, EP, 100/pk	12-4209
Replacement screens, 35 mm openings, 40-mesh, 100/pk	12-4210
Disk disassembly kit, for 12-4200	12-4211
Paddle Over Disk assembly, with 56 mm opening, 120-mesh screen	12-4230
Replacement screens, 56 mm openings, 120-mesh, 100/pk	12-4231
Disk disassembly kit, for 12-4230	12-4232
<b>Transdermal Patch Holders</b>	
Transdermal patch holder, 2.5 cm <sup>2</sup>	12-4300
Transdermal patch holder, 5.0 cm <sup>2</sup>	12-4310
Transdermal patch holder, 7.0 cm <sup>2</sup>	12-4320
Transdermal patch holder, 10.0 cm <sup>2</sup>	12-4330
Watch glass screen, polypropylene, 6/pk	12-4400
Watch glass screen, stainless steel, 6/pk	12-4410



(Left to right) Paddle Over Disk assemblies, transdermal patch holders and suspension cup



Rotating Cylinder, two-piece design, with removable extension for larger patches

## Rotating Cylinder and Accessories

Description	Part No.
Lower interchangeable shaft for Rotating Cylinder	12-1371
Lower interchangeable shaft for Rotating Cylinder, with certificate	12-1371V
Rotating Cylinder, 25 mm outside dia., with interchangeable shaft	12-1372
Height gauge, Rotating Cylinder, USP	12-7335



## DID YOU KNOW?

### Preparing Suspension Cups

1. Weigh empty suspension cup (removable center cup only).
2. Add desired amount of suspension to removable center cup.
3. Re-weigh suspension cup to obtain amount of suspension.
4. Insert center cup into outer piece.
5. Carefully insert the assembly into the dissolution vessel.
6. Add media to vessel by carefully pouring down the side wall.
7. Begin dissolution test.

### PTFE Suspension Cups

For suspensions, the PTFE suspension cup is a weighted holder with a hemispheric bottom designed to sit at the bottom of a standard 1L vessel to control the exposed surface area. The suspension is weighed in the center cup prior to analysis in order to correlate the release rate.

### Suspension Cups

Description	Part No.
Weighted holder, 5.72 cm outside dia., 0.52 cm inside dia.	12-4050
Insert cup, 17.5x8.2 mm, use with 12-4050	12-4055
Insert cup, 20x8.2 mm, use with 12-4050	12-4060



PTFE suspension cup

## Enhancer Cell

### DID YOU KNOW?

The Enhancer or Immersion Cell is now included in the new USP General Chapter <1724> Semisolid Drug Products - Performance Tests.

### Designed for release rate dissolution testing of ointments, creams, gels and topicals

Used in research, quality control and product development laboratories, the Enhancer Cell provides release rate data for topicals using your standard Apparatus 1 or 2 with either a standard 1L paddle method or 200 mL vessel with mini paddle. Also referred to as Immersion Cell, the Enhancer Cell is a PTFE cell with adjustable volume and retaining cap to eliminate air pockets trapped against the skin or artificial membrane that provide the diffusion barrier. It is a cost-effective alternative to investing in the fragile and more labor-intensive Vertical Diffusion, or Franz Cells.

- Ideal for testing ointments, creams and gels
- Available in several surface areas, including 0.5, 2.0 and 4.0 cm<sup>2</sup>
- Used with traditional dissolution apparatus and a 200 mL flat bottom vessel or 1L vessel
- Meets SUPAC guidelines
- An alignment tool, available in various sizes to match membrane surface area size, is used to hold the membrane in place while eliminating air pockets with the universal adjustment tool. Alignment tools specific to the surface area are sold individually.

Take a look at Agilent's tutorial video on the Enhancer Cell at [www.agilent.com/lifesciences/enhancercell](http://www.agilent.com/lifesciences/enhancercell).



Enhancer Cell and accessories

## Enhancer Cells and Accessories

Description	Part No.
Enhancer Cell, 4 cm <sup>2</sup> surface area membrane (one per position)	12-4000
Enhancer Cell, 2 cm <sup>2</sup> surface area membrane (one per position)	12-4001
Enhancer Cell, 0.5 cm <sup>2</sup> surface area membrane (one per position)	12-4002
Height spacer (1 cm)/alignment tool, for 4 cm <sup>2</sup> Enhancer Cell (one required)	12-4020
Height spacer (1 cm)/alignment tool, for 2 cm <sup>2</sup> Enhancer Cell (one required)	12-4021
Height spacer (1 cm)/alignment tool, for 0.5 cm <sup>2</sup> Enhancer Cell (one required)	12-4022
Adjustment tool, for all Enhancer Cell sizes (one required)	12-4015
Cuprophane membrane, 126x345 mm, 10 sheets/pk	12-1370

## Enhancer Cell Ordering Example

To add Enhancer Cell components to an existing 708-DS, refer to the following list:

### Enhancer Cell Ordering Example: 708-conversion, 6 position, 4 cm<sup>2</sup> Enhancer Cell

Quantity	Description	Part No.
6	Enhancer Cell, 4 cm <sup>2</sup> surface area membrane (one per position)	12-4000
1	Height spacer (1 cm)/alignment tool, for 4 cm <sup>2</sup> Enhancer Cell (one required)	12-4020
1	Adjustment tool, for all Enhancer Cell sizes (one required)	12-4015
6	Mini paddle, lower interchangeable, stainless steel	13-3608
6	TruAlign vessel, flat bottom, 200 mL (one per position)	12-5170
6	TruAlign vessel 100/200 mL conversion kit (includes vessel adapter and evaporation cover)	12-6368

## Intrinsic Dissolution Apparatus

The Intrinsic Dissolution Apparatus provides the dissolution rate of a pure active pharmaceutical ingredient (API) by exposing the API to a constant surface area of dissolution medium. The intrinsic rate is determined by rotating the apparatus in a dissolution vessel containing 37 °C media and pulling samples until at least 10% of the API has dissolved. The rate is then calculated by plotting the cumulative amount of API dissolved from the exposed surface area with respect to time.

Based on the modified Woods Apparatus as described in USP <1087>, the design includes threaded rings on the inside of the die cavity to prevent the compacted API from falling out of the die cavity during analysis. The apparatus includes a punch used to compress the API into a pellet with the aid of a laboratory press (not provided by Agilent). The Intrinsic Apparatus includes:

- Stainless steel die cavity with either a 0.5 or 0.125 cm<sup>2</sup> surface area
- Punch
- Shaft with holder
- Gasket ring

The surface plate, used in conjunction with the punch and a laboratory press, is sold separately. Only one surface plate is required and may be used with multiple apparatus.

Intrinsic dissolution is expressed in terms of mg/time/cm<sup>2</sup>, and is useful in studying the solubility characteristics of a pure drug substance.



Intrinsic Dissolution Apparatus and accessories

## DID YOU KNOW?

Take a look at the video of the Agilent Intrinsic Apparatus at:

**[www.agilent.com/lifesciences/intrinsic-video](http://www.agilent.com/lifesciences/intrinsic-video)**

## Intrinsic Dissolution Apparatus

Description	Part No.
Intrinsic Dissolution Apparatus, 0.5 cm <sup>2</sup> exposed surface area, with punch, shaft and holder, for 7000E/7010, 708-DS, 705-DS	12-4101
Intrinsic Dissolution Apparatus, 0.125 cm <sup>2</sup> exposed surface area (18 in. shaft)	12-4110
Intrinsic die, 0.5 cm <sup>2</sup> exposed surface area	12-4120
Punch	12-4140
Shaft and die holder only, for intrinsic dissolution (18 in. shaft)	12-4150
Surface plate, for intrinsic dissolution	12-4130

Note: Surface plate sold separately. Only one plate required for testing.

## Intrinsic Dissolution Apparatus Example

In addition to the standard dissolution apparatus, to configure a 708-DS for intrinsic dissolution use, see the following example:

### Intrinsic Dissolution Apparatus Ordering Example

Quantity	Description	Part No.
6	Intrinsic Dissolution Apparatus, 0.5 cm <sup>2</sup> exposed surface area, with punch, shaft and holder, for 7000E/7010, 708-DS, 705-DS	12-4101
1	Surface plate, for intrinsic dissolution	12-4130

## Verification Tools

### Verification Tools

Description	Part No.
<b>Height Spacers for USP Apparatus 1 and 2</b>	
Height spacer, paddles, ball without retrieval string, 25 mm	12-7240
Height spacer, paddles, ball with retrieval string, 25 mm	12-7250
Height spacer, paddles, ball with retrieval string, 25 mm, with certificate	12-7250V
Height spacer, intrinsic apparatus, ball with retrieval string, 38 mm	12-7260
Height spacer intrinsic apparatus, ball with retrieval string, 38 mm, with certificate	12-7260V
Height spacer, for attachment to paddles, 25 mm above bottom of vessel	12-7270
Height spacer, for attachment to paddles, 25 mm above bottom of vessel, with certificate	12-7270V
Height spacer, for attachment to basket shaft, 25 mm above bottom of vessel	12-7280
Height spacer, for attachment to basket shaft, 25 mm above bottom of vessel, with certificate	12-7280V
Height gauge, Rotating Cylinder, USP	12-7335
<b>Height and Centering Tools for USP Apparatus 1 and 2</b>	
Height tool, stainless steel, sets height of basket and paddles, 25 mm	12-7300
Height tool, stainless steel, sets height of basket and paddles, 25 mm, with certificate	12-7300V
Height tool, stainless steel, sets height of basket and paddles, for 2L vessels, 25 mm	12-7301
Height tool, stainless steel, sets height of basket and paddles, for 2L vessels, 25 mm, with certificate	12-7301V
Height tool, stainless steel, sets height of basket and paddles, used for testing antibiotics, 45 mm	12-7330
Height tool, stainless steel, sets height of basket and paddles, used for testing antibiotics, 45 mm, with certificate	12-7330V
Height tool, stainless steel and Delrin, for Peak vessels	12-7230
Bubble level, for horizontal centering	12-7325



Height spacers

## Water Baths and Heater/Circulators



708-DS heater/circulator

Agilent offers a number of water baths and replacement parts for the water baths, including fittings, adapters, tubing and clamps, as well as heater/circulators.

- Acrylic fabricated water baths for disintegration testers and BIO-DIS apparatus are made of a three-piece construction with solvent-welded seams.
- The molded high-performance polymer PETG design, utilized on most Agilent dissolution apparatus, provides better chemical and heat stability than standard acrylic baths and the rounded corners make cleaning easier.
- The 708-DS utilizes a universal voltage heater/circulator. It is designed specifically to fit beneath the apparatus housing and minimize vibration.

### Water Baths, Heater/Circulators and Accessories

Description	Part No.
<b>Water Baths and Replacement Parts</b>	
Water bath, for 100 Automated Disintegration Tester, with fittings	60-2120
Water-bath assembly (includes fittings and tubing), used with 708-DS	1005-1808
Water bath, for BIO-DIS, 22.56x20.68x7.5 in.	60-2400
Drain valve for molded bath	62-9000
Bulkhead bath fitting	62-9010
Bath flow deflector	62-9020
Barbed angle adapter	62-9025
PVC tubing with 3/4 in. outer dia., 1/2 in. inner dia., 50 ft.	62-9030
Bath tubing clamps, stainless steel, 4/pk	62-9040
Heater/circulator cable, for use with 7000/7010/BIO-DIS/Apparatus 7	K5075-00871
Heater/circulator cable, for use with 708-DS	5075-0057
<b>Heaters/Circulators</b>	
Heater/circulator, 115/230V	G7986A
Note: The heater/circulator can be used with 708-DS, as well as legacy 7000/7010, 7020, 7025 and 705-DS dissolution apparatus, and the BIO-DIS and Apparatus 7.	
Options for G7986A	
Cable for use with 7000/7010/BIO-DIS/Apparatus 7	G7986A #100
Cable for use with 708-DS	G7986A #101



## Apparatus 3

### BIO-DIS Reciprocating Cylinder Apparatus and Accessories

#### **Extended release-rate dissolution testing that meets requirements of USP Apparatus 3 and EP Reciprocating Cylinder specifications**

The Agilent BIO-DIS Reciprocating Cylinder Apparatus is ideal for automatic dissolution testing of dosage forms that require different types of media. Typically used for imitating the pH changes that occur in the body, this instrument is perfectly suited for extended and sustained release dosage forms.

The BIO-DIS can automatically perform a complete media change, simulating the pH change that occurs in the digestive tract. Due to the reciprocating action and the change in pH, the instrument may be used for a variety of applications. Capable of running unattended for extended periods of time, the BIO-DIS can store up to 15 programs and provide direct control over timepoints, agitation rate, sampling rate, movement between vessel rows, hold dip time, and drain time.



BIO-DIS Reciprocating Cylinder Apparatus

Features include:

- Simulate gastrointestinal conditions with simple programming that allows in vitro dissolution pH profiling with biorelevant agitation rates and retention times.
- Useful for release-rate testing of floating dosage forms, beads and chewables.
- Use one instrument to test and transport a variety of samples, saving valuable bench space. Samples are automatically transported from one medium to the next without operator intervention.
- Be confident knowing the BIO-DIS is compliant with the reciprocating cylinder apparatus, USP Apparatus 3 and EP harmonized specifications.
- Select a standard volumetric reciprocating cylinder option or small and large volume configuration to meet testing needs for low dose or poorly soluble formulations. Other options include a double row instrument for increased testing throughput.

The standard seven-position system includes the following items:

- 3 outer media tube vessel carriers, 14 positions each
- 7 inner sample tubes with upper and lower caps
- 1 sample kit of polypropylene and stainless steel screens
- 42 outer media tubes, 300 mL (USP)
- 1 external heater/circulator



BIO-DIS accessories

**DID YOU KNOW?****Automated Sampling for BIO-DIS**

Easily automate the sample collection process for Apparatus 3 using the Agilent 850-DS Dissolution Sampling Station. See pages 90-94 for more details.

**Filtration Options**

Accomplish manual inline filtration using the conventional Full Flow Filters with an inline filter housing. These inline filters should be used for systems configured with an 850-DS Sampling Station (option #150). Or use the 850-DS with optional filter module to automate filtration with innovative Whatman filter plates from GE Healthcare that sample down to 0.2 µm, 0.45 µm pore size. See page 52 for more details.

**Inline Filter Housing**

Filtration is a necessary step to stop the dissolution process. Inline Full Flow Filter housings are ideal for use with the BIO-DIS Reciprocating Cylinder Apparatus (USP Apparatus 3) and the Reciprocating Holder (USP Apparatus 7) when either of these instruments are used with automated sampling like the 850-DS. This housing allows the use of the standard Full Flow Filters (for more details see pages 46, 50, 51). Constructed of PEEK material the housing is inert to most chemicals. The Full Flow Filter is inserted onto the receptor and the housing is screwed closed. One housing is used for each sample line.

**BIO-DIS Reciprocating Cylinder Apparatus**

Description	Part No.
BIO-DIS Reciprocating Cylinder Apparatus, 300 mL, 7 samples x 6 rows	G7970A
<b>Options for G7970</b>	
100 mL, 7 samples x 6 rows	G7970A #100
1L, 3 samples x 3 rows	G7970A #105
Double row dip, 300 mL, 14 samples x 3 rows	G7970A #110
Double row dip, 1L, 6 samples x 1 row	G7970A #115
Note: The standard BIO-DIS is configured as a 300 mL system. Select from one of the above options if an alternative volume or configuration is desired.	
Add Installation Service	G7970A #44K
Add Familiarization Service	G7970A #44L

Note: For complete qualification services offering, see page 163.

**Conversion/Retrofit Kits**

Description	Part No.
Conversion kit, 100 mL	27-6100
Conversion kit, 1L	27-6105
Retrofit kit, double row dip, 300 mL*, 14 samples x 3 rows	27-6201
Retrofit kit, double row dip, 1L*, 6 samples x 1 row	27-6203
Retrofit kit, double row dip, 1L / 300 mL*	27-6205

\*Retrofit kits must be installed by an Agilent representative.



In-line filter housing (PEEK)

## DID YOU KNOW?

Dissolution Workstation Software (G4974AA) can be used to control up to four systems with the BIO-DIS, a pump, and the 850-DS Dissolution Sampling Station. In fact, the software allows for multiple samples per row and additional media changes beyond the traditional capability of the instrument. See pages 82, 83 for more information.

## BIO-DIS Reciprocating Cylinder Apparatus and 850-DS Sampling Station

Description	Part No.
BIO-DIS Reciprocating Cylinder Apparatus and 850-DS Sampling Station	G7977A
<b>Options for G7977A</b>	
100 mL, 7 samples x 6 rows	G7977A #100
1L, 3 samples x 3 rows	G7977A #105
Double row dip, 300 mL, 14 samples x 3 rows	G7977A #110
Double row dip, 1L, 6 samples x 1 row	G7977A #115
Note: The standard BIO-DIS is configured as a 300 mL system. Select from one of the above options if an alternative volume or configuration is desired.	
Inline filter housing option	G7977A #150
Sample tray, 96-position, 2 mL, for HPLC vials (no conversion required)	G7977A #210
Sample kit, 108-position, 2 mL, includes tray and needle block assembly	G7977A #211
Sample kit, 100-position, 2 mL, includes tray and needle block assembly	G7977A #212
Sample kit, 96-well plate, includes tray and needle block assembly	G7977A #213
Add Dissolution Workstation Software cable kit (software ordered separately)	G7977A #220
Add printer to 850-DS	G7977A #880
Add Installation Service	G7977A #44K
Add Familiarization Service	G7977A #44L

Note: For complete qualification services offering, see page 163.

## BIO-DIS Dimensions

Height	Width	Depth	Weight
73.66 cm / 29 in.	68.58 cm / 27 in.	69.85 cm / 27.5 in.	43.1 kg / 95 lbs, dry without vessels

**DID YOU KNOW?**

Apparatus 3 may also be used for disintegrating dosage forms by using a lower cap with a wider diameter which creates improved mixing for particulates that may pass through the lower screen.

**BIO-DIS Reciprocating Cylinder and Reciprocating Holder Apparatus 7  
Compatibility Table**

Description	Part No.
<b>Inner Sample Tubes (with threaded glass ends)</b>	
Standard inner sample glass tube for 300 mL outer media tube	27-5000
Inner sample glass tube for 100 mL outer media tube	27-5010
<b>Outer Media Tubes</b>	
Outer media tube, USP, 300 mL	27-5100
Outer media tube, 100 mL	27-5110
Outer media tube, flat bottom, 1000 mL	27-5120
<b>Upper and Lower Caps</b>	
Standard upper cap, USP, 300 mL, for use with P/N 27-5000	27-1000
Upper cap, 100 mL, for use with P/N 27-5010	27-1010
Standard lower cap, USP, 300 mL, for use with P/N 27-5000	27-1020
Lower cap, 100 mL, for use with P/N 27-5010	27-1030
Lower cap, wider diameter for improved mixing, for use with P/N 27-5000	27-1050
<b>Replacement Cannulas and Tubing</b>	
Replacement tubing kit, App 3/7, (for use with inline luer fittings)	27-0126
Replacement tubing kit, App 3/7 (for use with 1/4-28 inline fittings)	27-0127
<b>Evaporation Caps</b>	
Evaporation cap, USP, for 300 mL tube	27-1500
Evaporation cap, for 100 mL tube	27-1510
Evaporation cap, USP, tinted, for 300 mL tube	27-1520
<b>Vessel Carrier for Outer Media Tubes</b>	
Vessel carrier, for 300 mL tube, 7x2 layout, set of 3	27-6000
Vessel carrier, for 100 mL tube, 7x2 layout, set of 3	27-6005
Vessel carrier, 1L vessel, 1x3 layout, set of 3	27-6010

(Continued)



Vessel carrier rack for Apparatus 7

## BIO-DIS Reciprocating Cylinder and Reciprocating Holder Apparatus 7 Compatibility Table

Description	Part No.
<b>Replacement Screens for Inner Sample Tubes</b>	
Polypropylene screens, 1.25 in. dia. for 300 mL tubes, 20-mesh, 840 m	27-2000
Polypropylene screens, 1.25 in. dia. for 300 mL tubes, 40-mesh, 405 m	27-2005
Polypropylene screens, 1.25 in. dia. for 300 mL tubes, 56-mesh, 250 m	27-2007
Polypropylene screens, 1.25 in. dia. for 300 mL tubes, 78-mesh, 177 m	27-2010
Polypropylene screens, 1.25 in. dia. for 300 mL tubes, 100-mesh, 150 m	27-2015
Polypropylene screens, 0.75 in. dia. for 100 mL tubes, 20-mesh, 840 m	27-2200
Polypropylene screens, 0.75 in. dia. for 100 mL tubes, 40-mesh, 405 m	27-2205
Polypropylene screens, 0.75 in. dia. for 100 mL tubes, 78-mesh, 177 m	27-2210
Polypropylene screens, 0.75 in. dia. for 100 mL tubes, 100-mesh, 150 m	27-2215
Stainless steel screens, 1.25 in. dia. for 300 mL tubes, 10-mesh, 1905 m	27-2099
Stainless steel screens, 1.25 in. dia. for 300 mL tubes, 20-mesh, 864 m	27-2100
Stainless steel screens, 1.25 in. dia. for 300 mL tubes, 30-mesh, 533 m	27-2103
Stainless steel screens, 1.25 in. dia. for 300 mL tubes, 40-mesh, 381 m	27-2105
Stainless steel screens, 1.25 in. dia. for 300 mL tubes, 100-mesh, 140 m	27-2110
Stainless steel screens, 1.25 in. dia. for 300 mL tubes, 200-mesh, 74 m	27-2115
Stainless steel screens, 1.25 in. dia. for 300 mL tubes, 300-mesh, 46 m	27-2120
Stainless steel screens, 1.25 in. dia. for 300 mL tubes, 400-mesh, 38 m	27-2125
Stainless steel screens, 0.75 in. dia. for 100 mL tubes, 8-mesh, 2591 m	27-2300
Stainless steel screens, 0.75 in. dia. for 100 mL tubes, 10-mesh, 1905 m	27-2305
Stainless steel screens, 0.75 in. dia. for 100 mL tubes, 20-mesh, 864 m	27-2310
Stainless steel screens, 0.75 in. dia. for 100 mL tubes, 40-mesh, 381 m	27-2315
Stainless steel screens, 0.75 in. dia. for 100 mL tubes, 60-mesh, 229 m	27-2320
<b>Basket Adapters</b>	
Basket adapter, O-ring, for BIO-DIS	27-2400
Basket adapter, 3-clip, for BIO-DIS	27-2401



BIO-DIS screens



## Apparatus 7

### Reciprocating Holder Apparatus 7 and Accessories

The Agilent Reciprocating Holder Apparatus 7 is ideal for automatic dissolution testing of dosage forms that require a change of media, a smaller volume or more vigorous agitation. Initially developed for testing transdermal patches, this apparatus now includes many different dosage form holders. The reciprocating holder has a stroke length of 20 mm and can be programmed to dip between 5 and 40 dips per minute. At the end of a designated time period, the dosage form is automatically transported from one row to the next. Typical products tested include extended release tablets, transdermals, osmotic pumps and arterial stents.

The standard apparatus has seven sample positions with six rows and is available with 100 or 300 mL outer tubes. The firmware can be preprogrammed to automatically move to a fresh row of media for as many as six media changes. For smaller volumes, the instrument is available with 50 mL vessels in a 7-row configuration. Dissolution Workstation Software can also be used to control and log events of an Apparatus 7 with an 850-DS Sampling Station. After incorporating PC control, additional media changes can be accommodated by exchanging the vessel racks with fresh media.



50-mL Reciprocating Holder Apparatus 7



## DID YOU KNOW?

### Dosage Holder Options

Agilent offers a variety of standard and customizable holder options to meet your application needs. These include reciprocating disks, angled disks, and cylinders for transdermal patches. For traditional oral dosage forms, acrylic pointed rods, stent holders and mini baskets are available.

### Integration Options for Sampling and Filtration

The 7-position Apparatus 7 (100 or 300 mL) systems can be integrated with the 850-DS Dissolution Sampling Station, with optional built-in filter module to automate filtration down to 0.2  $\mu\text{m}$ , 0.45  $\mu\text{m}$  pore size. Inline filtration is also possible.

### The Reciprocating Holder Apparatus 7:

- Simulates the biorelevant conditions for the skin, gastrointestinal tract and tissue required for transdermal, oral drugs and implants with biorelevant temperature agitation rates and retention times.
- Tests and transports a variety of samples, saving valuable bench space. Samples are automatically transported from one medium to the next without operator intervention, and can run unattended for up to six days.
- Stores up to 15 programs and maintains direct control over timepoints, agitation rate, sampling rate, and movement between vessel rows, hold dip time, and drain time.
- Accommodates a variety of dosage form holders including cylinders, reciprocating disks, angled disks, spring holders, stent holders, and pointed rods.
- Supports typical volume configurations of 20, 50, 100 and 300 mL. Additional conversion kits are available that can transition the instrument to support different volumes.

### A standard Apparatus 7 includes the following items:

- Outer media tube vessel carriers
- Outer media tubes
- 1 external heater/circulator
- Built-in printer

**Reciprocating Holder Apparatus 7**

Description	Part No.
USP Apparatus 7 Reciprocating Holder	G7972A
<b>Options for G7972A</b>	
6-row, 7-sample, 300 mL configuration	G7972A #100
6-row, 7-sample, 100 mL configuration	G7972A #105
12-row, 12-sample, 50 mL configuration	G7972A #110
6-row, 13-sample, 20 mL configuration	G7972A #115
Note: Apparatus 7 Row/Sample Configuration - One (1) selection is required.	
Acrylic pointed rod assembly	G7972A #120
Transdermal holder kit	G7972A #121
Reciprocating disk, 2.5 cm <sup>2</sup>	G7972A #123
Reciprocating disk, 5.0 cm <sup>2</sup>	G7972A #124
Reciprocating disk, 7.0 cm <sup>2</sup>	G7972A #125
Reciprocating disk, 10.0 cm <sup>2</sup>	G7972A #126
Angled disk holder, 1.98 in.	G7972A #127
Angled disk holder, 1.42 in.	G7972A #128
Mini basket assembly, 40-mesh	G7972A #129
Mini basket assembly, 50-mesh	G7972A #130
Spring holder, 1.45" L x .58" ID x .031" wire ID	G7972A #131
Spring holder, 1.40" L x .31" ID x .040" wire ID	G7972A #132
Spring holder, 0.96" L x .33" ID x .031" wire ID	G7972A #133
Spring holder, 0.60" L x .25" ID x .031" wire ID	G7972A #134
Note: Sample Holder Type - One (1) selection is required.	
Add Installation Service	G7972A #44K
Add Familiarization Service	G7972A #44L

Note: For complete qualification services offering, see page 163.





850-DS Dissolution Sampling Station

## Reciprocating Holder Apparatus 7 and 850-DS Sampling System

Description	Part No.
Reciprocating Holder Apparatus 7 and 850-DS Sampling Station	G7978A
<b>Options for G7978A</b>	
6-row, 7-sample, 300 mL configuration	G7978A #100
6-row, 7-sample, 100 mL configuration	G7978A #105
6-row, 7-sample, 50 mL configuration	G7978A #110
Note: Apparatus 7 Row/Sample Configuration - One (1) selection is required.	
Acrylic pointed rod assembly	G7973A #120
Transdermal holder kit	G7978A #121
Reciprocating disk, 1.6 cm <sup>2</sup>	G7978A #122
Reciprocating disk, 2.5 cm <sup>2</sup>	G7978A #123
Reciprocating disk, 5.0 cm <sup>2</sup>	G7978A #124
Reciprocating disk, 7.0 cm <sup>2</sup>	G7978A #125
Reciprocating disk, 10.0 cm <sup>2</sup>	G7978A #126
Angled disk holder, 1.98 in.	G7978A #127
Angled disk holder, 1.42 in.	G7978A #128
Mini basket assembly, 40-mesh	G7978A #129
Mini basket assembly, 50-mesh	G7978A #130
Spring holder, 1.45 in. L x .58 in. D x 0.031 in. wire ID	G7978A #131
Spring holder, 1.40 in. L x .31 in. ID x 0.040 in. wire ID	G7978A #132
Spring holder, 0.96 in. L x .33 in ID x 0.031 wire ID	G7978A #133
Spring holder, 0.60 in. L x .25 in. ID x 0.031 in. wire ID	G7978A #134
Note: Sample Holder Type (options 120-134) - One (1) selection is required. Please specify quantity.	
Inline filter housing option	G7978A #150
Sample tray, 96-position, 2 mL, for HPLC vials (no conversion required)	G7978A #210
Sample kit, 108-position, 2 mL, includes tray and needle block assembly	G7978A #211
Sample kit, 100-position, 2 mL, includes tray and needle block assembly	G7978A #212
Sample kit, 96-well plate, includes tray and needle block assembly	G7978A #213
Add Dissolution Workstation Software cable kit (software ordered separately)	G7978A #220
Add printer to 850-DS	G7978A #880
Add Installation Service	G7978A #44K
Add Familiarization Service	G7978A #44L

Note: For complete qualification services offering, see page 163.

**Reciprocating Holder Apparatus 7 Accessories**

<b>Description</b>	<b>Part No.</b>
Pointed acrylic rod	27-3000
Transdermal patch holder kit	27-3001
Replacement acrylic rod kit	27-3002
1.6 cm <sup>2</sup> reciprocating disk	27-8005
2.5 cm <sup>2</sup> reciprocating disk	27-8010
5.0 cm <sup>2</sup> reciprocating disk	27-8015
7.0 cm <sup>2</sup> reciprocating disk	27-8020
10.0 cm <sup>2</sup> reciprocating disk	27-8025
Angled disk, 1.98 in.	27-8035
Angled disk, 1.42 in.	27-8036
Basket shaft, mini	27-8600
Basket, mini, 40-mesh	27-8620
Basket, mini, 50-mesh	27-8621
Basket assembly, titanium	27-8622
Spring holder, Alza, 1.45 in. L x 0.58 in. ID x 0.031 in. wire ID, spring offset	27-0100
Spring holder, Alza, 1.40 in. L x 0.31 in. ID x 0.040 in. wire ID, spring offset	27-0101
Spring holder, Alza, 0.96 in. L x 0.33 in. ID x 0.031 in. wire ID, spring offset	27-0102
Spring holder, Alza, 0.60 in. L x 0.25 in. ID x 0.031 in. wire ID, spring offset	27-0103
Spring holder, Alza, 1.00 in. L x 0.50 in. ID x 0.031 in. wire ID, spring offset	27-0104
Spring holder, Alza, 1.45 in. L x 0.58 in. ID x 0.031 in. wire ID, spring centered	27-0105
Spring holder, Alza, 1.40 in. L x 0.31 in. ID x 0.040 in. wire ID, spring centered	27-0106
Spring holder, Alza, 0.96 in. L x 0.33 in. ID x 0.031 in. wire ID, spring centered	27-0107
Spring holder, Alza, 0.60 in. L x 0.25 in. ID x 0.031 in. wire ID, spring centered	27-0108
Spring holder, Alza, 1.00 in. L x 0.50 in. ID x 0.031 in. wire ID, spring centered	27-0109
Replacement tubing kit, App 3/7, (for use with inline luer fittings)	27-0126
Replacement tubing kit, App 3/7 (for use with 1/4-28 inline fittings)	27-0127
Outer tube, 50 mL	27-5130
Outer tube, calibrated, 50 mL, class B	27-5135
Outer tube, 50 mL, low actinic - red	27-5160

## DID YOU KNOW?

The compatibility table on the right provides details on holders and outer tube volumes for your specific testing needs.

**BIO-DIS Reciprocating Cylinder and Reciprocating Holder Apparatus 7 Compatibility Table**

Part No.	Holder	Apparatus 7 – Outer Tube			
		50 mL	100 mL	300 mL (USP)	1000 mL
27-5000	Inner tube (300 mL)	-	-	◆	◆
27-5010	Inner tube (100 mL)	-	◆	◆	◆
27-2400	DuraFit basket adapter	-	NR	◆	◆
27-2401	Basket adapter with clip assembly	-	NR	◆	◆
27-8620	Basket, mini, 40-mesh	◆	NR	◆	◆
27-8621	Basket, mini, 50-mesh	◆	◆	◆	◆
27-8600	Basket shaft, mini	◆	◆	◆	◆
27-8622	Basket assembly, titanium	◆	◆	◆	◆
27-3000	Pointed acrylic rod	◆	◆	◆	◆
27-3002	Replacement acrylic rod kit	◆	◆	◆	◆
27-3001	Transdermal patch holder kit	-	-	◆	◆
27-8005	1.6 cm <sup>2</sup> reciprocating disk	-	◆	◆	◆
27-8010	2.5 cm <sup>2</sup> reciprocating disk	-	-	◆	◆
27-8015	5.0 cm <sup>2</sup> reciprocating disk	-	-	◆	◆
27-8020	7.0 cm <sup>2</sup> reciprocating disk	-	-	◆	◆
27-8025	10.0 cm <sup>2</sup> reciprocating disk	NR	NR	◆	◆
27-6540	Replacement stent holder	◆	◆	◆	◆
27-6541	Stent holder, 8 mm (horizontal)	◆	◆	◆	◆
27-6542	Stent holder, 18 mm (vertical)	◆	◆	◆	◆
27-6543	Stent holder, 30 mm (vertical)	◆	◆	◆	◆
27-0101	Spring holder, 1.40 in. L x 0.31 in. inner dia. x 0.040 in. wire inner dia.	◆*	◆*	◆*	◆
27-0102	Spring holder, 0.96 in. L x 0.33 in. inner dia. x 0.031 in. wire inner dia.	◆*	◆*	◆*	◆
27-0103	Spring holder, 0.60 in. L x 0.25 in. inner dia. x 0.040 in. wire inner dia.	◆*	◆*	◆*	◆
27-0104	Spring holder, 1 in. L x 0.50 in. inner dia. x 0.031 in. wire inner dia.	◆	◆	◆	◆
27-8035	Angled disk, 1.98 in.	-	-	-	◆
27-8036	Angled disk, 1.42 in.	-	-	-	◆

Diamond image (◆) = Compatible, Shaded box = Not compatible, NR = Not Recommended, Asterisk (\*) = based on dimension measurements only

## 400-DS Apparatus 7

### The first compendial small-volume dissolution testing apparatus for novel dosage forms

The 400-DS sets the performance standard for small-volume drug-release testing of medical devices or combination products such as drug eluting stents (DES) or medicated contact lenses that release small amounts of active pharmaceutical ingredients (API) during a long period of time. Also used for testing extractables and leachables, and extended-release pharmaceutical products, the apparatus offers bathless heating, custom sample holders, integrated autosampling, media replacement and liquid handling capabilities.

Systems are available in sample cell sizes of 5 or 10 mL. Dissolution can be performed in volumes as low as 3 mL, providing significant gains in sample concentration for UV or LC analysis while virtually eliminating evaporation even when used with organic solvents. Utilization of the media replacement capabilities and sampling capacity, up to 36 timepoints, or 360 mL of media, can be used per test.

Controlled by a customized version of Dissolution Workstation Software, the 400-DS is capable of storing the operating parameters and method data required for a 21 CFR Part 11 environment. A relational database is used for system, method and test result storage, archival and retrieval. A single PC and software can control up to four systems. Each PC on a common network can then store all data in a centralized database.



400-DS Dissolution Apparatus

## DID YOU KNOW?

### 400-DS Sample Cells

Please consider the volume of media your method will require. It is not possible to switch between 5 and 10 mL cells on the same instrument. Keep in mind that the total volume of media the dosage form is exposed to is cumulative. Example: a method using 10 mL of media that has five timepoints and includes a complete media change at each timepoint would have a total volume of 50 mL.

The 400-DS:

- Saves time by simultaneously testing up to 13 samples, or 12 samples and a control or standard, while providing users direct visibility of each dissolution cell
- Maintains temperature control through internal temperature probes and external heating jackets; no water bath is required
- Minimizes evaporation through the fully closed system and the integrated syringe pump and autosampler save valuable bench space
- Offers automated media addition/removal through a port on the bottom of the cell
- Enables sample holder reciprocation through an externally controlled magnetic plate and supports between 1 and 35 dips per minute (DPM) to best match your requirements
- Includes a built-in autosampler that accommodates 12 individual sample rows with either 2 or 4 mL HPLC vials
- Permits up to 36 timepoints and five different media types per method including the use of solvents at high concentrations
- Automates full or partial media replacement via a built-in fluidics module at every timepoint for each vessel

Items included with a standard 400-DS (software ordered separately):

- 400-DS base unit with built-in syringe pump
- 13 sample cells (5 or 10 mL)
- 13 heater jackets for sample cells
- Sample tray (13 individual rows)
- Sample vials (2 and 4 mL) for volume calibration
- Bottle caps and tubing for dissolution media/waste
- Modified temperature probe (for temperature calibration)
- Sample extraction tool
- Communication/power cables





400-DS sample cell with stent holder



Internal view of cell holders

### Dissolution Cell Design

- A glass tube, open at both ends, is placed on top of the fluidics module, and a heating jacket surrounds each tube (no water bath is required). The bottom end is capped by the sampling port, while the top end is sealed after the sample holder is inserted.
- All sampling and media replacement is performed from the sampling port at the bottom of the dissolution cell.
- Temperature is recorded and independently controlled using an integrated temperature probe at the bottom of each cell.
- The 400-DS supports the USP-specified stroke length of  $20 \pm 1.0$  mm required for Apparatus 7.
- 5 or 10 mL sample cells are available but not interchangeable on the same instrument

### 400-DS Dissolution Apparatus 7

Description	Part No.
400-DS Automated Apparatus 7	G7975A
400-DS, 5 mL sample cell	G7975A #105
400-DS, 10 mL sample cell	G7975A #110
Note: 400-DS sample cell size - one (1) selection is required. Sample cells are not interchangeable.	
5 mL stent holder assembly	G7975A #120
10 mL stent holder assembly	G7975A #121
Basket assembly, PEEK	G7975A #122
Pacemaker lead holder, 1.7 mm	G7975A #123
Basket, 50-mesh, 10 mL	G7975A #124
Basket, mesh end, 20 m	G7975A #125
Punctal plug, 5 mL	G7975A #126
Contact lens holder, 5 mL	G7975A #127
Flat blank holder, 10 mL	G7975A #128
Contact lens holder, 16 mm, 5 mL	G7975A #129
Basket, 50-mesh, 5 mL	G7975A #130
Contact lens holder, 16 mm, 10 mL	G7975A #131
Add Installation Service	G7975A #44K
Add Familiarization Service	G7975A #44L

Note: 400-DS Workstation software (G4973AA) not included.

Note: For complete qualification services offering, see page 163.

## 400-DS Software and Accessories

Description	Part No.
400-DS Workstation Software	G4973AA
400-DS Workstation Software Bundle, with PC, printer and monitor	G9263AA
400-DS, with PC, printer, software, 5 mL cell	33-0105
400-DS, with PC, printer, software, 10 mL cell	33-0505
Dissolution cell, 10 mL	33-9000
Dissolution cell, 5 mL	33-9005
Heater element with cable assembly, 10 mL	33-9001
Heater element with cable assembly, 5 mL	33-9006
Vial tray row, single, 1.5 mL	33-9013
Vial tray row, single, 4 mL	33-9002
Extraction tool	33-9007
Vial, pre-crimped 12x32, 100/pk	33-9010
Stent holder assembly, 5 mL	33-9009
Glass vial, clear, with PTFE/silicon cap, 15x45, 100/pk	17-5030

(Continued)



400-DS sample holders

## DID YOU KNOW?

Agilent offers a variety of standard holders for stents, pacemaker leads, medicated contact lens, wound care products, and more. Contact your Agilent representative for information on custom-designed holders specifically for your testing needs.

## 400-DS Software and Accessories

Description	Part No.
<b>400-DS Sample Holder</b>	
Stent holder assembly, 10 mL	33-9012
PEEK basket assembly	33-9022
Pacemaker lead holder, 1.7 mm, requires stent holder assembly	33-9025
50-mesh basket, 10 mL	33-9029
50-mesh basket assembly, 10 mL	33-9041
PEEK basket	33-9042
Basket, mesh end, 20 m	33-9046
Punctal plug holder, 5 mL	33-9047
Contact lens holder, 5 mL	33-9048
Flat blank holder, 5 mL	33-9049
Contact lens holder, 16 mm, 5 mL	33-9050
50-mesh basket, 5 mL	33-9051
50-mesh basket assembly, 5 mL	33-9052
Contact lens holder, 16 mm, 10 mL	33-9053

A = P/N 33-9046

B = P/N 33-9049

C = P/N 33-9009

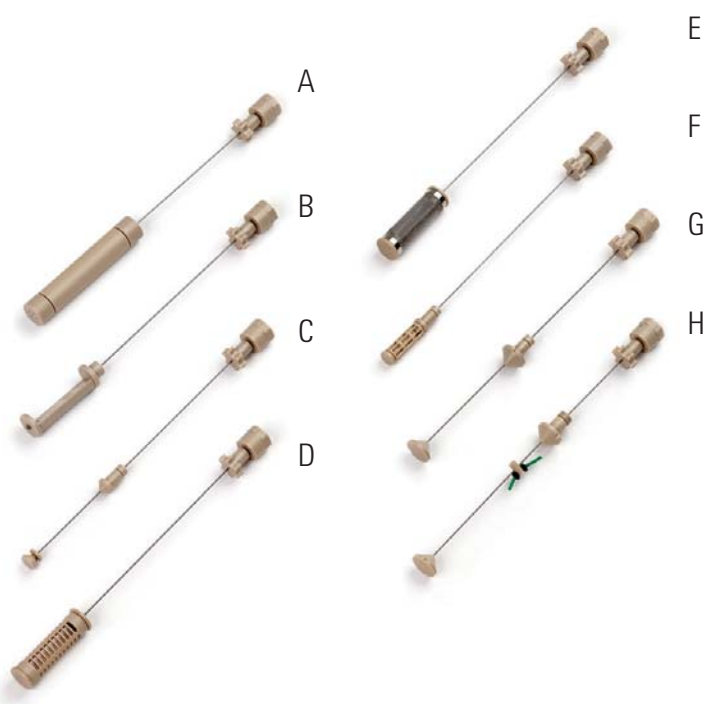
D = P/N 33-9022

E = P/N 33-9052

F = P/N 33-9048

G = P/N 33-9012

H = P/N 33-9025



## 400-DS Specifications

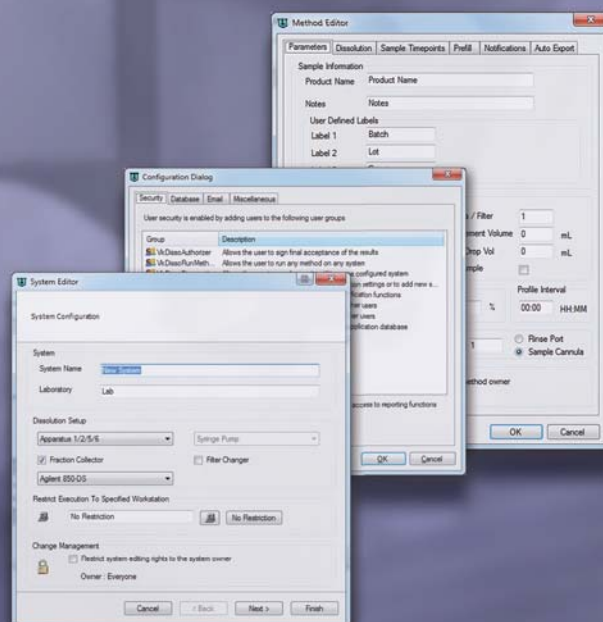
Reciprocation Length	20.0 ± 1.0 mm
Dip Rate	1-35 ± 5% DPM
Temperature Ambient	+ 5 to 55 ± 0.2 °C
Volume (Media)	3-5 (5 mL cell) or 8-12 (10 mL cell) ± 1%
Volume (Sample)	2 or 4 mL tray ± 1%
Timepoint (Samples)	Specified as HHH:MM:SS ± 2%
Number of Timepoints	Up to 36 (with tray change)
Input Voltage	115V / 230V AC; 50 / 60 Hz
Types of Media (per test)	Up to 5
Evaporation	0.2% or less over 24 hours

## 400-DS Dimensions

Height	Width	Depth	Weight
58.42 cm / 23 in.	53.34 cm / 21 in.	59.69 cm / 23.5 in.	58.97 kg / 130 lb.



400-DS sample tray



# Dissolution Software

## Dissolution Workstation Software

Complete, integrated control of multiple dissolution systems from a single computer

### DID YOU KNOW?

#### Supported Apparatus

Agilent's complete line of dissolution equipment is available for use with Dissolution Workstation Software.

This includes:

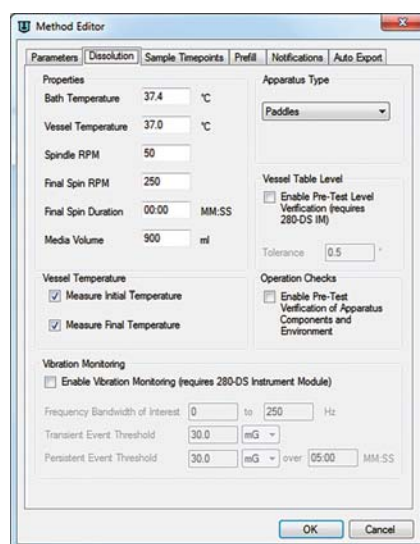
- 708-DS and legacy models (USP Apparatus 1 and 2)
- BIO-DIS Reciprocating Cylinder and Reciprocating Holder (USP Apparatus 3 and 7)
- Legacy 806 Syringe Pump, 808 Filter Changer or 810 Peristaltic Pump
- 850-DS and legacy 8000 Dissolution Sampling Stations

Dissolution Workstation Software integrates Agilent's dissolution apparatus and automated sampling components, allowing you to simultaneously control up to four systems of any configuration from a desktop PC. The software provides a mechanism for the user to build, edit, search, retrieve, and archive all dissolution methods and test reports from a single interface.

- Get Organized - Combine system, method, and test information in one database for easy maintenance and data review.
- Increase Efficiency - Eliminate manual documentation of each step of the dissolution testing process, improve data management, and reduce errors.
- Be Compliant - Meet electronic records and signature requirements for 21 CFR Part 11 compliance with built-in features.
- Rest Assured - Integrate data security with features designed to simplify data export and LIMS integration.

Method parameters, instrument and accessory information, and test data are captured and recorded with the software. View test status information in real time as the software progresses through the timepoints for each dissolution system. As part of 21 CFR Part 11 regulations, user changes to methods and system configurations can be easily tracked and documented.

Agilent's complete line of dissolution equipment is available for use with Dissolution Workstation Software. This includes Apparatus 1, 2, 3, 5, 6 and 7 and the associated pumps and automated sampling equipment.

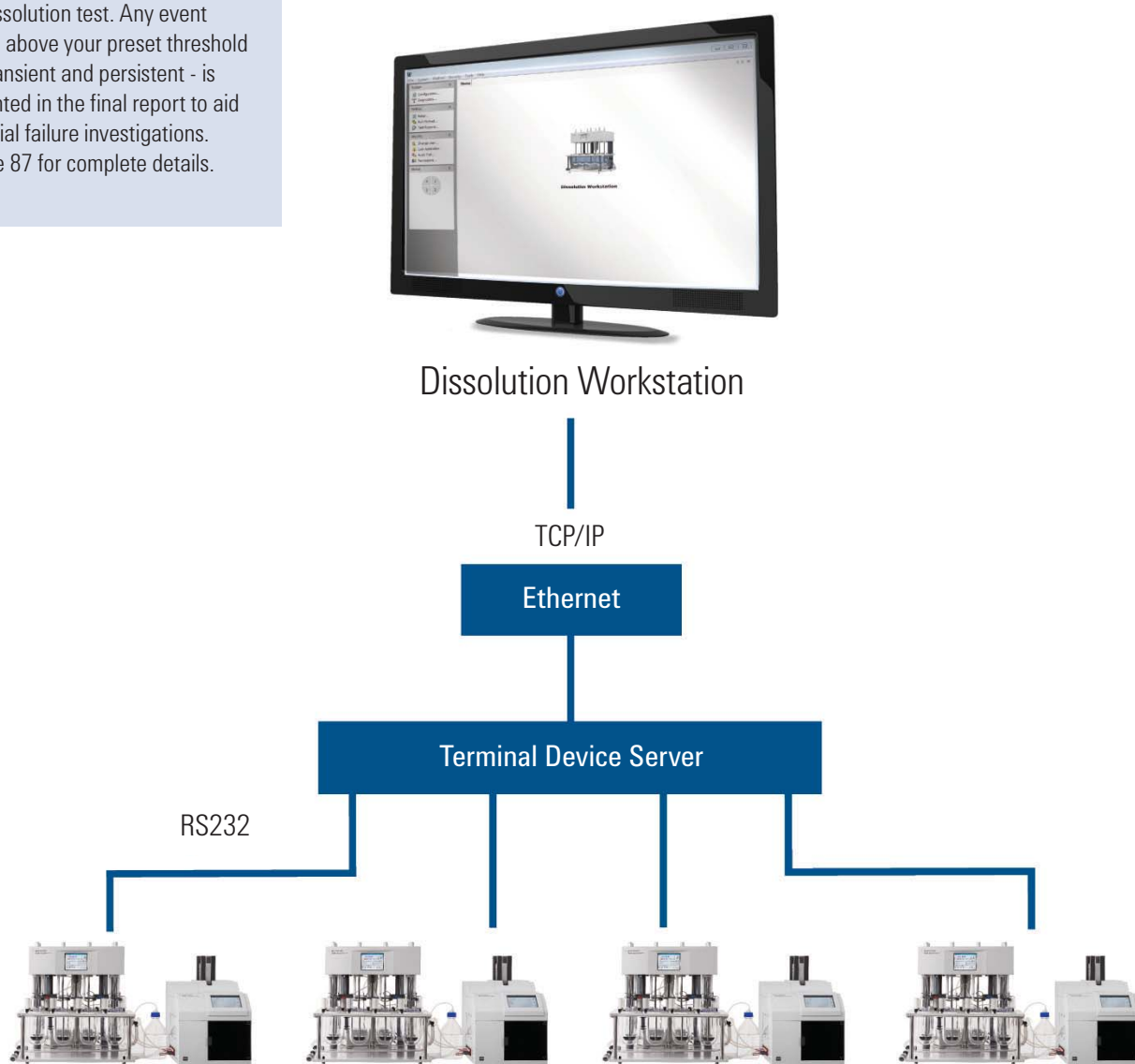


Dissolution Workstation Method Editor

**DID YOU KNOW?**

Dissolution Workstation software, in conjunction with the 280-DS instrument module, provides the ability to monitor vibration throughout the entire dissolution test. Any event recorded above your preset threshold - both transient and persistent - is documented in the final report to aid in potential failure investigations. See page 87 for complete details.

Dissolution Workstation Software maintains a complete history for all executed tests, which can be digitally verified and electronically signed. Print, preview or export PDF documented results generated by a dissolution run in the protected database created locally or on a network. The client-server architecture offers the potential to integrate or export the data to a laboratory information management system (LIMS).



Dissolution Workstation Software can manage up to 4 systems from a single PC. Each PC on a common network can connect to a centralized database.

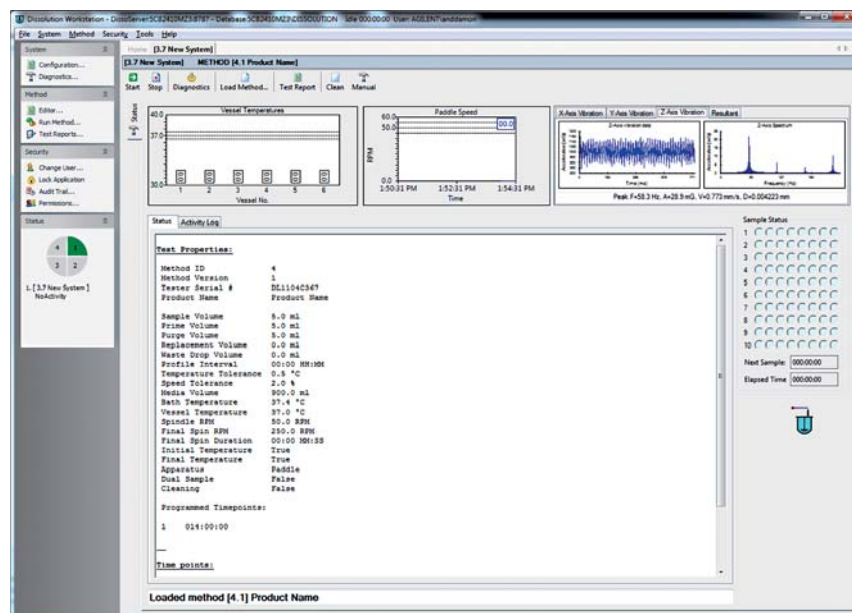


## DID YOU KNOW?

Dissolution Workstation software is validated for use in a Windows 10 environment.

## Dissolution Workstation Software

- Contains several different user groups to assign proper rights and privileges to individual users
- Includes an audit trail feature that creates test reports highlighting differences between versions of methods or system configurations
- Can support dissolution methods that include a media change
- Does not have restrictions on the different combinations of equipment with any of four systems that may be configured
- Offers an ideal solution to eliminating manual transcription errors, and improving efficiency and data integrity



The Dissolution Software system status screen displays the activity of all systems in real time.

## Dissolution Workstation Software

Description	Part No.
Dissolution Workstation Software (PC not included)	G4974AA
Dissolution Workstation Software Bundle (includes PC/printer/monitor)	G9264AA
280-DS Instrument Module Kit	12-0595



## Qualification Tools

## 280-DS Mechanical Qualification System

### Redefine Dissolution Qualification

#### DID YOU KNOW?

#### 280-DS MQS Recalibration

Depending on usage conditions and frequency, the 280-DS should be periodically recalibrated. Agilent offers this service at multiple locations worldwide. Contact Agilent Service to initiate recalibration of your 280-DS.

**[www.agilent.com/lifesciences/dissolutionrepair](http://www.agilent.com/lifesciences/dissolutionrepair)**

Easily perform measurements required for Mechanical Qualification (MQ) or the physical portion of the Performance Verification Test (PVT) in as little as 30 minutes for both paddles and baskets! The Agilent 280-DS Mechanical Qualification System (MQS) allows you to measure all critical physical parameters of the dissolution apparatus with increased reliability and precision. The 280-DS works with any dissolution apparatus with an open-head design to obtain accurate, repeatable measurements virtually hands-free. Simply place either the Instrument or Vessel Modules to take measurements without the use of separate tools or added steps that increase time in the qualification process. Coupled with software ideal for a 21 CFR Part 11-compliant environment, the system has the ability to maximize analyst efficiency, reduce instrument downtime and improve dissolution failure investigations.

The Instrument Module (IM) and Vessel Module (VM) electronically capture all the necessary measurements for the 280-DS. These durable modules replace the need for individual measuring gauges with an all-in-one system that accurately verifies physical parameters without the guesswork associated with manual gauges.

Instrument Module measurements include:

- Vessel plate level
- Triaxial vibration
- Temperature

Vessel Module measurements include:

- Rotational speed (RPM)
- Shaft wobble
- Basket wobble
- Vessel centering
- Vessel verticality
- Shaft verticality
- Basket and paddle height



280-DS MQS with modified arm extension allows compatibility with various types of dissolution vessels.



Agilent 280-DS Mechanical Qualification System and Workstation Software

### DID YOU KNOW?

When using the 280-DS with an Agilent dissolution apparatus, the user achieves an additional advantage. A simple RS232 connection from the instrument to the PC allows the software to initiate spindle rotation when necessary. This is especially useful when measuring RPM, wobble and vibration, and provides even greater time savings and efficiency! This connectivity can be achieved by adding option #100 when ordering.

### Reliable, Secure Data Recording and Storage

The 280-DS Workstation Software incorporates an intuitive, user-friendly interface built on a familiar and compliant software platform. It includes preloaded regulatory methods – such as ASTM E2503 – for quick setup and execution. Previously stored data files are categorized and easily retrieved from a secure database. The software also contains enhanced capabilities, such as data trending, that can improve failure investigations and increase apparatus integrity.

### 280-DS Mechanical Qualification System

Description	Part No.
280-DS Mechanical Qualification System, with 280-DS Workstation Software	G7980AA
Cable kit for Agilent/Varian/VanKel Dissolution Apparatus connection	G7980AA #100
Spacer kit for 280-DS VM (for use with shorter vessels)	G7980AA #105
HP ProBook laptop for use with 280-DS	G7980AA #650
Add Familiarization Service	G7980AA #44L
Add Installation Service	G7980AA #44K

Note: For complete qualification services offering, see pages 163.

### 280-DS Replacement Parts

280-DS Instrument Module Kit	12-0595
Magnetic Clip, RPM, 280-DS	K1005-02019
Temperature Probe, 280-DS	K1005-02024
Cable to connect PC to Agilent/Varian/VanKel Dissolution Apparatus	5075-0252



The 280-DS transforms the process of gathering mechanical qualification data

### Agilent Dissolution Workstation Software Enhancements

- Consolidate and maintain data in one paperless location, with options of exporting information into your laboratory information management system (LIMS) or Microsoft Excel
- Add and document an automated system cleaning cycle to the end of each method, extending the life of your dissolution equipment. Auto-cleaning can even be an unattended operation when using the 850-DS Sampling Station.
- Comply with the latest enhanced mechanical qualification (MQ) guidelines, including verifying and documenting the condition of accessories prior to each test.
- Improve failure investigations related to environmental impacts by monitoring the dissolution apparatus and environment for vibration using the Instrument Module (IM) of the 280-DS Mechanical Qualification System.



When used with Dissolution Workstation Software the 280-DS Instrument Module provides valuable insight into real-time environmental test conditions.

### Exclusive 280-DS Instrument Module (IM) monitoring provides important insights related to vibration

The importance of adding vibration and environmental impact monitoring to Dissolution Workstation Software cannot be overstated as this feature provides the user with important information that is not available elsewhere. It has been known for many years that vibration can dramatically impact dissolution results. Regulatory bodies suggest companies monitor and control the level of vibration – you now have a tool to do just this. The lack of an industry-wide norm demonstrates how internal and external vibrations may affect each product and individual environments differently. With baseline values for vibration on the x-, y- and z-axes, dissolution systems as well as their environments can consistently be monitored in real time.

This added benefit may be used during early research to develop internal tolerances for specific methods, as part of a quality control initiative for well-established methods – or to watch for wear and tear to prevent instrument failure. If failure should occur, this feature speeds problem solving and helps to get instruments back online faster.





## Automated Dissolution Sampling Systems

## 850-DS Dissolution Sampling Station

### Centralize Dissolution Workflow

The 850-DS Dissolution Sampling Station can be incorporated seamlessly into your existing workflow to provide an unattended sampling and cleaning solution that increases productivity and eliminates variability. Supporting a range of dissolution methods, the 850-DS works with USP dissolution apparatus 1, 2, 3, 5, 6 and 7 for precise and repeatable results using conventional test tubes, HPLC vials and even 96-well plates.

- Create and store custom dissolution methods
- Control precise and repeatable sampling
- Document critical instrument data
- Prepare samples for subsequent UV-Vis or HPLC analysis
- Automate cleaning of the instrument to prepare for your next test



Agilent 850-DS Dissolution Sampling Station with optional built-in filtration module.



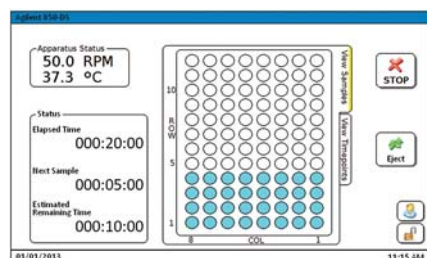
## **Built-in Syringe Pump and Optional Filter Changer Module**

Conserve bench space using the integrated syringe pump with variable speeds for shorter timepoint intervals. The 850-DS handles different types of media - including those containing surfactants - for superior autosampling performance. Media replacement is a standard feature and can be used with or without the optional filter module. Should you require filtration down to 0.2  $\mu\text{m}$ , 0.45  $\mu\text{m}$ , this is possible with the exclusive Whatman 850-DS 8-channel filter plates from GE Healthcare that simplifies the need for replacement between timepoints.

Visit [www.gelifesciences.com/distributors](http://www.gelifesciences.com/distributors) for contact information regarding filter plate ordering.



The 850-DS optional filter module uses eight 25 mm disc filters in a novel plate design.



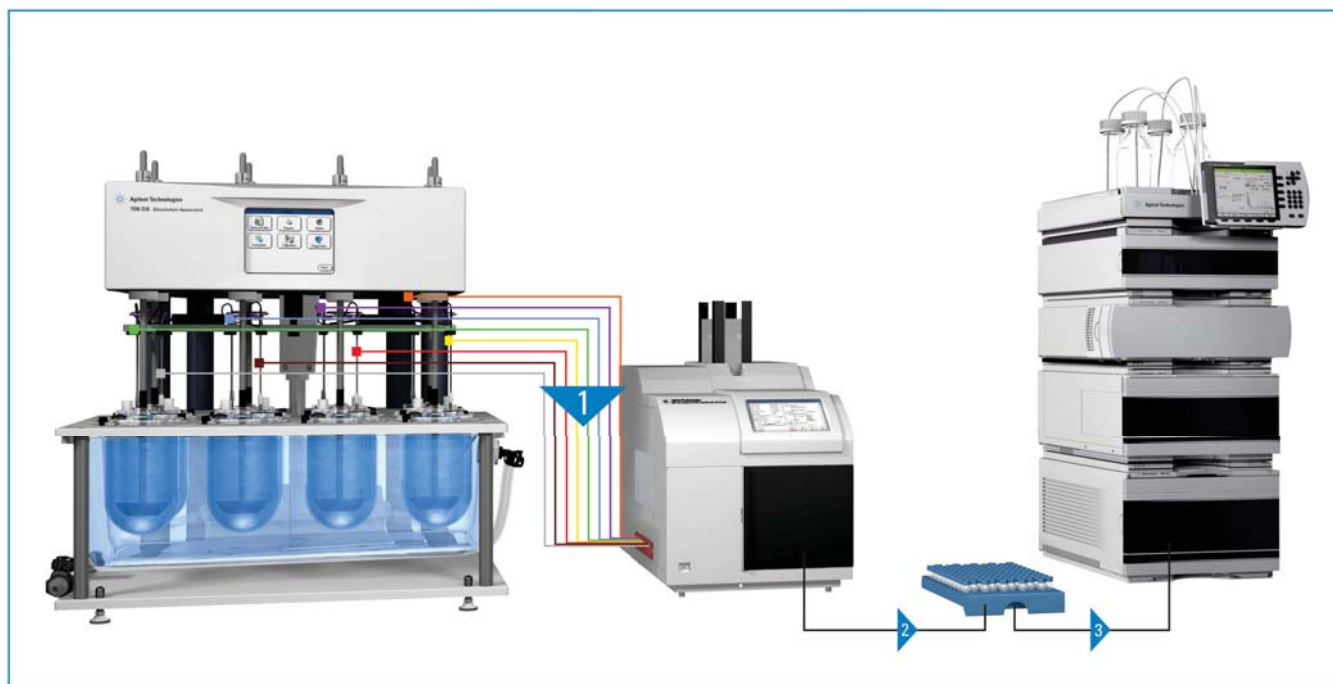
The 850-DS firmware displays real-time status of method progression.

## Firmware Capabilities

The 850-DS firmware supports a variety of languages including English, German, Japanese, Portuguese, Chinese and Spanish. Easily display real-time status of instrument conditions, including the sample tray format installed, as well as calculate time for minimum sampling interval during method setup, preventing timing errors.

The firmware also:

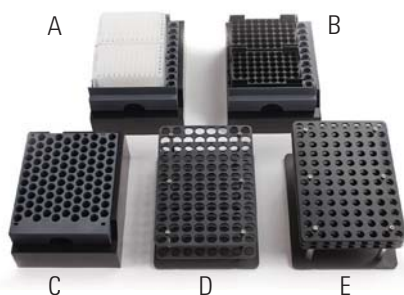
- Differentiates between full and partial media change for accurate timing
- Can prevent unauthorized instrument with individual usernames and password changes
- Accepts methods with up to 36 timepoints
- Calculates minimum sampling intervals accounting for prime, sample and purge volumes
- Supports data-export functionality via RS232, SD card, or optional built-in printer
- Synchronized start enables performance of two dissolution tests in parallel



Samples collected by the 850-DS into an Agilent HPLC sample tray can be placed directly into the HPLC autosampler, avoiding the need to manually transfer individual vials to a separate tray.

## 850-DS Dissolution Sampling Station

Description	Part No.
<b>850-DS Dissolution Sampling Station</b>	
850-DS Dissolution Sampling Station	G7930A
<b>850-DS Dissolution Sampling Options</b>	
Sample tray, 96-position, 2 mL, for HPLC vials (no conversion required)	G7930A #210
Sample tray kit, 108-position, 2 mL, includes tray and needle block assembly	G7930A #211
Sample tray kit, 100-position, 2 mL, includes tray and needle block assembly	G7930A #212
Sample tray kit, 96-well plate, includes tray and needle block assembly	G7930A #213
Add Dissolution Workstation software cable kit (software ordered separately)	G7930A #220
Add printer to 850-DS	G7930A #880
Add Installation Service	G7930A #44K
Add Familiarization Service	G7930A #44L
Note: For complete qualification services offering, see pages 164	
<b>850-DS Filtration Module</b>	
96-position (12 x 8), 14 mL sample tray (for use with test tubes)	K1005-02066
<b>850-DS Dissolution Sampling Station Option and Replacement Parts</b>	
Sample tray, 96-position, 12 x 8, 2 mL, for use with HPLC vials	K1005-05212
Sample tray kit, 108-position, 2 mL, requires needle block conversion	K1001-01202
Sample tray, 54-position, 9 x 6, for 2 mL vials, for use with K1001-01202	5022-6502
Sample tray kit, 100-position, 2 mL, requires needle block conversion	K1001-01203
100 position tray for 2 mL vials	G1313-44510
Sample tray kit 96-well plate, requires needle block conversion	K1001-01204
Glass tubes, 16x100 mm, 250/pk	17-5001
Glass vials, 12x32 mm, w/ cap (PTFE/Silicon), 100/pk	17-5020
850-DS Printer Kit (includes side panel)	K1005-05187



- A: 96-well plate sample tray – for use with two (2) 96-position well plates
- B: 108-position HPLC vial sample tray – for use with two (2) 54-position HPLC sample trays
- C: 100-position HPLC vial sample tray (zigzag) – for use with 100-position Agilent HPLC sample tray
- D: 96-position test tube sample tray – for use with 16 x 100 mm test tubes
- E: 96-position HPLC vial sample tray – for use with 12 x 32 mm HPLC vials

The 850-DS Dissolution Sampling Station is also part of the following system bundles:

## 850-DS Dissolution System Bundles

Description	Part No.
<b>850-DS Dissolution System Bundles</b>	
708-DS Dissolution Apparatus and 850-DS Sampling Station	G7913A
708-DS and Cary 8454 Online UV Dissolution System – Multicell	G7922A
708-DS and Cary 60 Online UV Dissolution System – Multicell	G7926A
BIO-DIS Reciprocating Cylinder Apparatus and 850-DS Sampling Station	G7977A
Reciprocating Holder Apparatus 7 and 850-DS Sampling Station	G7978A

## 850-DS Dissolution Sampling Station Dimensions and Specifications

<b>Dimensions</b>	
Height	40.0 cm
Height with filter module	60.0 cm
Width	39.0 cm
Width with filter waste bin	48.0 cm
Depth	60.0 cm
Weight	27.0 kg
<b>Specifications</b>	
Sampling accuracy	10 mL $\pm$ 2.5%
Sample volume per vial/tube	0.1-14 mL (up to 28 mL with dual sample)
Sample frequency	Method specific with minimum of 2 minutes
Number of samples per test	Up to 36 with manual tray exchange
Pump speed	Variable (6, 8, 10, or 12 mL/min)

Note: For the complete 850-DS specifications, visit  
[www.agilent.com/en-us/products/dissolution/automated-sampling-systems/850-ds-dissolution-sampling-station](http://www.agilent.com/en-us/products/dissolution/automated-sampling-systems/850-ds-dissolution-sampling-station).



## Automated UV Dissolution Systems

## UV Dissolution Systems

### Selecting a UV Dissolution System

Agilent offers UV Dissolution Systems with both the Cary 8454 and the Cary 60 UV-visible Spectrophotometers. Whether you want an online or offline system, multicell-based or in situ measurement via fiber optics, we have just the configuration to suit your needs.

### Online UV Dissolution System Configuration

#### **Cary 8454 UV-visible Spectrophotometer**

First, select the UV spectrophotometer that best suits your testing needs. Consider these criteria:

- The Cary 8454 is a diode array UV spectrophotometer that is ideal for use with single and select multicomponent products and powered by UV-ChemStation software.
- The most economical configuration is equipped with a single flow cell. Samples are pumped to the flow cell by a peristaltic pump and read sequentially. This system may be ordered using G7920A.
- When configured with a single apparatus, the eight-position multi-cell transport (MCT) option withdraws samples simultaneously, pumps the samples to the individual flow cells, reads and returns the samples to the vessels with no cross contamination.
- For even greater flexibility, the MCT option can have up to four apparatus integrated with one UV spectrophotometer (G7921A). Samples are withdrawn and read sequentially. After measurement, the sample is discarded rather than returned to the vessel.
- Updated UV-ChemStation software provides enhanced 21 CFR Part 11 security via Security Pack or OpenLab ECM.
- The single bath, multicell option (G7922A) can also support the 850-DS sampling station. This provides a system capable of online UV analysis and offline LC sample collection for laboratories requiring both types of analysis.



Cary 8454 UV-visible Spectrophotometer

## Cary 60 UV-visible Spectrophotometer

- **Multicell UV Dissolution:** Utilizes a multicell changer that allows for the integration of up to two dissolution apparatus with one UV spectrophotometer. In a single- or dual-apparatus configuration, each vessel has a dedicated flow cell. Samples are taken simultaneously and read sequentially.
- **Cary WinUV Software:** Supports the 850-DS Dissolution Sampling Station in line with the Cary 60, offering sample archival or offline collection for HPLC analysis.
- **Fiber Optic UV Dissolution:** May be configured for use with a fiber optic multiplexer, and integrated with either one or two apparatus. The fiber optic probes are mounted on the moveable manifold and are precisely positioned in the media only during measurements.

If you need assistance with selecting the system most suitable for your laboratory, please contact your Agilent representative or the Dissolution Hotline at [dissolution.hotline@agilent.com](mailto:dissolution.hotline@agilent.com).

Once you have determined the appropriate spectrophotometer, you will need to determine which apparatus you would like to integrate. The 708-DS is fully compatible with these online UV-Dissolution systems. In addition, you can retrofit many older Varian and VanKel apparatus with either system.



Cary 60 UV-visible Spectrophotometer



## UV Dissolution Selection Chart Cary 8454 and Cary 60 UV-visible Spectrophotometers

General Information	Cary 8454	Cary 60
Software Package	UV-ChemStation	Cary WinUV
Number of Apparatus	1 to 4	1 to 2
Multicomponent Analysis	Yes (for select products)	No
Fiber Optic System Availability	No	Yes

Spectrophotometer Details	Cary 8454	Cary 60
Wavelength Range	190-1100 nm	190-1100 nm
Slit Width	1 nm	1.5 nm
Lamp Type	Tungsten and Deuterium	Xenon Flash
Instrument Design	Diode Array	Scanning
Wavelength Accuracy	< $\pm 0.5$ nm	< $\pm 0.5$ nm
Wavelength Reproducibility	< $\pm 0.02$ nm	$\pm 0.1$ nm
Photometric Accuracy	< $\pm 0.005$ Abs (NIST 930E)	$\pm 0.005$ Abs (NIST 930D)
Photometric Noise	< 0.0002 Abs	$\pm 0.0001$ Abs
Baseline Flatness	< 0.001 Abs	< 0.001 Abs
Stray Light	< 1.0% (198 nm) < 0.05% (220 nm) < 0.03% (340 nm)	< 1.0% (198 nm) < 0.05% (220 nm) $\leq 0.05\%$ (370 nm)



Select from either of Agilent's UV-Vis Spectrophotometer for a complete online solution - Cary 8454 UV-Vis (left) or Cary 60 (right)

## Online Sampling System

Details	Cary 8454	Cary 60
Closed Loop Sampling	Yes (Multicell)	Yes (Multicell)
Path Lengths (mm)	1, 2, 5, 10 (Multicell)	0.2, 0.5, 1, 2, 5, 10 (Multicell) 1, 2, 5, 10, 20 (Fiber Optic)
Automated Dosage Delivery and Sampling	Yes	Yes
Temperature Monitoring	Yes	Yes
Simultaneous Sampling	Yes (Multicell)	Yes (Multicell)
Sequential Sampling	Yes (Valve Systems)	Yes (Fiber Optic)
Sample Filtration (minimum pore size m)	0.2 or 0.45 $\mu$ m with 850-DS Dissolution Sampling Station and filter module	0.2 or 0.45 $\mu$ m with 850-DS Dissolution Sampling Station and filter module
Sample Archival	Yes (Multicell with 850-DS Dissolution Sampling Station)	Yes (Multicell with 850-DS Dissolution Sampling Station)

Software Details	Cary 8454 (UV-ChemStation)	Cary 60 (Cary Win UV)
Real-time Data Visible	Yes	Yes
Independent Methods	Yes	Yes
Offline Analysis	Yes	Yes
User-definable Dissolution Result Calculation	Yes	No
Tablet Weight Normalization	Yes	Yes
Medium Volume Changes	Yes	Yes
Customizable Reports	Yes	Yes
Apparatus Performance Tracking	Yes	No
21 CFR Part 11 Package	Yes	Yes
Electronic Signatures	Yes	Yes

## Cary 8454 UV Dissolution Systems

### Online UV Dissolution

Agilent, Varian and VanKel dissolution apparatus, as well as many other brands can be directly linked to the diode array Cary 8454 UV-visible spectrophotometer for automated test runs. The UV-visible ChemStation software integrates the apparatus, the spectrophotometer and the computer into a complete system supporting guided operation and unattended test runs with online test progress monitoring. The software supports test preparation, as well as post run activities. The software offers additional features by adding advanced capabilities for method development and validation, as well as a tool set for 21 CFR Part 11 compliance. The software can be operated in a local workstation or within an OpenLab/ECM environment.



The 708-DS, 850-DS with the Cary 8454 provide an online UV system controlled by ChemStation UV-Vis Software

## DID YOU KNOW?

ChemStation dissolution software supports full spectrum acquisition. During a dissolution run, corrections can be applied for capsule absorbance and background scattering. Multi-component analysis of formulations with multiple active ingredients can also be analyzed. Analytical methods can be optimized without repeating the test run simply by recalculation of the run data.

## Online Sampling Systems

UV-ChemStation software also controls the sampling and pumping systems. The pumps, with convenient cassette-mounted tubing, offer variable speeds for adjustable flow rates, which are reversible as well.

The online sampling systems support eight measurement channels depending on the hardware configuration. The measurement cycle at each timepoint is configurable with up to eight measurements consisting of a blank, control and samples.

Disposable cannula filters prevent the transfer of non-dissolved particles into the flow cells. Reversal of the pump direction at the end of a transfer cycle flushes particles from the filters, avoiding clogging. Flow tests before and after completion of a run can be applied to ensure the equipment has performed reliably during the entire run.

A large variety of flow cells with different path lengths, from 1 to 10 mm, in combination with the variable pump times are ideal for aligning your target UV-visible analysis. You can adapt the various cell volumes, and measure the respective exchange pump time by the flow test included in ChemStation software.

Services for complete qualification are available assuring the proper performance of the entire system.



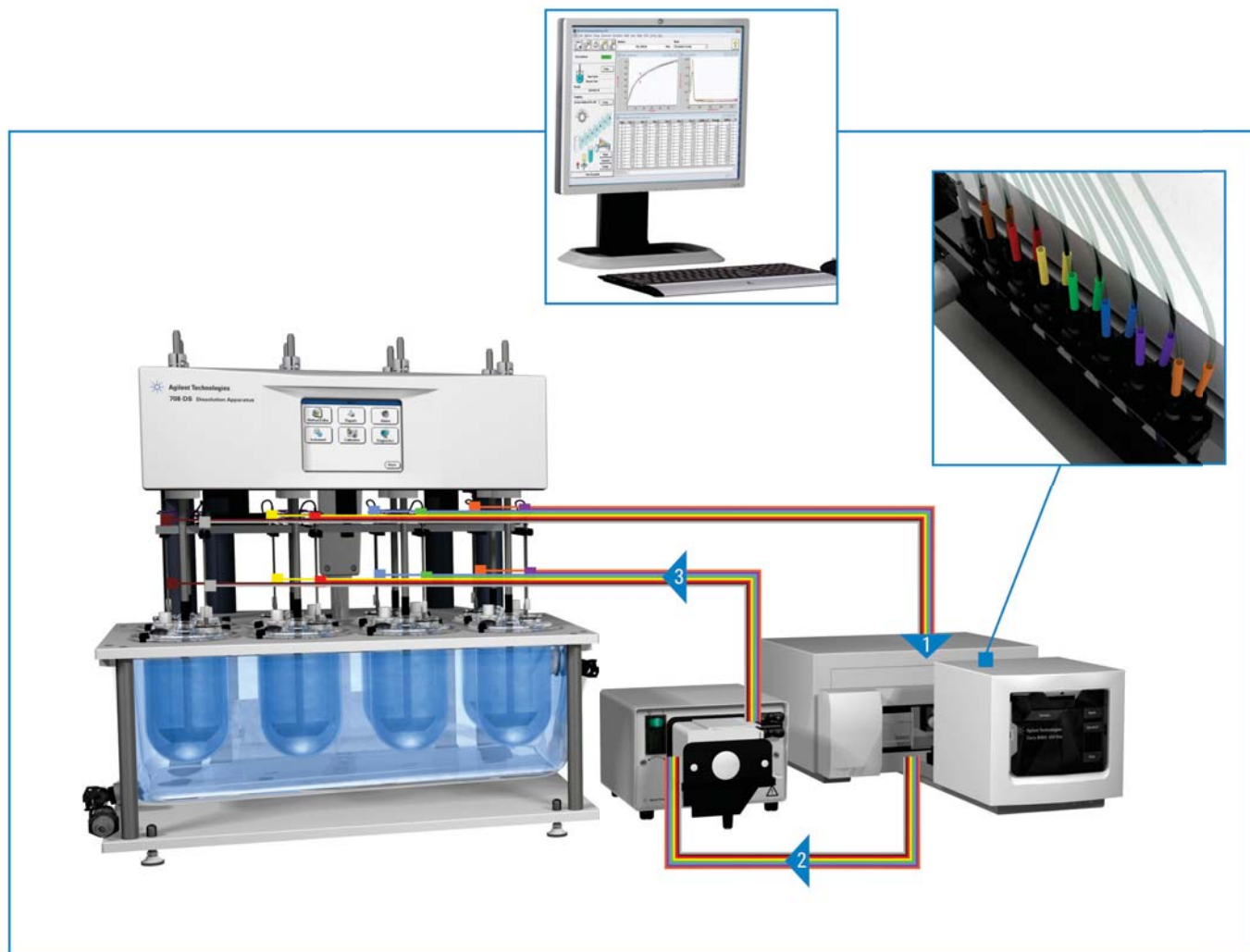
708-DS with 850-DS and Cary 8454 UV-visible Spectrophotometer

## Cary 8454 UV Dissolution System: Multicell-based Sampling

The multicell-based system is the most commonly used and versatile sampling system for single apparatus testing, and is ideally suited for QA testing and formulation development. The system uses a multicell transport with eight flow cells, one for the blank, up to six for the individual vessels and one for a standard, with a multi-channel peristaltic pump or 850-DS sampling station to sample all vessels simultaneously. A minimum cycle time of two minutes is possible. The dissolution medium is returned to the vessel so that there is no change in medium volume during the test. The system is capable of taking a large number of data points, allowing for a well characterized dissolution profile. Addition of the 850-DS allows for sample archival or collection for subsequent HPLC analysis.

### Flow Configuration (as shown below)

1. The sampling manifold is lowered and the pump primes the lines.
2. The sample from each vessel is pulled into the flow cells of the Cary 8454 simultaneously. The manifold rises and the pump is stopped during measurement.
3. Optionally, samples are deposited into the tubes or vials of the 850-DS sample tray.
4. After measurement, the pump pushes the samples back to the return cannulas and into the vessels. All media is returned to the individual vessel from which it was drawn. No sample volume is lost in this-closed loop system.



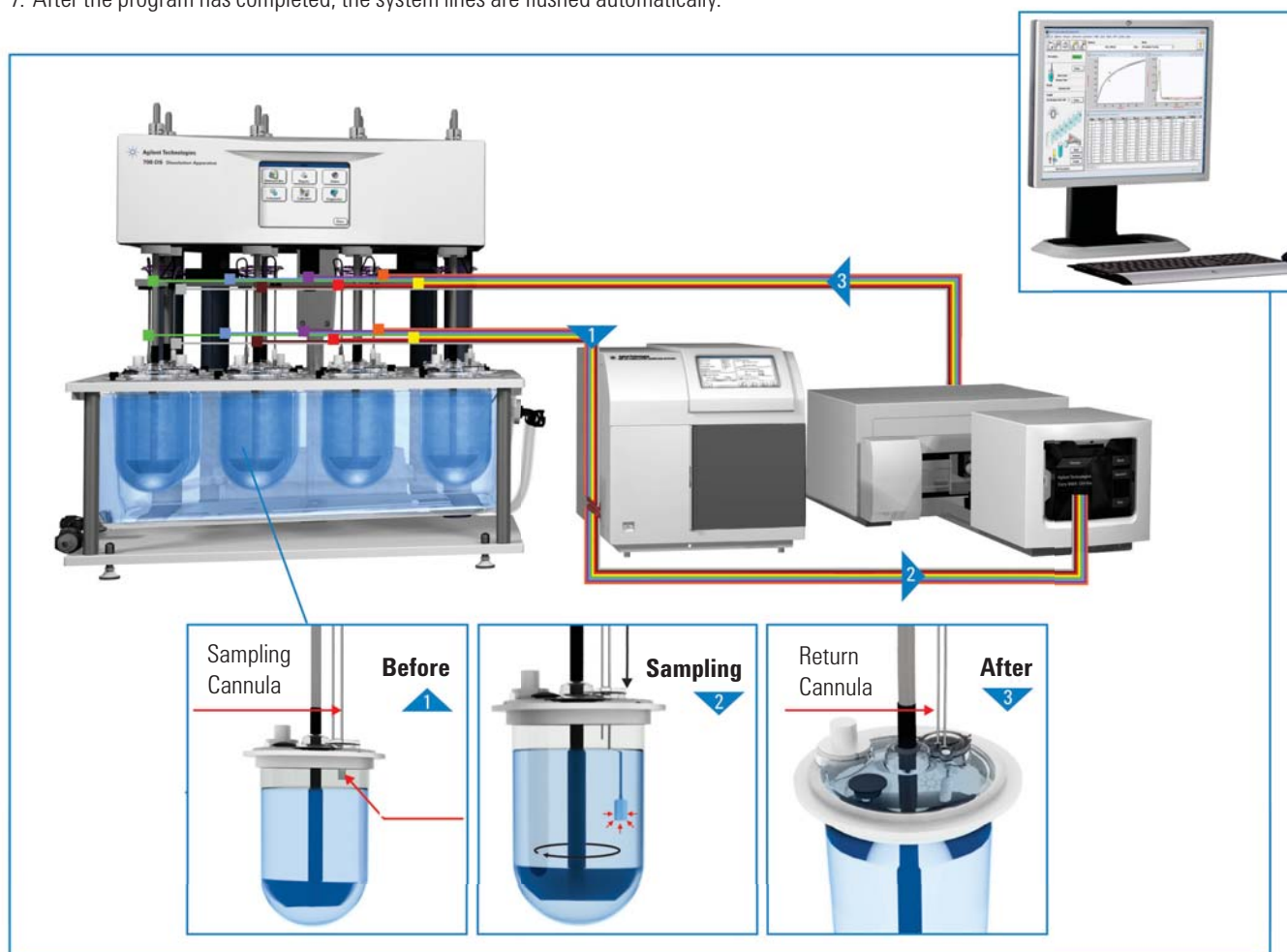
Cary 8454 UV Dissolution System: Multicell-based Sampling

## Cary 8454 UV Dissolution System: Single Apparatus with 850-DS Sampling Station

The multicell system is ideal for providing repeatable results, especially when additional filtration or sample archival is required, via the 850-DS Dissolution Sampling Station with filter module. Integrating the 850-DS Dissolution Sampling Station with the Cary 8454 provides the flexibility of online UV analysis and offline collection for methods requiring an LC finish.

### Flow Configuration (as shown below)

1. At each timepoint, the sampling manifold lowers and the blank, standard and samples are transferred to the built-in 850-DS syringe pump simultaneously.
2. The 850-DS pumps and moves the samples through the filters on the integrated filter module (if the method calls for additional filtration, otherwise this step can be bypassed).
3. Samples are then collected for archival in the 850-DS sample trays. If there is no need for archival, this step is bypassed.
4. The volume continues on into individual flow cells contained in the cell changer of the Cary 8454. The manifold rises.
5. After the samples are measured, the sample lines are purged with air and all volume is returned to the dissolution vessels. No volume is lost in
6. this closed-loop system and the sample lines remain empty until the next timepoint.
7. After the program has completed, the system lines are flushed automatically.



Cary 8454 Dissolution System - Single Apparatus Setup with 850-DS Dissolution Sampling Station



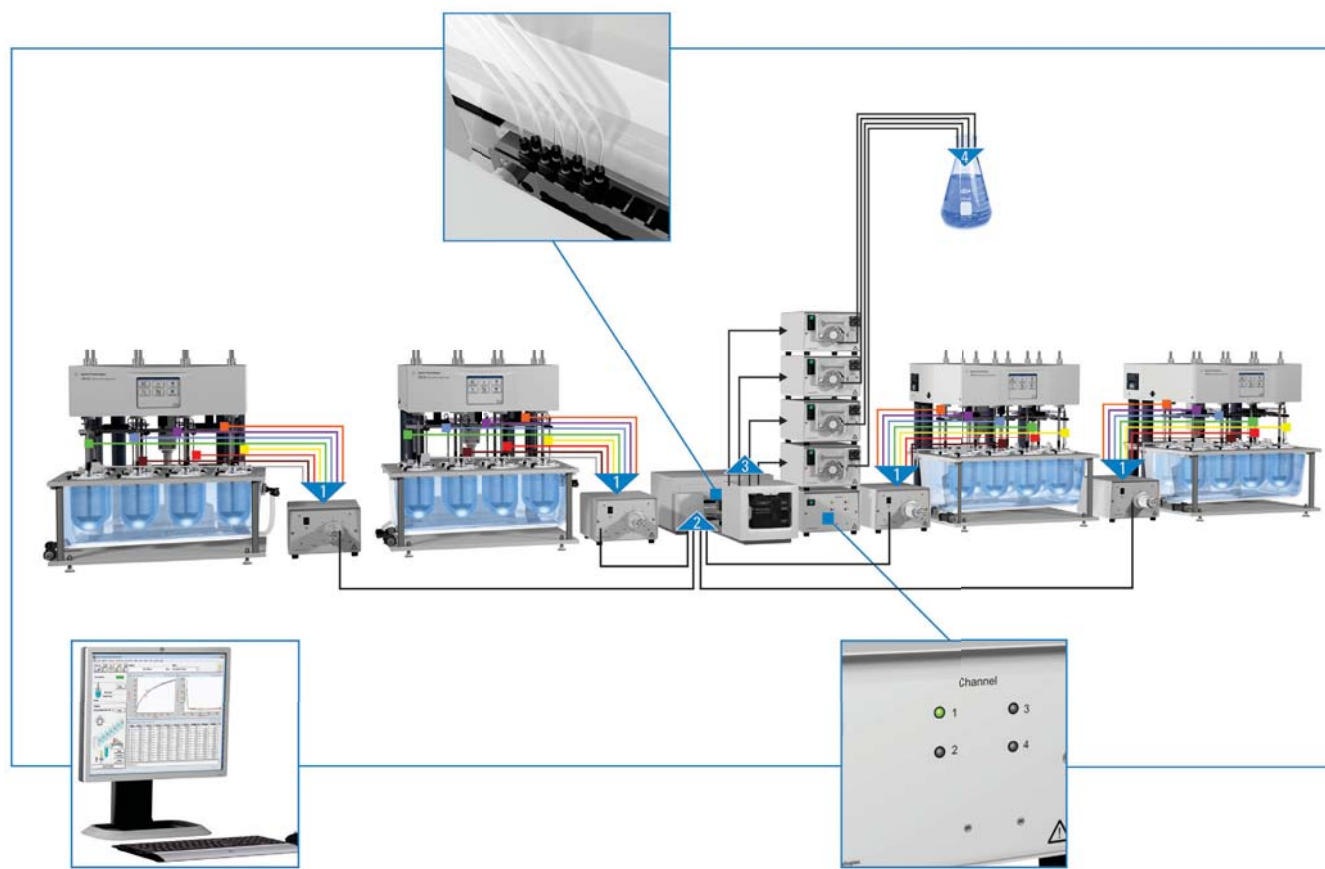
## Cary 8454 UV Dissolution System: Multi-apparatus Sampling

The Cary 8454 UV dissolution testing system, in combination with the valve-based, multi-apparatus sampling capabilities (up to four apparatus), offers increased productivity when running a large number of samples. The system uses a single spectrophotometer to measure a blank, six vessels and a control in up to four apparatus all within five minutes, and each apparatus can run a different method, if needed. The methods and features are identical with the single-apparatus, valve-based system. In both systems the samples are read sequentially. Each apparatus has a dedicated flow cell.

### Flow Configuration (as shown below)

1. At the appropriate timepoints, the sampling manifolds are lowered and the samples are moved individually to the 8-port valve.
2. One sample from each apparatus is pulled through the valve and placed into the flow cell assigned to that apparatus.  
The pump stops and the measurement is taken.
3. The samples are then pulled through the peristaltic pump.
4. Finally, the sample volume is discarded into waste. Waste volume is accounted for in the UV-ChemStation software.

This cycle is then repeated for the next vessel in each apparatus until all the samples have been measured.  
The sampling manifold is in the lowered position during the sampling process.



Cary 8454 UV Dissolution System: Multi-apparatus Sampling



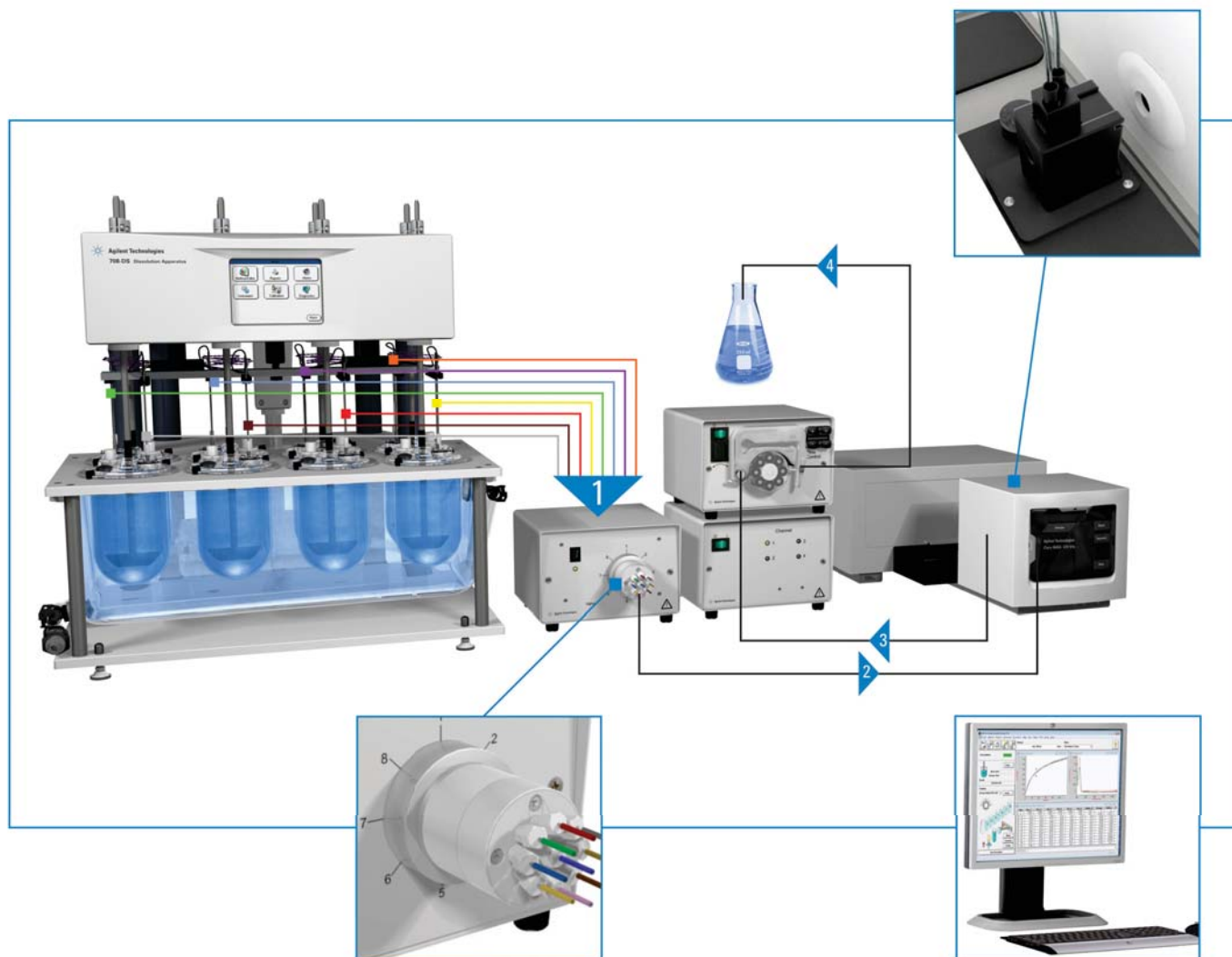
## Cary 8454 UV Dissolution System: Valve-based Sampling

The valve-based system is the most cost-effective UV dissolution solution. The system uses an eight-port valve to switch between blank, control and the six dissolution vessels, with a single channel and flow cell. Because the sampling is sequential, the minimum cycle time is five minutes. ChemStation software performs calculation correction for the approximate 4 mL waste volume during result processing.

### Flow Configuration (as shown below)

1. The sampling manifold is lowered, the pump is activated and samples are pulled sequentially through the 8-port valve.
2. The samples are moved to a single flow cell on the Cary 8454 and individually read.
3. From the flow cell, the sample is pulled through the peristaltic pump.
4. Finally, the sample is discarded into a waste receptacle.

Once all vessel positions have been sampled and analyzed, the manifold is raised until the next timepoint.



Cary 8454 UV Dissolution System: Valve-based Sampling

## Offline UV Dissolution

In the offline approach of UV dissolution testing, the dissolution samples are collected independently of the Cary 8454 UV-visible spectrophotometer. For example, a number of dissolution apparatus can be used in conjunction with an automated sampling system. The samples are then manually transported to the Cary 8454 for analysis. Sample analysis and data evaluation are performed using the spectrophotometer and software, creating a flexible approach to evaluating dissolution results.

The offline analysis approach is scalable and applies to:

- Manual operation using standard UV cuvettes
- Sipper operation using a flow cell

### Cary 8454 UV-Visible Spectrophotometer Dimensions

Height	Width	Depth	Weight
18.5 cm / 7.3 in.	34.4 cm / 13.5 in.	56 cm / 22 in.	16.5 kg / 36.3 lbs.



Sipper operation is easy with built-in measurement buttons

## UV-Vis ChemStation Software

### DID YOU KNOW?

Agilent OpenLAB Software Suite helps streamline data management for pharma regulatory compliance

- Boost productivity by organizing the ever-increasing volume of data in your lab
- Manage your lab's electronic content regardless of source

UV-Visible ChemStation software belongs to the Agilent family of ChemStation software for analytical instruments, and its portfolio of features facilitates a strong learning and usability experience.

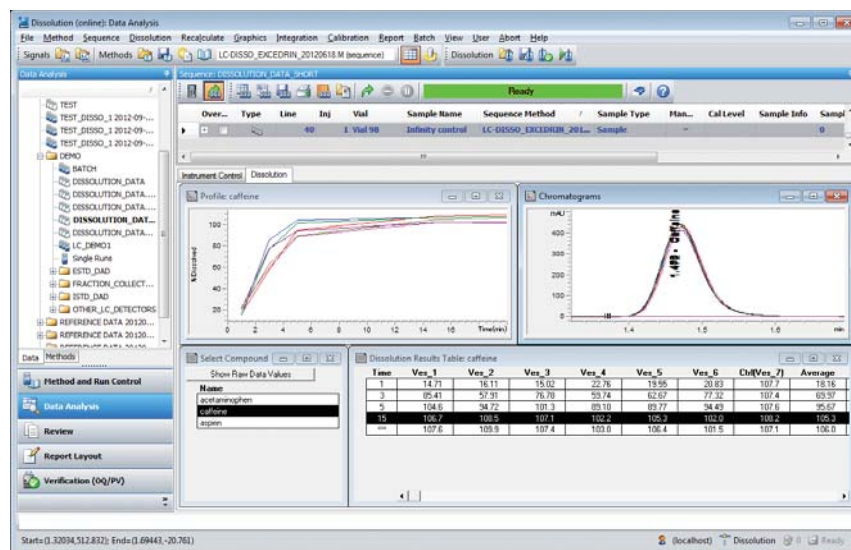
The application module for dissolution testing offers precise and accurate sample analysis combined with online and offline dissolution testing analysis and results evaluation. A ChemStation dissolution testing method is generated independent from the approach of sampling. This offers new opportunities in method transfer even if different approaches in the experimental setup and equipment are applied. A ChemStation dissolution method supports the dissolution workflow from test preparation to the final clean-up and results archival.

In its online configuration, ChemStation dissolution software monitors and checks the apparatus performance during the dissolution test. The results file generated after test completion contains all information to verify, reprocess and document the dissolution experiment. The ChemStation Security Pack provides the necessary 21 CFR Part 11 requirement tools in a localized setup. Electronic signatures can be issued on a results file for various purposes. UV-ChemStation software is OpenLab/ECM compatible.

Apparatus drivers, ChemStation software and the dissolution application module are required for complete control your Agilent, Varian or VanKel dissolution apparatus.

For more information, visit:

**[www.agilent.com/en-us/products/software-informatics/openlabsoftwaresuite](http://www.agilent.com/en-us/products/software-informatics/openlabsoftwaresuite)**.



The run-time display shows profiles, actual values and the last spectra, as well as the status of instrument at a glance.

## Cary 8454 UV Dissolution Systems

For Cary 8454 UV Dissolution systems, each bundle is fully inclusive of the apparatus, spectrophotometer and required accessories. The 708-DS Dissolution Apparatus is included as standard, but may be removed (option #900) and used with an existing dissolution apparatus.

The three bundles, which all offer online analysis provided by the Cary 8454 UV-visible Spectrophotometer, include:

## Cary 8454 UV-Visible Spectrophotometer Bundles

Description	Part No.
<b>Cary 8454 UV Dissolution System</b>	<b>G7920A</b>
<ul style="list-style-type: none"> <li>• 708-DS Dissolution Apparatus</li> <li>• Valve-based sampling system with Cary 8454 UV-visible Spectrophotometer</li> <li>• PC and printer</li> <li>• UV-visible ChemStation plus Security Pack software</li> </ul>	
<b>Multi-apparatus Cary 8454 UV Dissolution System</b>	<b>G7921A</b>
<ul style="list-style-type: none"> <li>• Two 708-DS Dissolution Apparatus</li> <li>• Multi-apparatus sampling system with Cary 8454 UV-visible Spectrophotometer</li> <li>• PC and printer</li> <li>• UV-visible ChemStation plus Security Pack software</li> </ul>	
<b>Cary 8454 UV Dissolution System Options</b>	
<b>708-DS and Cary 8454 Online UV Dissolution System – Multicell</b>	<b>G7922A</b>
<ul style="list-style-type: none"> <li>• 708-DS Dissolution Apparatus</li> <li>• Multicell-based sampling system with Cary 8454 UV-visible Spectrophotometer</li> <li>• PC and printer</li> <li>• UV-visible ChemStation plus Security Pack software</li> </ul>	

(Continued)

## Cary 8454 UV-Visible Spectrophotometer Bundles

Description	Part No.
Replace Peristaltic Pump with 850-DS (G7922A only)	G7922A#205
Cary 8454 UV Dissolution System without PC and printer	G792xA#695
Cary 8454 UV Dissolution System without printer	G792xA#890
Cary 8454 UV Dissolution System without 708-DS Dissolution Apparatus	G792xA#900
Add Installation Service	G792xA#44K
Add Familiarization Service	G792xA#44L

Note: For complete qualification services offering, see page 163.

## UV-visible ChemStation Dissolution Software

Dissolution testing software	G1118AA
Agilent dissolution apparatus driver software	G7900AA
Dissolution testing software upgrade (license)	G1126AA
Automated Sipper System for the Cary 8454/8453	89068D

## Cary 8454 Sampling Systems

Multicell Transport Sampling System	G1127A
Valve Sampling System	G1128A
Multi-apparatus sampling system for two dissolution apparatus	G1129A
Additional sampling system for one dissolution apparatus	G1130A
Flow cell, for use with 8453/8454, 1 mm	5061-3396
Flow cell, for use with 8453/8454, 2 mm	5061-3397
Flow cell, for use with 8453/8454, 5 mm	5065-9918
Flow cell, for use with 8453/8454, 10 mm	5061-3398

The standard 708-DS Dissolution Apparatus includes:

- 8 testing positions
- Sampling manifold with AutoTemp
- 7 1L clear glass vessels and one 200 mL conversion kit

Should you require further customization (example: low actinic (red) vessels, 2L vessels, rotating cylinders, etc.), Agilent can easily custom configure your apparatus. Contact your Agilent representative for details.

## Cary 8454 UV-Visible Spectrophotometer Systems and Accessories

Description	Part No.
Cary 8454 UV-visible system	G1812AA
Security Pack for UV-Visible ChemStation software	G1813AA
Cary 8454 UV-visible system with Security Pack	G1815AA
<b>UV-visible ChemStation Dissolution Software</b>	
Dissolution testing software	G1118AA
Agilent dissolution apparatus driver software	G7900AA
<b>Cary 8454 Sampling Systems</b>	
Multicell Transport Sampling System	G1127A
Valve Sampling System	G1128A
Multi-apparatus sampling system for two dissolution apparatus	G1129A
Additional sampling system for one dissolution apparatus	G1130A
Automated Sipper System for the Cary 8454/8453	89068D
Flow cell, for use with 8453/8454, 1 mm	5061-3396
Flow cell, for use with 8453/8454, 2 mm	5061-3397
Flow cell, for use with 8453/8454, 5 mm	5065-9918
Flow cell, for use with 8453/8454, 10 mm	5061-3398



Cary 8454 Multi-Cell Transport



## Cary 60 UV Dissolution System

### Online UV Dissolution – Multicell

#### DID YOU KNOW?

**Cary 60 integrates easily with single- or dual-apparatus operation for increased throughput and automation**

- Long-lasting, no warm-up time  
Xenon lamp flashes only when taking a measurement
- No degradation of photosensitive active drug components associated with continually burning lamps
- Virtual immunity to room light, reducing noise and allowing for a linear absorbance range up to 3.5 AU
- Configurable with Agilent 850-DS for collecting and archiving samples for LC analysis (multicell only)

Precise and accurate determination of dissolution concentrations is achieved with UV-Vis dissolution methods. These remain among one of the most common analytical techniques for dissolution sample analysis. The Agilent Online UV Dissolution System with the Cary 60 UV-visible Spectrophotometer integrates dissolution testing with online UV analysis to provide a single source, automated performance testing solution.

Available in either single- or dual-apparatus configurations, the system supports individual flow cells for a range of path lengths. The multicell changer accommodates eight flow cells per dissolution apparatus, allowing for a blank, standard and six samples. The system can take both blank and standard readings during each timepoint. Additionally, each vessel position is configured with its own flow cell and tubing, eliminating cross-contamination.



708-DS, 850-DS Dissolution Sampling Station and Cary 60 Multicell UV Dissolution System

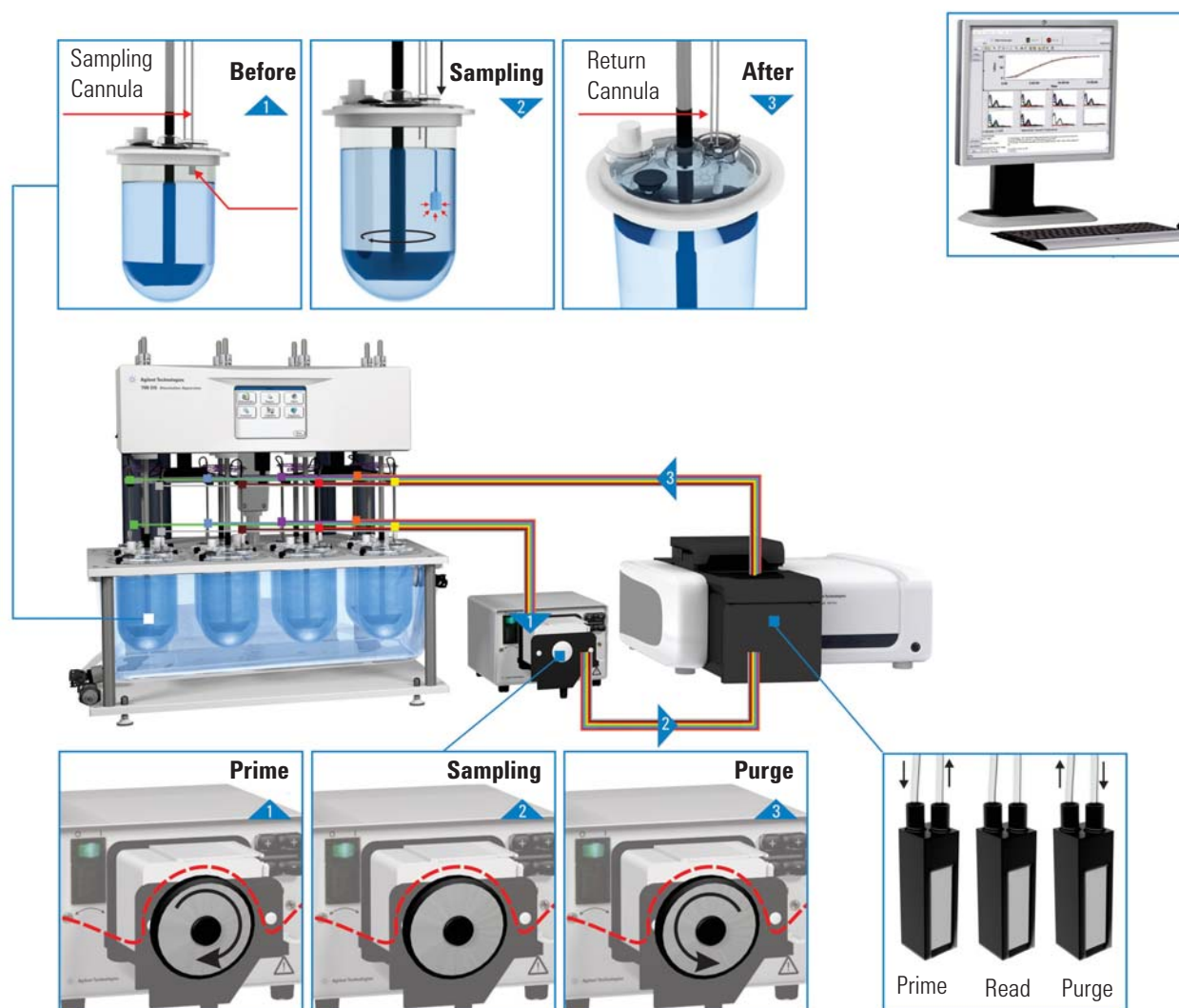


## Cary 60 UV Dissolution System: Single Apparatus with Peristaltic Pump

The Cary 60 can be configured with a peristaltic pump to transfer the sample to the flow cell. Cells are analyzed and the sample is returned to the vessel maintaining vessel volume and eliminating the need for media replacement.

### Flow Configuration (as shown below)

1. At each timepoint, the sampling manifold lowers and the blank, standard and samples are transferred to the peristaltic pump simultaneously.
2. The pump then moves the sample into individual flow cells contained in the cell changer of the Cary 60. The manifold rises.
3. After the samples are measured, the pump reverses flow and returns all sample volume to the dissolution vessels. No volume is lost in this closed-loop system. The sample lines are then purged and remain empty until the next timepoint.



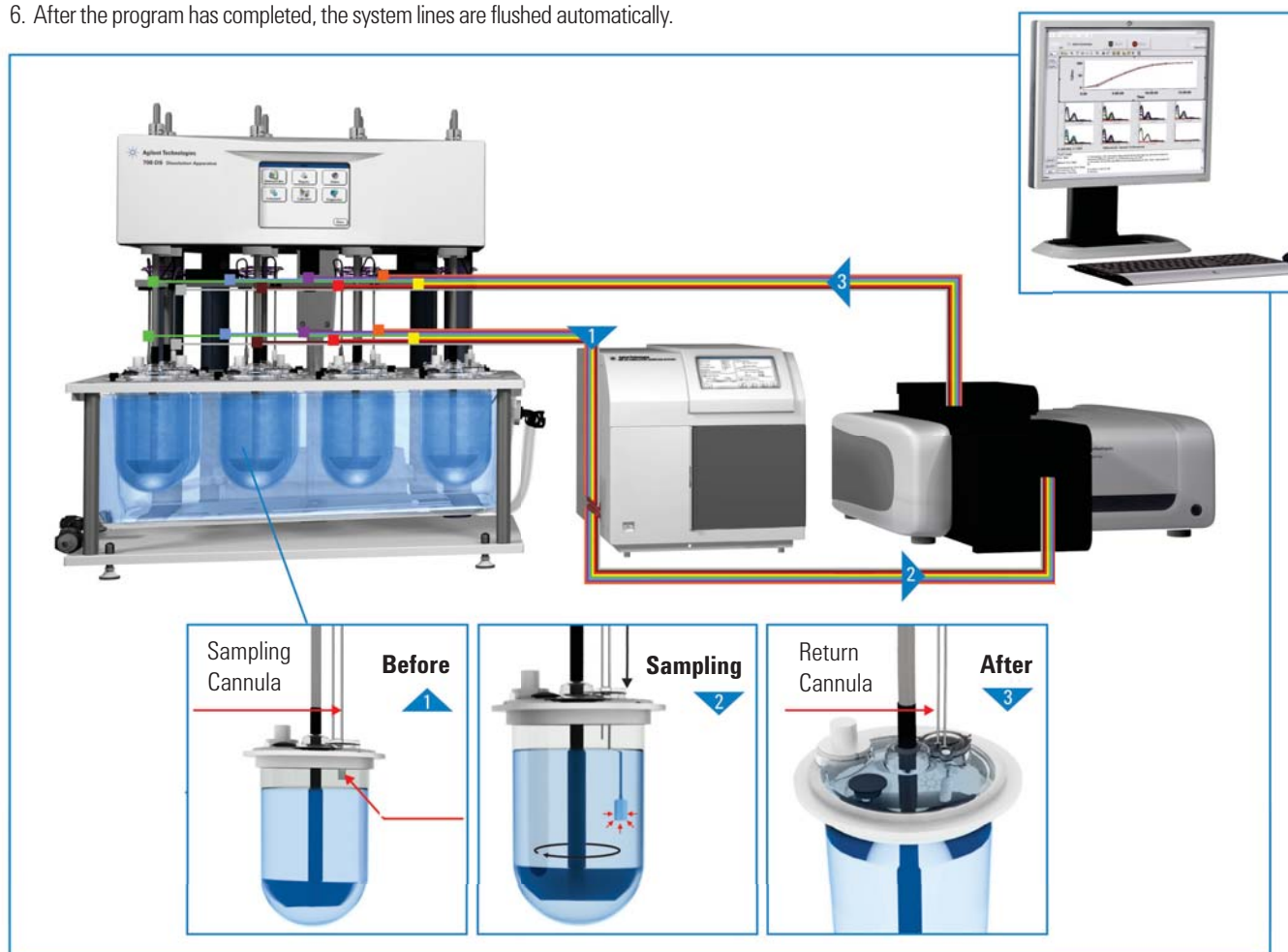
Cary 60 UV Dissolution System – Single Apparatus Setup with peristaltic pump

## Cary 60 UV Dissolution System: Single Apparatus with 850-DS Sampling Station

The multicell system is ideal for providing repeatable results, especially when additional filtration or sample archival is required, via the 850-DS Dissolution Sampling Station with filter module. Integrating the 850-DS Dissolution Sampling Station with the Cary 60 allows you the flexibility of online UV analysis and offline collection for methods requiring an LC finish.

### Flow Configuration (as shown below)

1. At each timepoint, the sampling manifold lowers and the blank, standard and samples are transferred to the built-in 850-DS syringe pump simultaneously.
2. The 850-DS pumps and moves the samples through the filters on the integrated filter module (if the method calls for additional filtration, otherwise this step can be bypassed)
3. Samples are then collected for archival in the 850-DS sample trays. If there is no need for archival, this step is bypassed.
4. The volume continues on into individual flow cells contained in the cell changer of the Cary 60. The manifold rises.
5. After the samples are measured, the sample lines are purged with air and all volume is returned to the dissolution vessels. No volume is lost in this closed-loop system and the sample lines remain empty until the next timepoint.
6. After the program has completed, the system lines are flushed automatically.



Cary 60 UV Dissolution System – Single Apparatus Setup with 850-DS Dissolution Sampling Station

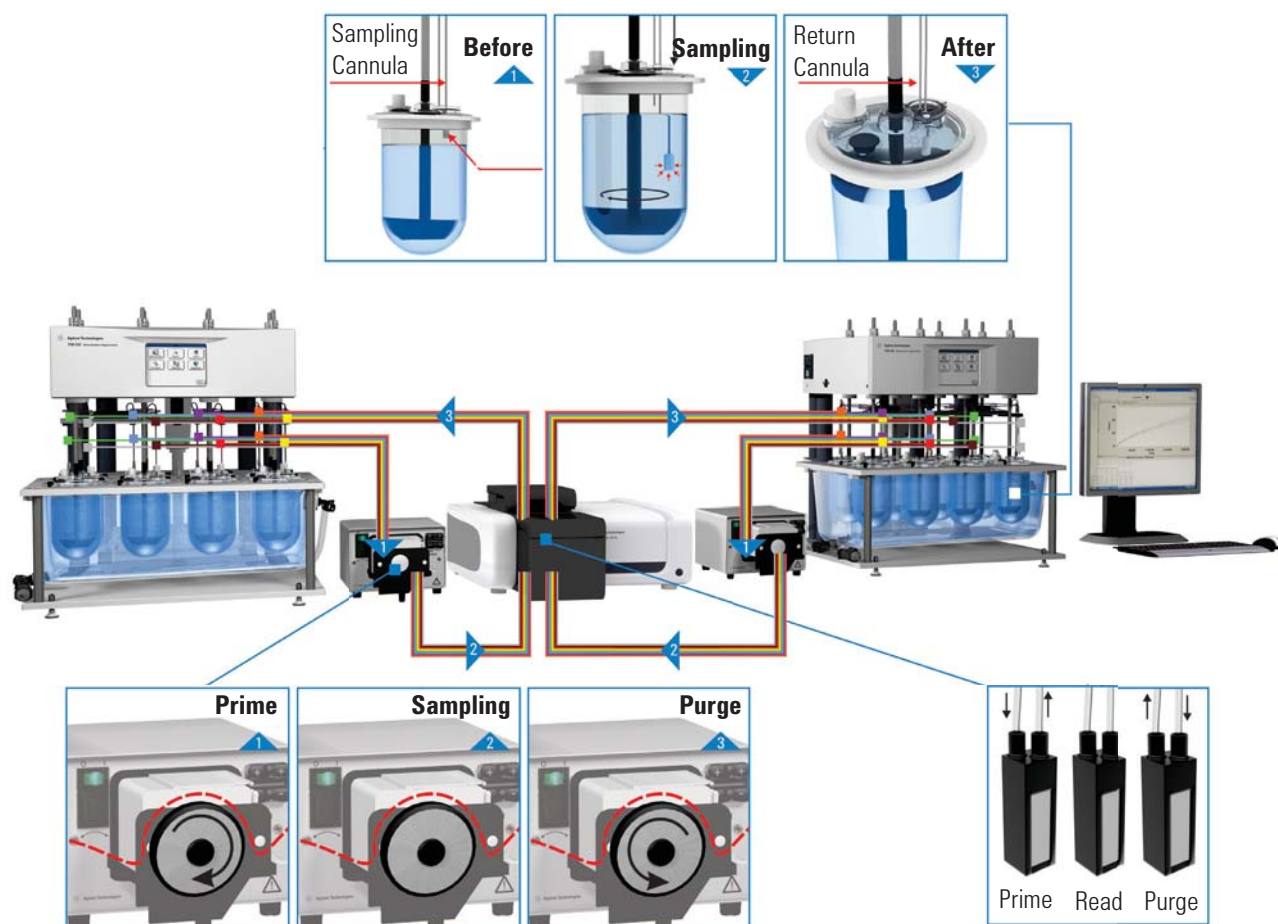
## Cary 60 UV Dissolution System: Dual-Apparatus with Peristaltic Pumps

For maximum efficiency, up to two dissolution apparatus can be used with a single Cary 60. A dual-apparatus system will incorporate two peristaltic pumps or 850-DS Dissolution Sampling Stations to allow independent methods to be run on the two systems.

### Flow Configuration (as shown below)

1. At each timepoint, the sampling manifold lowers and the blank, standard and samples are transferred to the respective peristaltic pumps simultaneously.
2. The pump then moves the sample into individual flow cells contained in the cell changer of the Cary 60. The manifold rises.
3. After the samples are measured, the pump reverses flow and returns all sample volume to the dissolution vessels. No volume is lost in this closed-loop system. The sample lines are then purged and remain empty until the next timepoint.
4. After the programs have completed, the system lines are flushed automatically

The flow configuration is identical for each apparatus in a dual-system setup. Independent methods can be executed concurrently. The cell changer of the Cary 60 supports two sets of dedicated flow cells, eliminating the chance of cross-contamination or carryover.



Cary 60 UV Dissolution System - Dual-Apparatus Setup with peristaltic pumps

## Cary 60 UV-Vis Spectrophotometer

### Online UV Dissolution – Fiber Optic

#### DID YOU KNOW?

##### Why Choose Fiber Optic UV Dissolution?

Save time with real-time sample analysis and reporting of dissolution data using in situ fiber optic probes. Also, no pumps or moving media/samples means no system flush is required. This greatly improves turnaround time and maximizes efficiency – simply rinse some key accessories and you're ready to begin the next test.

The Fiber Optic Online UV Dissolution System offers versatility and flexibility while delivering the highest level of automation and data integration for your UV dissolution needs. The Cary 60 UV-visible spectrophotometer offers excellent optical transmission and reproducibility capabilities, and the extended linear photometric range is ideally suited for superior fiber optic analysis.

The fiber optic multiplexer ensures precise and rapid position-to-position movement to decrease time needed between sample timepoints. The system's probes use silica fibers for optimal performance, and interchangeable tips make cleaning and replacement cost-efficient and easy. Tip pathlengths from 1 to 20 mm are available to accommodate a wide variety of sample concentrations.

#### Advantages of Fiber Optic UV Dissolution

- Ideal for rapid timepoint requirements with the ability to take readings as often as every 45 seconds
- Samples are read directly in the dissolution vessel, which eliminates contamination, carryover and dilution of samples
- Compensates for samples with excipient and background interferences
- Cleaning is simple, requiring only rinsing and wiping of the fiber optic probes and tips
- Fewer moving parts and consumables (e.g., filters, sample tubing) reduce cost of ownership



Cary 60 UV-visible Spectrophotometer with multiplexer for fiber optic UV dissolution



The system is based on the Cary 60 UV-visible Spectrophotometer, with Xenon flash lamp technology for fiber optic utilization. Because the system is based on a standard spectrophotometer, parts and service are readily available worldwide.

The fiber optic system utilizes a 12-position multiplexer, to read samples sequentially. A single spectrophotometer can be used with two dissolution apparatus.

The fiber optic probes can be mounted on a movable manifold that lowers the probe to the correct sampling height in the vessel. The sample is read and the probe is raised either entirely out of the media or held in the upper level of the media to minimize bubble formation and prevent drying on the tip surface.

## Cary 60 UV-Vis Spectrophotometer Dimensions

Height	Width	Depth	Weight
19.6 cm / 8 in.	47.7 cm / 19 in.	56.7 cm / 23 in.	18 kg / 40 lbs

## Cary 60 UV-Vis Spectrophotometer Specifications

Wavelength Range	Wavelength Accuracy	Wavelength Reproducibility	Photometric Range	UV-Vis Limiting Resolution
190 - 1100 nm	+/- 0.5 at 541.94 nm	+/- 0.1 nm	+/- 3.5 Abs	</- 1.5 nm



708-DS Dissolution Apparatus and Cary 60 Fiber Optic UV Dissolution System

## Cary WinUV Dissolution Software

### DID YOU KNOW?

#### Testing in a Regulated Environment?

Cary WinUV Dissolution Software includes an optional Compliance Manager package that allows your laboratory to install and configure proper 21 CFR Part 11 controls.

#### Maximize Cary WinUV Software

When the Cary 60 is not being used for an online Dissolution test, there is an entire suite of applications available in Cary WinUV software to maximize its value as a standalone spectrophotometer. These include Advanced Reads, Scan, Concentration, Kinetics, and more.

Cary WinUV Dissolution Software supports both the Agilent Multicell and Fiber Optic Online UV Dissolution Systems. The software generates accurate and robust data and accommodates a wide variety of dissolution samples and methods. Analysts can easily customize final reports with a complete summary of the data acquisition using comparison and statistical evaluation tools, data tables and dissolution profiles.

#### Agilent Cary 60 UV-Vis Spectrophotometer

The Cary 60 utilizes a Xenon flash lamp that only turns on when acquiring a data point, minimizing photo-bleaching of samples. The Cary 60 acquires data at a rate of 80 Hz with a maximum scan rate of 24,000 nm/min applying a dual-detector approach to measure sample and source simultaneously.

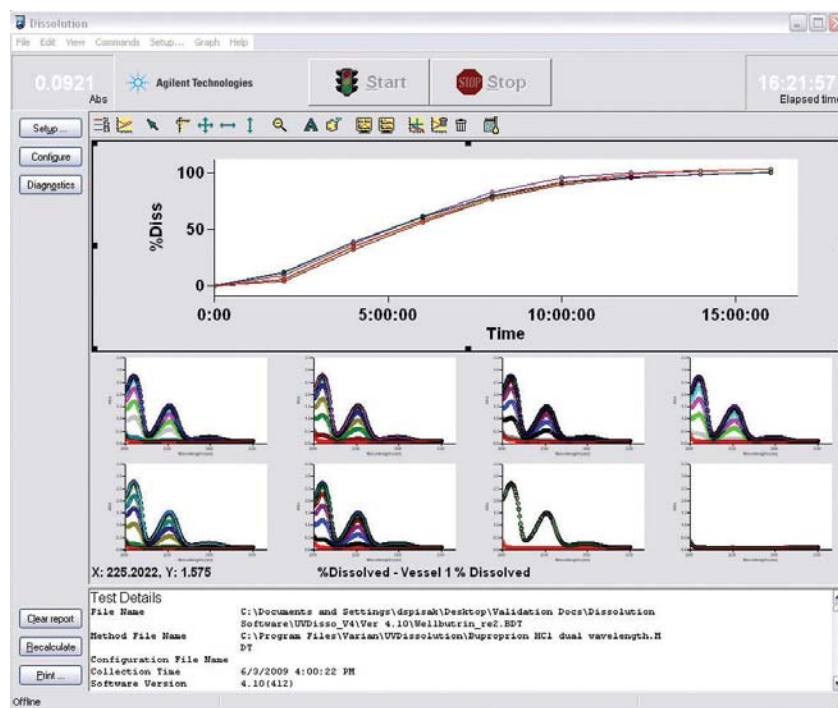
This rugged instrument is easy to operate and economical to own. Because the lamp only illuminates when taking a reading, not only do you save energy, but there are significant lamp savings versus conventional deuterium-lamp systems.



Cary 60 UV Spectrophotometer with 18-cell changer

## Cary WinUV Dissolution Software

- Can integrate a peristaltic pump or 850-DS Dissolution Sampling Station with optional filter module for accurate preparation of samples and archival
- Controls apparatus features such as dosage delivery, automated sampling and vessel temperature monitoring
- Creates data processing and reports for samples taken offline using the UV dissolution manual application
- Accommodates media change methods, capsule shell corrections and infinity spins required for various methods
- Includes advanced UV capabilities, such as second derivative analysis, baseline correction and more, to work with challenging spectra
- Easily integrated into a 21 CFR Part 11 compliant environment



Progression of a UV Dissolution profile as data is acquired



**DID YOU KNOW?****Flexible Standard Measurement and Calculation Options**

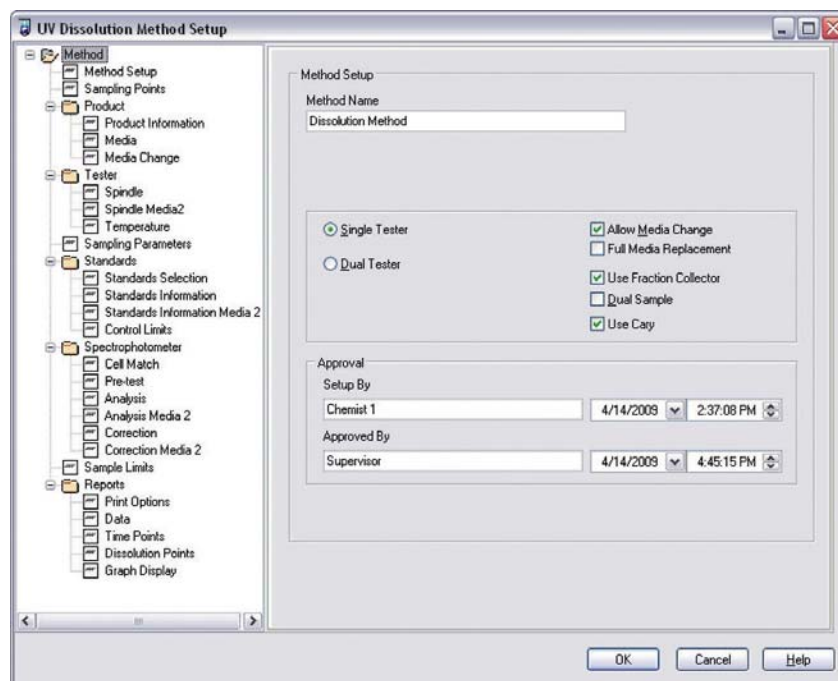
The UV Dissolution application incorporates several online standard options including Post Cycle Standard (for bracketed analysis), Bridged Mean, and Running Mean. Each method stores how results are calculated depending on your specific preferences.

**Superior Linear Range (> 3 Abs) of the Agilent Cary 60 UV-visible Spectrophotometer**

The linear range of a spectrophotometer defines the absorbance range in which measurements are accurate. The linear range of the Cary 60 permits the analysis of a wide range of sample concentrations, reduces the need for dilution or smaller path length cells, and measures highly turbid solutions (for fiber optics).

**Key Software Functionalities**

- Advanced UV-Vis analysis options include single wavelength, scan, and single and scan options
- Allows two independent methods to be run simultaneously when using a dual-apparatus configuration
- Online or offline testing of standards for percentage (%) and milligrams (mg) dissolved calculations
- Built-in PreTest Scan feature to confirm analysis wavelength prior to dosage introduction
- Immediate notification of out-of-specification results
- Supports media change or media addition methods
- Hardware configuration files and method files stored separately for quick retrieval and reduced turnaround times
- Dissolution profiles and customizable reports are visible in real time
- Manual data entry and recalculation provides flexibility by allowing you to obtain validated calculations and reports for samples taken on other offline systems
- Diagnostics module allows for easy troubleshooting and cleaning



A comprehensive Method Setup utility is at the core of Cary WinUV Dissolution Software

## DID YOU KNOW?

### Dual-cell Tubing Kit

The Cary 60 makes it easy to interconnect two different cells within the multicell transport. This allows you to switch between two sets of cells, typically with different path lengths, with no disassembling or reassembling of the tubing lines. Switching between methods requiring cells of different path lengths is as easy as selecting the cells to be read using Cary WinUV Dissolution Software. Only one dissolution apparatus can be used when the dual cell tubing is in place (p/n 11-1320).

The Agilent UV dissolution systems are scalable to your needs. In the ordering tables, you will find all components forming a complete dissolution testing system with UV-Visible analysis.

## Automated UV Systems - Cary 60 Dissolution Software and Accessories

Description	Part No.
<b>Cary 60 Software - UV Dissolution Multicell Packages</b>	
708-DS and Cary 60 Online UV Dissolution System – Multicell	G7926A
Note: Software and PC ordered separately (G4971AA or G9261AA).	
<b>Options for G7926A</b>	
Add AutoTemp, for 708-DS	G7926A #105
Add low actinic - red accessories	G7926A #110
Delete basket shafts and baskets	G7926A #120
Delete paddles	G7926A #125
PTFE-coated paddles	G7926A #126
PEEK paddles	G7926A #127
Note: Only one selection may be chosen from options 125-127 for G7926A (not required).	
2L 708-DS Dissolution Apparatus	G7926A #140
Verified accessories	G7926A #145
Peristaltic pump	G7926A #200
Add 850-DS Dissolution Sampling Station, with built-in syringe pump	G7926A #205
Note: One selection is required from pump options #200 or #205 for G7926A.	
Sample tray, 96-position, 2 mL, for HPLC vials (no conversion required)	G7926A #210
Sample kit, 108-position, 2 mL, includes tray and needle block assembly	G7926A #211
Sample kit, 100-position, 2 mL, includes tray and needle block assembly	G7926A #212
Sample kit, 96-well plate, includes tray and needle block assembly	G7926A #213
Cary 50/60 flow cell, 0.2 mm, 8/pk	G7926A #300
Cary 50/60 flow cell, 0.5 mm, 8/pk	G7926A #301
Cary 50/60 flow cell, 1 mm, 8/pk	G7926A #302
Cary 50/60 flow cell, 2 mm, 8/pk	G7926A #303
Cary 50/60 flow cell, 5 mm, 8/pk	G7926A #304
Cary 50/60 flow cell, 10 mm, 8/pk	G7926A #305

Note: One selection is required from options 300 - 305 for G7926A.

(Continued)

## Automated UV Systems - Cary 60 Dissolution Software and Accessories

Description	Part No.
Add printer, for 708-DS	G7926A #880
Add printer to 850-DS	G7926A #881
Delete 708-DS Dissolution Apparatus	G7926A #900
Dual system 708-DS	G7926A #920
Add Installation Service	G7926A #44K
Add Familiarization Service	G7926A #44L
Note: For complete qualification services offering, see page 163.	
UV Dissolution Software, multicell (PC not included)	G4971AA
UV Dissolution Software bundle, multicell, with PC, printer, monitor	G9261AA
Flow cell for use with Cary 50/60, 10 mm	11-1300
Flow cell for use with Cary 50/60, 0.2 mm	11-1301
Flow cell for use with Cary 50/60, 0.5 mm	11-1302
Flow cell for use with Cary 50/60, 5 mm	11-1305
Flow cell for use with Cary 50/60, 2 mm	11-1310
Flow cell for use with Cary 50/60, 1 mm	11-1315
Cary 50/60 18-cell holder	G6867A
Tubing kit, dual path length, for Cary UV Dissolution System	11-1320
Flow cell tubing replacement kit, for Cary UV Dissolution System	11-1226

## DID YOU KNOW?

### Upgrade Your Cary 50/60

Increase productivity as laboratory needs change by using your dissolution apparatus and spectrophotometer with an online UV dissolution system. Add the necessary software, cell changer or multiplexer, and other accessories to maximize the efficiency of your instrumentation and streamline analysis. Fiber optic probes/tips and flow cells must be ordered separately depending on the desired pathlength.

## Cary WinUV Software - UV Dissolution Fiber Optic Packages and Software

Description	Part No.
<b>Options for G7927A</b>	
708-DS and Cary 60 Fiber Optic Online UV Dissolution System	G7927A
Note: Software and PC ordered separately (G4972AA or G9262AA)	
Add AutoTemp, for 708-DS	G7927A #105
Add low actinic - red, accessories	G7927A #110
Delete basket shafts and baskets	G7927A #120
Delete paddles	G7927A #125
PTFE-coated paddles	G7927A #126
PEEK paddles	G7927A #127
708-DS Dissolution Apparatus, 2L	G7927A #140
Verified accessories	G7927A #145
Fiber optic removable tip, 1 mm, 6/pk	G7927A #300
Fiber optic removable tip, 2 mm, 6/pk	G7927A #301
Fiber optic removable tip, 5 mm, 6/pk	G7927A #302
Fiber optic removable tip, 10 mm, 6/pk	G7927A #303
Fiber optic removable tip, 20 mm, 6/pk	G7927A #304
Note: One (1) selection is required from options 300-304 for G7927A.	
Add printer, for 708	G7927A #880
Delete 708-DS Dissolution Apparatus	G7927A #900
Dual system 708-DS	G7927A #920
UV Dissolution Software, fiber optic, without PC	G4972AA
UV Dissolution Software Bundle, fiber optic, with PC, printer, monitor	G9262AA
Add Installation Service	G7927A #44K
Add Familiarization Service	G7927A #44L

Note: For complete qualification services offering, see pages 163.

## Cary WinUV Software - UV Dissolution Fiber Optic Accessories

Description	Part No.
Benchtop table for UV dissolution system, with keyboard tray	11-1125
4-port USB-to-serial converter	11-1011
External cuvette holder, 1 cm, for FO	11-1012
External cuvette holder cover, 1 cm	11-1014
Fiber optic patchcord, 20 in.	11-1424
Fiber optic probe, 2 m, no tip, for 7000, 7010, 708-DS, 709-DS	11-1425
Fiber optic probe, 2 m, no tip, for 7025/7030	11-1426
Fiber optic removable tip, 1 mm	11-1429
Fiber optic removable tip, 2 mm	11-1430
Fiber optic removable tip, 5 mm	11-1435
Fiber optic removable tip, 10 mm	11-1440
Fiber optic removable tip, 20 mm	11-1445
Fiber optic probe holder, for Distek evaporation cover	12-0592
<b>Cary 60 Upgrade Options</b>	
Cary 60 fiber optic upgrade, includes Cary WinUV software for fiber optic UV dissolution and multiplexer, for 708-DS (probes/tips ordered separately)	11-1141



Fiber optic probe with tips





Content Uniformity



## Content Uniformity

Dose uniformity testing is performed on each batch of dosage forms to verify that the amount of API contained within the dosage forms is consistent throughout the batch. Tablets, capsules and other solid dosage forms are sampled from across the batch and are randomly selected for testing by either the content uniformity method or the weight variation method. These procedures are harmonized between the USP, EP and JP and the method of uniformity testing is based on the amount or ratio of API to the weight of each dose.

For CU determinations, ten dosage units are individually prepared in volumetric solutions designed to completely extract and dissolve the API usually assisted with hydro-organic solvents and aggressive mixing. Test results should indicate that all ten units are less than or equal to the Level 1 % (L1%) limit, typically 15% unless otherwise specified. If not, twenty additional tablets are tested and the thirty total results must be less than the L1 % limit to conform.

Samples are generally analyzed by HPLC or UV depending on the number of active components or other components of the dosage form. The testing is usually conducted using a large amount of laboratory space due to the amount of volumetric glassware required, as well as shaking and ultrasonication equipment used to dissolve the samples. Group testing is often employed where several batches of ten tablets are prepared and run consecutively in HPLC systems.

To achieve a reliable and accurate process for CU testing, it is essential to remove variables from the preparation and analysis technique being used. An automated solution introduces a high level of repeatability, removes analysts variability and can be consistently applied across different departments and facilities. With a robust and repeatable approach to CU testing, variation in CU data can be attributed to the solid dosage form and not put into question the actual process of preparing the samples ready for analysis.



CambTEK Rapid Extraction System (RES)

### Rapid Extraction System

The CambTEK Rapid Extraction System (RES), in association with Agilent, provides an ideal platform for laboratories to automate and standardize their solid dosage form sample preparation for content uniformity testing. It was designed to improve laboratory productivity and to provide reliable, consistent results from minimal user touch-time, within development, quality assurance, and manufacturing environments.

### Flexibility and Ease of Use

The unique design of the RES allows for sample preparation of a vast range of solid dosage forms, including standard and extended release tablets, capsules, powders, gels, pastes, swabs, stents, beads, intermediate granulation, pellets, solid and semi-solid matrices, and suppositories.

Using an intuitive barcode driven workflow, the RES allows users to automate sample preparation in six steps. The sample is first placed into the consumable flow cell and the barcode is scanned. Information about the sample is then entered, which becomes associated with that set of consumables, providing a chain of custody for the sample. The operator then simply places the sample onto the RES and presses the play button.

With solvent working volumes between 50 and 500 mL, the sample is quickly eroded and dissolved, using turbulent fluidic flow with optional ultrasonic energy. Multiple solvents and extraction events can be created in the method, giving complete flexibility of the extraction step. Pump speed is adjustable from 70 mL to 1L/min to give full control over the extraction process.

These features allow the RES to perform a wide range of functions, including:

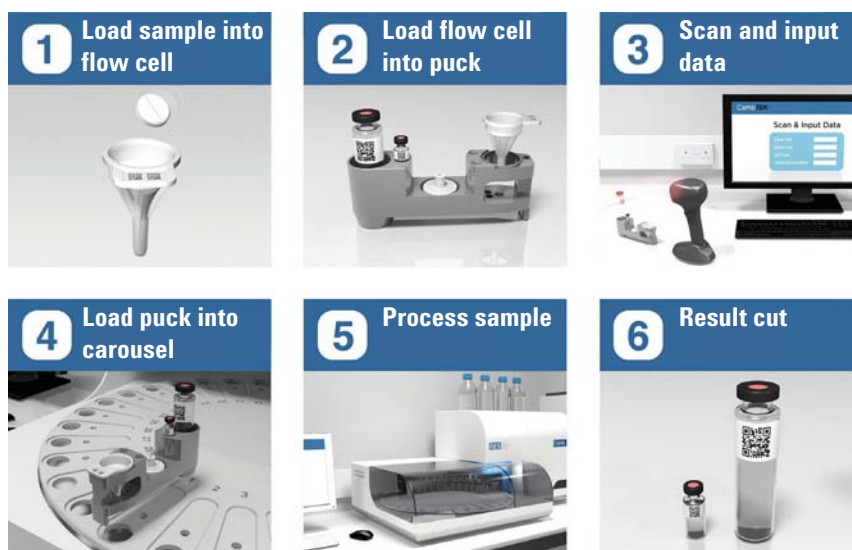
- Content uniformity testing
- Impurity testing
- Composite and bulk assay testing
- ICH stability assay testing
- Blend and granulation uniformity testing

After extraction, the solution is filtered and delivered to a 20 mL, septa-sealed vial, ready for accurate dilution (Class A equivalence) and/or dispensing to an HPLC vial for analysis. All dispense and dilution steps are checked gravimetrically to ensure high accuracy and repeatability, and all metadata is captured for quality assurance and complete audit trail.

The sanitary system design allows for thorough cleaning with <0.05% carryover easily obtainable and drying between samples, which facilitates the processing of non-consecutive samples on the 30-sample carousel, as well as quick batch processing.

Other features include:

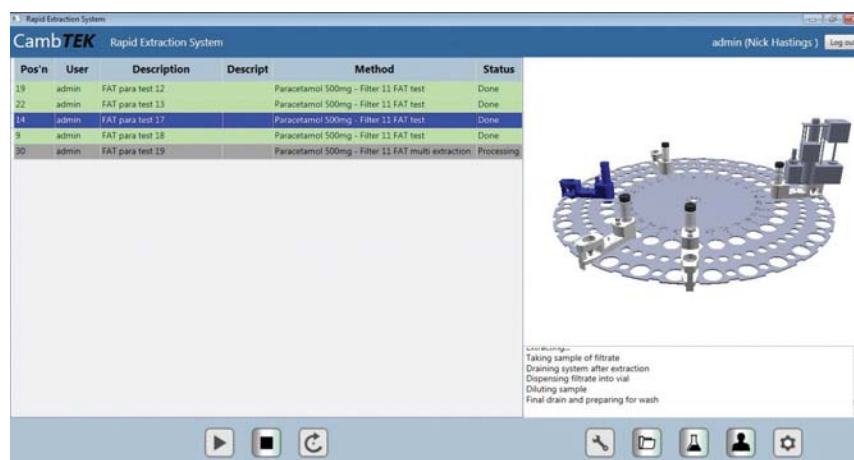
- 5-channel solvent selection allows for complex extraction profiles
- Off-line and adaptable on-line with HPLC or UV/MS analysis
- Powerful extraction of compounds with or without ultrasonics.
- Robustness testing/design space of analytical test methods to investigate sensitivity of extraction and dilution process.
- Highly variable working sequence giving random access workflow, or batch processing.
- Powerful and ease of use RES Command software gives full control over extraction parameters.
- Fast setup and operation keeps instrument touch time to a minimum, allowing for high productivity.



RES workflow

### Quality of Data

- Designed to highest standards to ensure regulatory and quality compliance of data integrity, validity and repeatability.
- Sanitary design of fluidic path minimizes cross contamination and carryover studies with difficult to clean compounds show <0.1% carryover is achievable with minimal wash steps.
- Developed to exceed Class A volumetric requirements with sophisticated gravimetric feedback for closed loop confirmation of dispensing processes.
- Eliminates potential variability due to analyst technique or human error.
- Sample barcode tracking provides chain of custody and improved GMP compliance.
- User control and implementable solutions for 21 CFR Part 11 compliance.
- Metadata for in-process checking and conformity, answering queries of who, when, and what.
- Comprehensive post-extraction report allows for detailed data collection of sample preparations performed and facilitates Out Of Specification (OOS) investigations.
- Optional on-line video monitoring assists method development and atypical OOS investigations.
- Capped and septa sealed vials maintain sample integrity.
- Enclosed system for additional safety and sample integrity.



RES data collection

## Standardization and Compliance

The RES is a platform technology for site- and user-independent standardization of results, from R&D through to manufacturing.

- Supports R&D laboratories performing DoE, and new product developments, supporting Quality by Design (ICH Q8)
- Robust design and simplistic operation, the RES is ideal for screening and QA within in manufacturing facilities.
- Pressure monitoring allows end-point confirmation utilizing PAT concepts, thereby increasing test process understanding
- Fluidics and sonication provide good equivalency to manual methods, minimizing revalidation from manual processes to automation
- Comprehensive encrypted and secure documentation and user login protocols comply with 21 CFR Part 11
- User access rights control method approval and status

For more information on the Rapid Extraction System, including technical specifications, ordering and consumables, visit **[www.cambtek.com](http://www.cambtek.com)**.



RES sample carousel



## HPLC Solutions and Software

## Agilent InfinityLab LC Series

Efficient LC solutions for any application and budget

From routine analysis to cutting-edge research, the Agilent InfinityLab LC Series offers the broadest portfolio of liquid chromatography solutions, helping you to achieve highest operational efficiency while keeping within your budget.



### Agilent 1290 Infinity II LC System

#### **The benchmark in efficiency**

The Agilent 1290 Infinity II LC embodies the next generation of LC, giving you the ultra-high performance to achieve maximum efficiency.

- Unmatched separation and detection performance deliver analysis data of the highest quality – for ultimate confidence in your results.
- Highest sample capacity and fastest injection cycles combine with new levels of usability – for highest throughput for any application.
- Seamless integration in current infrastructure and smooth method transfer from legacy equipment – for non-disruptive transition to highest productivity.

1290 Infinity II LC System





1260 Infinity II LC System

## Agilent 1260 Infinity II LC System

### Everyday efficiency in every way

The Agilent 1260 Infinity II LC is the trusted platform with the broadest instrument choice, taking you to the next level of efficiency.

- A broad range of reliable instrumentation matches with the latest column technologies to guarantee robust separation and detection performance – for highest confidence in your results.
- Easy column handling and superior sample logistics from sample submission to data analysis – for highest instrument utilization and fast turnaround.
- Designed for method transferability and stepwise upgrade capability now and in the future – for risk and care-free integration in current infrastructure matching your budget.



1220 Infinity II LC System

## Agilent 1220 Infinity II LC System

### Affordable efficiency

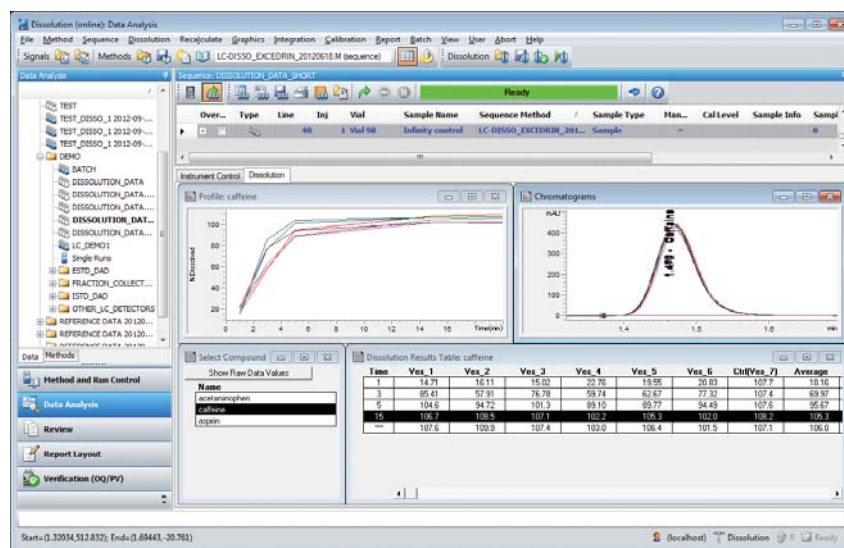
The Agilent 1220 Infinity II LC is an affordable, high-quality integrated LC system, putting you on the fast track to efficiency.

- A factory-configured and tested system that allows you to start analyzing your samples right after arrival – for daily productivity.
- Robust and highly reliable LC quality compatible with all InfinityLab LC Series detectors – for easy-upgrade to meet future demands.

## Integrating Dissolution and HPLC

Having one source of dissolution equipment, analytical instrumentation and software ensures you receive the best service and support. We also realize that there are many other brands of equipment, so Agilent offers solutions to give you the choice of which tools work best for you.

Agilent dissolution equipment has many features not found on other dissolution equipment. The 850-DS Automated Sampling Station allows you to sample and filter your LC samples prior to storage in an HPLC vial. Once your dissolution run is complete, the entire tray can be easily transferred to the 1260 Infinity II Multisampler for analysis. No chance of juxtaposing the sample vials between vessel locations or timepoints.



The Agilent integrated software solution simplifies dissolution data capture and analysis.



Disintegration Apparatus

## 100 Automated Disintegration Apparatus

Integrated disintegration testing that conforms to harmonized regulatory requirements

### DID YOU KNOW?

#### Instant Status Reporting

By outfitting the 100 Automated Disintegration Apparatus with the optional printer, you have the ability to record instrument status at a predefined interval as well as at any time during the test by pressing Print on the instrument panel.

An integral prerequisite for dissolution, dosage forms must be tested for disintegration to ensure maximum active pharmaceutical ingredient (API) contact with media and subsequent bioavailability. The disintegration test is an important quality control process that helps ensure the proper manufacturing controls are in place. The fully programmable Agilent 100 Automated Disintegration Apparatus provides a reliable, compliant approach to disintegration testing. The reciprocating drive system, water bath, and heater/circulator are incorporated into a single instrument offering a compact design to save valuable bench space. The three-basket apparatus comes complete with accessories required to perform the standard USP disintegration test.

The easy-to-use numeric keypad includes program, temperature, and printer control options. Simply enter the time duration of the test and the baskets will be lifted from the beaker at the end of the run. The basket is held above the media until you return to inspect the results. Individual digital time displays for each basket, and tests can be run simultaneously or sequentially, maximizing laboratory efficiency. The optional printer can be added to document critical test information.

The standard 100 Automated Disintegration Apparatus comes with:

- Three (3) 6-tube basket(s), 10-mesh / 1905 m (USP)
- Fluted disks – USP
- Three (3) disintegration beakers – USP
- Disintegration spacer gauge – 25 mm



Agilent 100 Automated Disintegration Apparatus

## DID YOU KNOW?

### Verified Disintegration Accessories

Many standard disintegration accessories, such as basket rack assemblies, can be ordered with individual certificates that verify conformance of critical dimensions. The certificates include the measurements, measuring device information, and its traceability. Any part number that ends in V indicates a Verified component.

## Disintegration Testing

Description	Part No.
100 Automated Disintegration Apparatus, 3-basket	G7962A
6-tube, 10-mesh, 1905 m, USP, verified	G7962A #110
6-tube, 20-mesh, 864 m	G7962A #111
6-tube, 10-mesh, 1905 m, nylon, with stainless screen	G7962A #112
3-tube, 10-mesh, 1905 m, 38 mm, outer diameter	G7962A #113
3-tube, 10-mesh, 1905 m, 38 mm, outer diameter, verified	G7962A #114
1-tube, 10-mesh, 1905 m, 44 mm, outer diameter	G7962A #115
6-tube, 40-mesh, 381 m, with screened cover	G7962A #116
Note: 110-116 Disintegration basket types - multiple selections possible, not required.	
Add printer	G7962A #880

## 100 Automated Disintegration Apparatus Baskets

Description	Part No.
Basket, 6-tube, 10-mesh, 1905 m (USP)	37-3001
Basket, 6-tube, 10-mesh, 1905 m (USP), verified with certificate	37-3001V
Basket, 6-tube, 20-mesh, 864 m	37-3010
Basket, 6-tube, 10-mesh, 1905 m, nylon, stainless steel screen	37-3020
Basket, 3-tube, 10-mesh, 1905 m, 38 mm outer dia.	37-3030
Basket, 3-tube, 10-mesh, 1905 m, 38 mm outer dia., verified with certificate	37-3030V
Basket, 1-tube, 10-mesh, 1905 m, 44 mm outer dia.	37-3040
Basket, 6-tube, 40-mesh, 381 m, with screened cover	37-3050



Agilent 100 accessories: (top row, left to right) 6-tube standard, 10-mesh basket; 3-tube, 10-mesh basket; 1-tube, 10-mesh basket; and 6-tube, 40-mesh basket; (bottom row, left to right) standard screen with fluted disks; 3-basket screen with screws; plunger; and 6-tube screen



1L disintegration beaker

## 100 Automated Disintegration Apparatus Accessories

Description	Part No.
Suspension rod dia. for holding 1-basket rack	37-1040
Cover, for 6-tube, 10-mesh, 1905 m basket	37-2100
Cover, for 3-tube, 10-mesh, 1905 m basket	37-2105
Cover, for 6-tube, 40-mesh, 381 m basket	37-2110
Screen, 10-mesh, 1905 m, stainless steel, for 6-tube basket, set of 6	37-2200
Screen, 20-mesh, 864 m, stainless steel, for 6-tube basket, set of 6	37-2205
Screen, 40-mesh, 381 m, stainless steel, for 6-tube basket, set of 6	37-2210
6 USP fluted disks, for Agilent 100 and Standard Disintegration Apparatus	37-4000
6 USP fluted disks, for Agilent 100 and Standard Disintegration Apparatus, verified with certificate	37-4000V
3 Plastic disks, for Agilent 100 Disintegration Apparatus	37-4010
1 Plastic disk, for Agilent 100 Disintegration Apparatus	37-4020
6-tube plunger assembly	37-4100
3-tube plunger assembly	37-4110
6-tube plunger assembly, for use in Canada	37-4120
Replacement tubes, 6-tube basket, 25 mm, set of 6	37-5000
Replacement tubes, 6-tube basket, 25 mm, set of 6, verified with certificate	37-5000V
Replacement tubes, 3-tube basket, 38 mm, set of 3	37-5005
Replacement tube, 1-tube basket, 44 mm	37-5010
Disintegration beaker, for Standard Disintegration Apparatus	37-5200
Disintegration beaker, USP for Disintegration Apparatus	37-5305
Disintegration beaker, USP for Disintegration Apparatus, verified with certificate	37-5305V
Disintegration gauge, 2.5 cm, from vessel bottom	37-9000
Printer option for Agilent 100, 115/230V	37-0200
Water bath temperature probe	67-0300

## 100 Automated Disintegration Apparatus Dimensions

Height	Width	Depth	Weight
74.93 cm / 29.5 in.	55.88 cm / 22 in.	52.07 cm / 20.5 in.	29.7 kg / 65.5 lbs, dry with 3 baskets

## 100 Automated Disintegration Apparatus Specifications

Dip Speed (DPM)	Stroke Length (cm)	Temperature Range (°C)	Temperature Accuracy (°C)	Test Duration (hh:mm:ss)
30 ± 1	5.5 ± 0.1	Ambient + 5 to 55	± 0.2	Up to 99:59:59





Accessories and Replacement Parts for Legacy Instruments



## Accessories for Legacy Instruments

Agilent offers a complete line of dissolution and physical testing accessories to support legacy instruments that are still under service support.

Accessories for the following legacy instruments can be found in this section:

- 705-DS, 709-DS, 7000, 7010, 7025 V-Series and 7030 V-Series Dissolution Apparatus
- Calibration and Verification Tools
- QAll C Station and 5010 Calibration and Verification Tools
- 8000 Dissolution Sampling Station
- 806 Syringe Pump
- 810 Peristaltic Pump
- Rotating Bottle Apparatus
- 200 Tablet Hardness Tester
- 250 Friability Tester
- 350 Tapped Density Tester



Legacy 709-DS Dissolution Apparatus

## DID YOU KNOW?

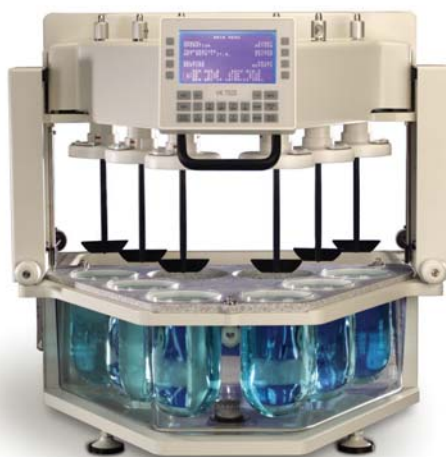
### Questions about availability, compatibility, or anything else?

You can contact Agilent's dissolution experts directly at **dissolution.hotline@agilent.com**.

Simply let us know what you are looking for or what type of problem you need to solve —we're always here to help.

## Basket Shafts/Assemblies

Description	Part No.
<b>14.5 in. (37 cm) Basket Shafts for 7025/7030</b>	
Basket shaft, USP, for 7025/7030	13-3615
<b>21 - 24 in. (53 - 61 cm) Basket Shafts and Assemblies for 705-DS, 7000/7010E, 705/708/709-DS</b>	
Basket shaft, USP 3-clip, 21 in.	13-3620
Basket shaft, O-ring, 21 in.	13-3621
Basket shaft, PTFE-coated, 21 in.	13-3622
Basket shaft, USP 3-clip, 24 in.	13-3629
Basket shaft, for bolus basket, 24 in.	13-3630



Legacy 7025 V-Series Dissolution Apparatus



Electropolished stainless steel paddle

## Paddle Shafts and Accessories

Description	Part No.
<b>14.5 in. (37 cm) Paddle Shafts for 7025/7030</b>	
Paddle, PTFE-coated, for 7025/7030	13-3589
Paddle, electropolished, for 7025/7030	13-3590
Paddle, PEEK, for 7025/7030	13-3591
Paddle, electropolished, 200 mL, for 7025/7030	13-3593
<b>21 - 24 in. (53 - 61 cm) Paddle Shafts for use with 7000/7010E, 705/708/709-DS</b>	
Paddle, PTFE-coated, 21 in.	13-3594
Paddle, PTFE-coated, 24 in.	13-3596
Paddle, electropolished, 21 in.	13-3595
Paddle, electropolished, 24 in.	13-3597
Paddle, PEEK, 24 in.	13-3598
Mini paddle, PTFE-coated, 24 in.	13-3599
Mini paddle, electropolished, 24 in.	13-3600
Mega paddle, electropolished stainless steel, 24 in.	13-3601
<b>Shaft Accessories</b>	
Collet, for 3/8 in. dia. shafts, for 7000/7010	12-1320
Collet, for 1/4 in. dia. shafts, for 7000/7010	12-1330
Shaft locking ring, for all models	12-2096
Basket and paddle shaft locking rings, 6/pk	12-2099



1L EaseAlign vessel

## EaseAlign Vessels

EaseAlign vessels are designed to be used on the legacy 705-DS, 7000 and 7010 dissolution apparatus, and are compatible with many other manufacturer instruments as well. The EaseAlign vessel is held in place by a centering ring and is available in various types and sizes.

### EaseAlign Vessels for 705-DS and 7000/7010 Dissolution Apparatus

Description	Part No.
EaseAlign vessel, 1L	12-5000
EaseAlign vessel, 1L, with certificate	12-5000V
EaseAlign vessel, low actinic - red, 1L	12-5010
EaseAlign vessel, low actinic - red, 1L, with certificate	12-5010V
EaseAlign vessel, 100 mL	12-5040
EaseAlign vessel, low actinic - red, 100 mL	12-5041
EaseAlign vessel, 200 mL	12-5050
EaseAlign vessel, low actinic - red, 200 mL	12-5051
EaseAlign vessel, flat bottom for Enhancer Cell, 200 mL	12-5055
EaseAlign vessel, 2L	12-5070
EaseAlign vessel, 2L, with certificate	12-5070V
EaseAlign vessel, low actinic - red, 2L	12-5075
EaseAlign vessel, 4L	12-5080
EaseAlign vessel, clear plastic, 1L	12-5200
EaseAlign vessel, clear plastic, 1L, with certificate	12-5200V
EaseAlign Peak vessel, 1L	12-5500
EaseAlign Peak vessel, 1L, with certificate	12-5500V
EaseAlign Peak vessel, low actinic - red, 1L	12-5505
EaseAlign VF molded vessel, 1L	12-1502
EaseAlign VF molded vessel, 1L, with certificate	13-0020
EaseAlign Peak vessel, low actinic - red, 1L	12-5505

## TruCenter Vessels

Used with the 7025 and 7030 Dissolution Apparatus, TruCenter vessels offer superior centering and vessel verticality and are turned on a lathe during manufacture to find the exact center. The vessels incorporate a groove and synthetic flange with magnetic collar to align on the vessel plate. The magnetic closure on the vessel plate makes inserting or removing a vessel simple.

In addition to not floating when empty, an added benefit of the TruCenter vessel is the plastic collar that decreases the chance of breakage compared to traditional glass collared vessels.

Conversion kits are available to upgrade your 705-DS and 7000/7010 models to TruCenter vessels (see following page).

### TruCenter Vessels for 7025, 7030 and 709-DS Dissolution Apparatus

Description	Part No.
<b>TruCenter Vessels for 7025 Dissolution Apparatus</b>	
TruCenter vessel, without adapter, 200 mL	12-5033
TruCenter vessel, with adapter, 200 mL	12-5034
TruCenter vessel, with collar, 1L	12-5035
TruCenter vessel, with collar, 1L, with certificate	12-5035V
TruCenter vessel, low actinic - red, with collar, 1L	12-5120
TruCenter vessel, low actinic - red, with collar, 1L, with certificate	12-5120V
TruCenter Peak vessel, with collar, 1L	12-5125
TruCenter Peak vessel, low actinic - red, with collar, 1L	12-5130
TruCenter VF molded vessel, 1L	12-1503
TruCenter VF molded vessel, 1L, with certificate	13-0030
<b>TruCenter Vessels for 7030 Dissolution Apparatus</b>	
TruCenter DVH vessel, for 7030 only, 1L	12-5039
TruCenter DVH vessel, for 7030 only, 1L, with certificate	12-5039V
<b>TruAlign Vessels for 709 Dissolution Apparatus</b>	
EaseAlign vessel, 1L	12-5000
EaseAlign vessel, 1L, with certificate	12-5000V



200 mL TruAlign Vessel

## TruCenter Conversion

TruCenter vessels, standard on the 7025 Dissolution Apparatus, offer superior centering and vessel verticality compared to EaseAlign vessels. Conversion kits are available to upgrade your 705-DS and 7000/7010 models to TruCenter vessels. The TruCenter kit includes:

- 1L TruCenter vessel
- Adapter ring
- Evaporation cover

## Vessel Conversion Kits and Accessories for 705-DS and 7000/7010 Dissolution Apparatus

Description	Part No.
<b>1L Conversion Kits</b>	
Conversion kit, TruCenter, with ground groove, 1L	12-6100
Conversion kit, TruCenter, with ground groove, 1L, with certificate	12-6100V
Conversion kit, TruCenter, with manual sampling evaporation cover, 1L	12-6101
<b>100 mL Conversion Kits</b>	
Conversion kit, EaseAlign, 100 mL, without paddle	12-0310
<b>200 mL Conversion Kits</b>	
Conversion kit, EaseAlign, with 24 in. paddle, flat bottom vessel, 200 mL (for use with Enhancer Cells)	12-0301
Conversion kit, EaseAlign, 24 in. paddle, 200 mL vessel	12-0318
<b>1L Conversion Kits</b>	
Height spacer paddle, 100/200 mL, 15 mm, for 7000/7010	12-0320
Height spacer, 100/200 mL, 3.25 in., for 7000/7010	12-0321
Evaporation cover, EaseAlign, for use with 100/200 mL vessel	12-6315

## Conversion Kits and Accessories for 7025 Dissolution Apparatus

Description	Part No.
<b>100 mL Conversion Kit</b>	
TruCenter conversion kit, with paddle, 100 mL	12-0308
TruCenter conversion kit, with paddle and temperature monitoring, 100 mL	12-0315
<b>200 mL Conversion Kit</b>	
TruCenter conversion kit, with paddle, 200 mL	12-0312
TruCenter conversion kit, with paddle and temperature monitoring, 200 mL	12-0314
<b>Conversion Kits Accessories</b>	
TruCenter vessel, with adapter, 200 mL	12-5034
TruCenter vessel, without adapter, 200 mL	12-5033



200 mL glass vessel used in conversion kits



## Manual Sampling Accessories for 7000/7010

Description	Part No.
Bent cannula with adjustable gauge, 4.75 in. (900 mL)	12-3215
Bent cannula with adjustable gauge, 7.75 in. (900 mL)	12-3216
Adjustable gauge kit (cannulas not included)	12-3217
Manual sampling bracket, for use with manifold, 7000/7010	17-3150

## Sampling Cannulas and Accessories

Description	Part No.
Sampling cannula, 4.5 in., 900 mL (for 7000/7010 manifold)	17-3300
Sampling cannula, 6.5 in., 500 mL (for 7000/7010 manifold)	17-3305
Cannula extension kit, 500 mL (for use with one 4.5 in. cannula)	17-3306
Sampling cannula, 8.12 in., for 2L vessel (for 7000/7010 manifold)	17-3307
Sampling cannula, 10 in., for 4L vessel (for 7000/7010 manifold)	17-3309
Manual sampling cannula assembly, 500 mL	17-3311
Manual sampling cannula assembly, 900 mL	17-3312
Sampling cannula (for 7025/7030)	17-3313
Return cannula (for 7025/7030)	17-3314
Manual sampling cannula (for 7025/7030)	17-3317
Return cannula, 2 1/4 in. (for 7000/7010 manifold)	17-3320
Sampling cannula, 4.5 in., 900 mL (for 7000/7010 manifold)	17-3300
Printer paper, 10 rolls/pk	12-9995
Printer paper, 100 rolls/pk	12-9996
Ribbon cartridge, 5/pk	12-9997

## Replacement Sampling Accessories for Legacy Dissolution Apparatus

Description	Part No.
<b>Internal Motor Drive</b>	
Internal motor drive, for 3x3 configuration	12-0200
Internal motor drive, for 4x2, 4x3, 4x4 configurations	12-0205
Sampling manifold, for use with 3x3 configuration, 1L	17-3100
Sampling manifold, for use with 4x2 configuration, 1L	17-3102
Sampling manifold, for use with 4x4 configuration, 1L	17-3107
Sampling manifold, for use with 4x4 configuration, 200 mL	17-3116
Sample manifold tubing/cannulas, sampling, 1L, 3x3 configuration	1005-1687
Sample manifold tubing/cannulas, return, 1L, 3x3 configuration	1005-1688
<b>Replacement Sample Manifold Tubing</b>	
Sample manifold tubing/cannulas, sampling, 2L, 3x3 configuration	1005-1782
Sample manifold tubing/cannulas, return, 2L, 3x3 configuration	1005-1783
Sample manifold tubing/cannulas, sampling, 1L, 4x2 configuration	1005-1692
Sample manifold tubing/cannulas, return, 1L, 4x2 configuration	1005-1693
Sample manifold tubing/cannulas, sampling, 2L, 4x2 configuration	1005-1778
Sample manifold tubing/cannulas, return, 2L, 4x2 configuration	1005-1779
Sample manifold tubing/cannulas, sampling, 1L, 4x4 configuration	1005-1670
Sample manifold tubing/cannulas, return, 1L, 4x4 configuration	1005-1671
Sample manifold tubing/cannulas, sampling, 2L, 4x4 configuration	1005-1780
Sample manifold tubing/cannulas, return, 2L, 4x4 configuration	1005-1784
Sample manifold tubing/cannulas, return, online UV, 4x4 configuration	1005-1785

(Continued)

## Replacement Sampling Accessories for Legacy Dissolution Apparatus

Description	Part No.
<b>Replacement Sample Cannula Tubing for 7020/7025/7030</b>	
Sample tubing/cannulas, sampling/return, 6-position, V-Series	1005-1787
Sample tubing/cannulas, sampling/return, 8-position, V-Series	1005-1786
<b>Replacement Sample Tubing for 8000 Sampling Station and Pumps</b>	
Sample tubing, syringe pump to filter changer, 6-position	1005-1722
Sample tubing, syringe pump to filter changer, 8-position	1005-1729
Sample tubing, syringe pump or filter changer to 8000, 6-position	1005-1696
Sample tubing, syringe pump or filter changer to 8000, 8-position	1005-1674
Sample tubing, from 8000 valves, 6-position	1005-1694
Sample tubing, from 8000 valves, 8-position	1005-1672
Sample tubing, to 8000 valves, 6-position	1005-1695
Sample tubing, to 8000 valves, 8-position	1005-1673
Tubing connector, barbed fitting for peristaltic pump (female)	3090-0159
Tubing connector, union fitting (male)	3090-0160

## Centering Rings and Accessories

Description	Part No.
Centering ring, EaseAlign, for 705-DS and 7000/7010	12-6050
Centering ring, EaseAlign, retrofit, 6-position, includes pins and evaporation covers	12-6060
Centering ring, EaseAlign, retrofit, 8-position, includes pins and evaporation covers	12-6062
Locating pins, EaseAlign, 12/pk	12-6065
Conversion kit, EaseAlign, for Hanson vessels, 6/pk	12-6070
Alignment plate, TruCenter	12-6115

## Evaporation Covers and Accessories

Description	Part No.
Evaporation cover, low-loss split hinge design	12-6327
Evaporation cover, low-loss hinged, for EaseAlign centering rings	12-6328
Evaporation cover, low-loss hinged, for use with resident probes	12-6329
Evaporation cover, low actinic - red, with DDM opening, EaseAlign	12-6311
Evaporation cover, for use with 4L vessels	12-6326
Evaporation cover, EaseAlign	12-6300
Evaporation cover, EaseAlign, PVC	12-6301
Evaporation cover, EaseAlign, for DDM	12-6310
Evaporation cover, EaseAlign, for use with 100/200 mL vessel	12-6315
Evaporation cover, EaseAlign, low actinic - red	12-6320
Evaporation cover, for use with EaseAlign, solid cover for non-vessel positions	12-6330
Evaporation cover, manual sampling, opening for Japanese sinkers, for 7025/7030	12-6352
Evaporation cover, dual sampling, for 7025/7030	12-6353
Evaporation cover, for three openings for basket and two sampling ports	12-0463
Evaporation cover, for single opening for basket and auto start	12-0464
Evaporation plugs, 36/pk	12-6350
Evaporation hole plug, for 7025/7030	12-6358



EaseAlign Centering Ring and Evaporation Covers

## Rotating Cylinder and Accessories

Description	Part No.
Rotating Cylinder, 4.45 cm outside dia.	12-1360
Rotating Cylinder, 4.45 cm outside dia., with certificate	12-1360V

## Intrinsic Dissolution Apparatus

Description	Part No.
Intrinsic Dissolution Apparatus, 0.5 cm <sup>2</sup> exposed surface area, with punch, shaft and holder, for 7000/7010	12-4100
Intrinsic Dissolution Apparatus, 0.5 cm <sup>2</sup> exposed surface area, for use with 7025	12-4105
Intrinsic Dissolution Apparatus, 0.125 cm <sup>2</sup> exposed surface area, for 7025	12-4111

Note: Surface plate sold separately. Only one plate required for testing.

## Water Baths

Description	Part No.
<b>Water Baths and Replacement Parts</b>	
Water bath, molded, for use with 4x4 configuration	60-1500
Water bath, for 7025 and 7030	60-2110
Water bath, for Rotating Bottle, 24x12x12 in.	60-2200

## Heater/Circulators

Description	Part No.
Heater/circulator, 115/230V	G7986A
Note: The heater/circulator can be used with 708-DS, as well as legacy 7000/7010, 7020, 7025 and 705-DS dissolution apparatus, and the BIO-DIS and Apparatus 7.	
<b>Options for G7986A</b>	
Cable for use with 7000/7010/BIO-DIS/Apparatus 7	G7986A #100

## Calibration and Verification Tools

### QAll C Mechanical Qualification Station Replacement Parts

Description	Part No.
Adapter, universal for QAll and QAll C	12-9005
Calibration shaft, with certification	12-9010
Reflective RPM sensor clip, black	12-9015
Reflective RPM sensor clip, white	12-9020
Magnetic RPM sensor clip, for 1/4 dia. shaft	12-9021
Magnetic RPM sensor clip, for 3/8 dia. shaft	12-9025
Printer paper, 10 rolls/pk	12-9995
Printer paper, 100 rolls/pk	12-9996
Ribbon cartridge, 5/pk	12-9997



QAll C Mechanical Qualification Station

## Verification Tools

Description	Part No.
<b>Height and Centering Tools for USP Apparatus 1 and 2</b>	
Vessel centering tool, pass/fail gauge, EaseAlign centering rings	12-7310
Vessel centering tool, pass/fail gauge, EaseAlign centering rings, with certificate	12-7310V
<b>Height Spacers for USP Apparatus 1 and 2</b>	
Height spacer, 100/200 mL, 3.25 in., for 7000/7010	12-0321
Height spacer, baskets, for 7000/7010	12-7210
Height spacer, paddles, for 7000/7010	12-7200
Height spacer paddle, 100/200 mL, 15 mm, for 7000/7010	12-0320
Height spacer paddle, 100/200 mL, 15 mm, for 7000/7010	12-0320
Height spacer, for Peak vessels	12-7220



Height Spacers





Sampling trays with HPLC septum-capped vials (top) and glass tubes (bottom)

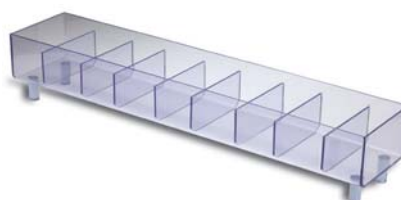
## Accessories for 8000 Dissolution Sampling Station

Description	Part No.
<b>Accessories for 8000 Dissolution Sampling Station</b>	
Media replacement option, internal (specify printer type)	17-0110
Media/rinse chamber	17-1200
Printer, retrofit kit	17-1400
Stacking rack, for 8000	17-1500
Autocalibration fixture	17-5100
Adapters, to connect PTFE to 810 Peristaltic Pump tubing, 24/pk	17-6050
Nut and ferrule, 1/4-28, for 1/16 in. inner dia. tubing	17-6070
Printer paper, 10 rolls/pk	12-9995
Printer paper, 100 rolls/pk	12-9996
Ribbon cartridge, 5/pk	12-9997

## Trays for 8000 Dissolution Sampling Station

Sampling tray, open tube, 16x100 mm	17-1000
Sampling tray, HPLC, 12x32 mm	17-1050
Acrylic rinse tray, 6 vessels, 3x3, for 7000/7010	17-1300
Acrylic rinse tray, 7-8 vessels, for 7000/7010	17-1310
Sample tubing rinse kit	17-1341
Acrylic rinse tray, for 708-DS	17-1351

(Continued)



Acrylic rinse trays

## Accessories for 8000 Dissolution Sampling Station

Description	Part No.
<b>Tubes, Vials and Needles for 8000 Dissolution Sampling Station</b>	
Glass tubes, 16x100 mm, 250/pk	17-5001
EaseAlign vessel, low actinic - red, 1L	12-5010
Glass vials, 12x32 mm, w/ cap (PTFE/Silicon), 100/pk	17-5020
Glass vial, clear, with PTFE/silicon cap, 15x45, 100/pk	17-5030
Glass vial, low actinic - red, with PTFE/silicon cap, 15x45, 100/pk	17-5035
Calibration tubes, 10 mL, 8/pk	17-5040
Replacement needle kit, 8/pk (4 long, 4 short)	K1002-00477
Replacement valve kit, long needle	17-6200
Replacement valve kit, short needle	17-6210
<b>Replacement Tubing for 810 Peristaltic Pump</b>	
Purple/white Marprene replacement tubing, 8/pk	17-6000
Purple/white Viton replacement tubing, 8/pk	17-6005
White silicone replacement tubing, 8/pk	17-6010

(Continued)



HPLC septum-capped vials (left) and glass tubes (right)

## Accessories for 8000 Dissolution Sampling Station

Description	Part No.
<b>Color-coded Clear Tubing for 8000 Dissolution Sampling Station</b>	
Sample manifold tubing/cannulas, sampling, 1L, 4x4 configuration	1005-1670
Sample manifold tubing/cannulas, return, 1L, 4x4 configuration	1005-1671
Sample tubing, from 8000 valves, 8-position	1005-1672
Sample tubing, to 8000 valves, 8-position	1005-1673
Sample tubing, syringe pump or filter changer to 8000, 8-position	1005-1674
Sample manifold tubing/cannulas, sampling, 1L, 3x3 configuration	1005-1687
Sample manifold tubing/cannulas, return, 1L, 3x3 configuration	1005-1688
Sample manifold tubing/cannulas, sampling, 1L, 4x2 configuration	1005-1692
Sample manifold tubing/cannulas, return, 1L, 4x2 configuration	1005-1693
Sample tubing, from 8000 valves, 6-position	1005-1694
Sample tubing, to 8000 valves, 6-position	1005-1695
Sample tubing, syringe pump or filter changer to 8000, 6-position	1005-1696
Sample tubing, syringe pump to filter changer, 6-position	1005-1722
Sample tubing, syringe pump to filter changer, 8-position	1005-1729
Sample manifold tubing/cannulas, sampling, 2L, 4x2 configuration	1005-1778
Sample manifold tubing/cannulas, return, 2L, 4x2 configuration	1005-1779
Sample manifold tubing/cannulas, sampling, 2L, 4x4 configuration	1005-1780
Sample manifold tubing/cannulas, return, 2L, 4x4 configuration	1005-1784
Sample manifold tubing/cannulas, return, online UV, 4x4 configuration	1005-1785
Sample tubing/cannulas, sampling/return, 8-position, V-Series	1005-1786
Sample tubing/cannulas, sampling/return, 6-position, V-Series	1005-1787
Tubing assembly, male lure for 810 Peristaltic Pump, 12x12, for BIO-DIS	1005-1791
Tubing assembly, barbed fitting, 12x12, for BIO-DIS	1005-1793

(Continued)

## Accessories for 8000 Dissolution Sampling Station

Description	Part No.
<b>Replacement Tubing for 8000 Dissolution Sampling Station</b>	
Tubing assembly, 8 flared, male to female, 72 in.	1005-1891
Tubing assembly, 6 flared, male to female, 72 in.	1005-1892
Tubing assembly, 8 double flared, male to male, 72 in.	1005-1893
Tubing assembly, 6 double flared, male to male, 72 in.	1005-1894
Tubing assembly, for 1L 708-DS, sample and return cannulas, 6-position	1005-1920
Tubing assembly, for 1L 708-DS, sample and return cannulas, 8-position	1005-1921
Tubing assembly, for 2L 708-DS, sample and return cannulas, 6-position	1005-1922
Tubing assembly, for 2L 708-DS, sample and return cannulas, 8-position	1005-1923
Tubing assembly, female/lure to sample cannula, 8-valve, for BIO-DIS	1005-1952
Tubing assembly, male/lure to male ¼-28, 8-valve, for BIO-DIS	1005-1953
Tubing assembly, female ¼-28 to return cannula, 8-valve, for BIO-DIS	1005-1954

## 806 Syringe Pump Accessories

Description	Part No.
Replacement syringe, for 806 Syringe Pump	K1002-00437

## 810 Peristaltic Pump Accessories

Description	Part No.
<b>Peristaltic Replacement Tubing</b>	
Purple/white Marprene replacement tubing, 8/pk	17-6000
Purple/white Viton replacement tubing, 8/pk	17-6005
White silicone replacement tubing, 8/pk	17-6010

## Rotating Bottle Apparatus



Rotating Bottle Apparatus

### Rotating Bottle Accessories

Description	Part No.
<b>Conversion Kits</b>	
Conversion kit, low actinic - red, 200 mL	32-0110
Conversion kit, 4 in. center shaft extensions, 16x100 mm tubes	32-0120
<b>Bottle Caps</b>	
Cap, with Viton liner, for 100 mL	32-1101
Cap, with Viton liner, for 200 mL	32-1105
Decanting cap, with 40-mesh screen, for 100 mL	32-1121
Decanting cap, with 40-mesh screen, for 200 mL	32-1125
<b>Screens and Liners</b>	
Viton liner, for 200 mL	32-1205
Replacement screen, for decanting cap, 40-mesh, for 200 mL	32-1225
<b>Clips</b>	
Bottle clips, for 100 mL	32-1300
Bottle clips, for 16x100 mm tubes	32-1301
Bottle clips, for 28x98 mm (40 mL) tubes	32-1302
Bottle clips, for 200 mL	32-1305
<b>Bottles</b>	
Bottle, with cap, 100 mL	32-5001
Bottle, with cap, low actinic - red, 100 mL	32-5021
Bottle, with cap, low actinic - red, 200 mL	32-5030
Bottle only, low actinic - red, 100 mL	32-5521
Bottle only, 100 mL	32-5530

## 200 Hardness Tester



Agilent 200 Tablet Hardness Tester

### 200 Tablet Hardness Tester and Accessories

Description	Part No.
Hardness/fragment safety shield	42-2010
Hardness/fragment brush	42-2030
Tablet thickness gauge, handheld, dial gauge, 0-10 mm	42-6105
Tablet thickness gauge, handheld, digital gauge, 0-10 mm	42-6110
RS232 serial port, retrofit	42-0250
Thickness gauge option	42-0300
Battery for Mitutoyo gauge	42-0355
Printer, 115V/230V	42-0120
Jaw plate, 1/16 radius	42-1015
Jaw plate, 1/4 radius	42-1020
Jaw plate, 1/8 radius	42-1025
Jaw plate, bolus type	42-1030
Jaw plate, 3/16 radius	42-1035
Jaw plate, flat face	42-1040
Jaw plate, adjustable	42-1050
Printer paper, 10 rolls/pk	12-9995
Printer paper, 100 rolls/pk	12-9996
Ribbon cartridge, dot matrix, black	12-9993
Ribbon cartridge, dot matrix, purple	12-9998

### 200 Tablet Hardness Tester Calibration Tools

Description	Part No.
Calibration fixture	42-2000
Trim pot tool	42-2005
Hardness/calibration weight hanger	42-2020
Calibration weight, 200 gm, with certificate	42-1200
Calibration weight, 500 gm, with certificate	42-1205
Calibration weight, 1kg, with certificate	42-1210
Calibration weight, 2 kg, with certificate	42-1215
Calibration weight, 5 kg, with certificate	42-1220
Calibration weight, 10 kg, with certificate	42-1225
Calibration weight, 20 kg, with certificate	42-1230

## 200 Tablet Hardness Tester Jaw Plates

Description	Part No.
Jaw plate, standard	42-1000
Jaw plate, shelf type	42-1005
Jaw plate, 1/8 x 60 degree	42-1010
Jaw plate, 1/16 radius	42-1015
Jaw plate, 1/4 radius	42-1020
Jaw plate, 1/8 radius	42-1025
Jaw plate, bolus type	42-1030
Jaw plate, 3/16 radius	42-1035
Jaw plate, flat face	42-1040
Jaw plate, adjustable	42-1050



Jaw plates (top row, L to R) standard, 1/8x60 degree, 1/8 radius, flat face (bottom row, L to R) shelf, 1/16 radius, bolus, adjustable



## 250 Friability Tester

### 250 Friability Tester Accessories

Description	Part No.
Dual-chamber drum, clockwise rotation	47-1000
Dual-chamber drum, clockwise rotation, with certificate	47-1000V
Dual-chamber drum, counterclockwise rotation	47-1005
Dual-chamber drum, counterclockwise rotation, with certificate	47-1005V
Single-chamber drum, clockwise rotation	47-1010
Single-chamber drum, clockwise rotation, with certificate	47-1010V
Single-chamber drum, counterclockwise rotation	47-1015
Single-chamber drum, counterclockwise rotation, with certificate	47-1015V
Abrasion drum	47-1020
10-degree lift (wedge)	47-1030
Printer, 115V/230V, retrofit	47-0153



Agilent 250 Friability Tester with two dual-chamber drums

## 350 Tapped Density Tester



350 Tapped Density Tester, dual-platform in the specially designed acoustic cabinet

### 350 Tapped Density Tester Accessories

Description	Part No.
<b>Tapped Density Platforms</b>	
Platform, 10 mL, 14 mm drop, USP	52-1000
Platform, 25 and 50 mL, 14 mm drop, USP	52-1010
Platform, 100 mL, 14 mm drop, USP	52-1020
Platform, 250 mL, 14 mm drop, USP	52-1030
Platform, 500 mL, 14 mm drop, USP	52-1040
Platform, 10 mL, 3 mm drop, USP or ASTM	52-1050
Platform, 25 and 50 mL, 3 mm drop, USP or ASTM	52-1060
Platform, 100 mL, 3 mm drop, USP or ASTM	52-1070
Platform, 250 mL, 3 mm drop, USP or ASTM	52-1080
<b>Graduated Cylinders</b>	
Graduated cylinder, funnel top, hexagonal base, 10 mL	52-5000
Graduated cylinder, funnel top, hexagonal base, 100 mL	52-5010
Graduated cylinder, funnel top, hexagonal base, 250 mL	52-5020
Graduated cylinder, standard top, hexagonal base, 25 mL	52-5040
Graduated cylinder, standard top, hexagonal base, 50 mL	52-5050
Graduated cylinder, standard top, hexagonal base, 500 mL	52-5060
<b>Acoustic Cabinet</b>	
Acoustic cabinet	52-2010
<b>Printer</b>	
Printer, retrofit, 115V/230V	52-0153



Service and Qualification

# Service and Qualification

## Agilent Services and Support: Your Laboratory Partner



Agilent offers you a variety of comprehensive qualification and service options for your dissolution apparatus and analytical instruments. Focus on what you do best and let Agilent provide you with installation and familiarization, hardware and software training, and complete qualification services.

Our service organization has the experience, education and training to ensure your dissolution equipment is properly installed and qualified, not only at the time of purchase, but throughout the life of the instrument. Our engineers and chemists are cGMP-trained and receive extensive ongoing training to ensure they have the requisite knowledge.

We can work with you to develop a service offering that meets your specific needs for:

- Instrument maintenance and repair
- Regulatory compliance
- Software and data systems
- Training and educational services

We can help optimize your productivity by quickly resolving problems, maximizing your equipment uptime, adhering to agreed-upon service and qualification schedules, minimizing your compliance risk and reducing your administrative burdens.





### Preventive Maintenance and Repair Service

Keeping your dissolution apparatus in top condition is critical to meeting current USP Performance Verification Test (PVT) requirements, as well as the recent enhanced Mechanical Qualification (MQ) specifications put forth by the FDA and ASTM. It is even more important that your apparatus are routinely serviced.

We offer a number of repair contract options that cover maintenance, repair and qualification services. For Agilent's Service Center Repair information, visit [www.agilent.com/lifesciences/dissolutionrepair](http://www.agilent.com/lifesciences/dissolutionrepair)



### Qualification Documentation

Maintaining the proper instrument and qualification documentation is essential. To ensure you meet the cGMP requirements, Agilent provides qualification services and documentation for all our dissolution instrumentation. Our qualification protocols include installation qualification (IQ), operational qualification (OQ), and in the case of Apparatus 1 and 2, a performance qualification (PQ) based on the USP Performance Verification Test (PVT). A mechanical qualification (MQ) procedure is also available. Our PQ procedure contains current USP practices for qualification with current acceptance criteria. Similarly, the MQ protocol accurately reflects the current specifications and tolerances for physical parameters contained in, for example, the ASTM process. Our dedicated compliance group strives to ensure this documentation remains current according to the ever-changing industry regulations.



### Compliance Services

Our laboratory services group provides a cost-effective alternative to performing these qualification services. You can be assured the job will be performed correctly. In fact, Agilent is ranked #1 in compliance by lab professionals worldwide.

Our service group is trained to perform the PQ for Apparatus 1 and 2. We offer these services for our own equipment, as well as for all other brands of dissolution apparatus. We will work with you or your metrology department to establish a schedule to ensure your equipment remains qualified. When performing a PQ, our services include a verification of the critical physical parameters and the chemical qualification using your USP prednisone tablets with either the single- or two-stage procedure for paddles and/or baskets.

For customers who choose to perform the MQ procedure, we provide this service as well. Our engineers are equipped with our electronic qualification tools to measure all the relevant physical parameters. Our protocols include the specifications as outlined in the USP, as well as the FDA and ASTM recommendations.

### Training and Educational Services

Agilent offers training on the proper operation of all its equipment. This service can be ordered at the time of instrument purchase. We also offer a variety of other educational programs that can be delivered in a wide range of methods to best suit your needs.

Contact your Agilent representative for more information or to set up a time to discuss your specific requirements.

**DID YOU KNOW?**

A wide variety of preventive maintenance and service agreements are available for all of Agilent's dissolution and physical testing instruments. Contact your local Agilent representative to find the solution that best fits your laboratory's needs.

**Enterprise Edition (EE) Compliance Services (IQ/OQ/PQ/MQ)**

Description	Part No.
<b>708-DS Dissolution Apparatus</b>	
EE IQ Service for 708-DS	SYS-DI-708 R26N091
EE OQ Service for 708	SYS-DI-708 R26J091
EE PQ Service for 708	SYS-DI-708 R26P091
EE MQ Service for 708	SYS-DI-708 R26M091
EE IQ/OQ Service for 708	SYS-DI-708 R26H091
EE IQ/OQ/MQ Service for 708	SYS-DI-708 R26T091
EE IQ/OQ/PQ Service for 708	SYS-DI-708 R26U091
<b>BIO-DIS Reciprocating Cylinder Apparatus</b>	
EE IQ Service for BIO-DIS Apparatus 3 Reciprocating Cylinder	SYS-DI-BIO R26N091
EE OQ Service for Bio-Dis Apparatus 3 Reciprocating Cylinder	SYS-DI-BIO R26J091
<b>Reciprocating Holder Apparatus 7</b>	
EE IQ Service for Apparatus 7 Reciprocating Holder	SYS-DI-APP7 R26N091
EE OQ Service for Apparatus 7 Reciprocating Holder	SYS-DI-APP7 R26J091
<b>400-DS Apparatus 7</b>	
IQ Service for 400-DS (Small Volume Apparatus 7)	SYS-DI-400 R26N091
OQ Service for 400-DS (Small Volume Apparatus 7)	SYS-DI-400 R26J091
IQ/OQ Service for 400-DS (Small Volume Apparatus 7)	SYS-DI-400 R26H091
<b>100 Automated Disintegration Apparatus</b>	
IQ Service for 100 Automated Disintegration	SYS-ZZ-OTHER2
OQ Service for 100 Automated Disintegration	SYS-ZZ-OTHER2
<b>850-DS Dissolution Sampling Station</b>	
850-DS Dissolution Sampling Station IQ* (for use with 708-DS, Bio-Dis, Apparatus 7)	Add "-E" to SYS-DI-XXX
850-DS Dissolution Sampling Station OQ* (for use with 708-DS, Bio-Dis, Apparatus 7)	Add "-E" to SYS-DI-XXX

(Continued)



## Enterprise Edition (EE) Compliance Services (IQ/OQ/PQ/MQ)

Description	Part No.
<b>UV Dissolution Hardware and Software</b>	
Cary 60 with UV-Vis Spectrophotometer, multicell or fiber optic, IQ	SYS-UV-60 R26N091
Cary 60 with UV-Vis Spectrophotometer, multicell or fiber optic, IQ/OQ	SYS-UV-60 R26J091
Cary 60 with UV-Vis Spectrophotometer, multicell or fiber optic, IQ/OQ	SYS-UV-60 R26H091
Cary 8454 UV-Vis Spectrophotometer, IQ	SYS-UV-VIS R26N091
Cary 8454 UV-Vis Spectrophotometer, OQ	SYS-UV-VIS R26J091
Cary 8454 UV-Vis Spectrophotometer, IQ/OQ	SYS-UV-VIS R26H091
UV Dissolution Software, Cary 60 or 8454, IQ	SYS-SW-CS-E R26N091
UV Dissolution Software, Cary 60 or 8454, OQ	SYS-SW-CS-E R26J091
<b>Workstation Software</b>	
IQ Service for Dissolution Workstation Software	SYS-SW-CS R26N091
OQ Service for Dissolution Workstation Software	SYS-SW-CS R26J091
<b>280-DS Mechanical Qualification System</b>	
IQ/OQ Service for 280-DS Mechanical Qualification System	SYS-ZZ-OTHER2



Educational Services and Industry Support

## Dissolution Seminar Series

Agilent Dissolution Systems offers educational seminars that are specifically designed to provide the latest in theory, techniques and hands-on training for those involved with dissolution testing. Our instructors include Agilent employees, as well as prominent scientists from academia and the dissolution industry.

What makes these courses unique? The courses are not disguised sales presentations, with all course materials being vendor-neutral and designed to provide a solid base of knowledge. Also, course materials are relevant to a GMP environment. Our chemists understand the latest regulations and what it takes to comply.

These courses are offered at various locations around the world and can also be scheduled on site at your facility. For a complete list of seminar dates and locations, please check our web site at **[www.agilent.com](http://www.agilent.com)**.



## Fundamentals of Dissolution

This comprehensive two-day course is designed for new and emerging dissolution analysts. The course places emphasis on basic dissolution fundamentals and theory, along with focused discussions on current compendial dissolution testing apparatus, USP physical parameter requirements and the current USP calibration procedure. Hands-on workshops provide participants with experience preparing for and executing a dissolution test. This course will benefit novice, as well as experienced, dissolution analysts and those in quality control and assurance, calibration, and metrology. This course also serves as a refresher for those individuals with limited or intermediate dissolution experience. The hands-on workshops include dissolution apparatus familiarization, performing the dissolution test, and physical suitability testing.

### Topics:

- Evolution of dissolution testing
- Dissolution fundamentals and theory
- Compendial dissolution testing
- Calibration of USP Apparatus 1 and 2
- Critical physical parameters
- Compendial and noncompendial drug release apparatus
- Methods of sample analysis
- Dissolution technique
- Regulatory issues

Upon successful completion of this course, the attendee should be able to:

- Describe basic principles of dissolution theory and compendial Apparatus 1 through 7
- Perform proper dissolution techniques to conform with USP guidelines
- List critical physical parameters associated with Apparatus 1 and 2
- Describe essentials in USP and enhanced mechanical qualification of Apparatus 1 and 2, as well as regulatory issues associated with dissolution and GMP guidelines



### Dissolution Method Development and Validation

Designed for experienced R&D, method development, or QC chemists interested in the development and validation of discriminating in vitro dissolution methods, this highly intensive two-day course offers an interactive approach to the selection of a discriminating method, including discussion of biorelevant media and test conditions and an examination of appropriate testing equipment. New advancements in noncompendial apparatus and automated equipment (including fiber optics) in regards to innovative method development are also explored. The Biopharmaceutics Classification System will be an integral part of the method development aspects.

Accompanying these topics are presentations of regulatory guidelines for concise method validation and instructional exercises designed to enhance the student's learning experience. Participants will be encouraged to share their method development experiences and problems. This course is designed for individuals involved with research and development, quality control/quality assurance, and pharmacokinetics.

#### Topics:

- Overview of in vitro method dissolution
- Goals for dissolution method development
- Selection of test conditions
- Discrimination challenges
- Specification setting
- Test method generation
- Validation of the dissolution method
- Method transfer

Upon successful completion of this course the attendee should be able to:

- Develop a dissolution method according to current regulatory guidelines
- Assess the discriminatory power of your dissolution method
- Determine sources of error associated with the proposed method
- Perform thorough validation of all manual and automated methods
- Explore all aspects of method transfer



## Correlating Dissolution and Bioavailability: Understanding IVIVC

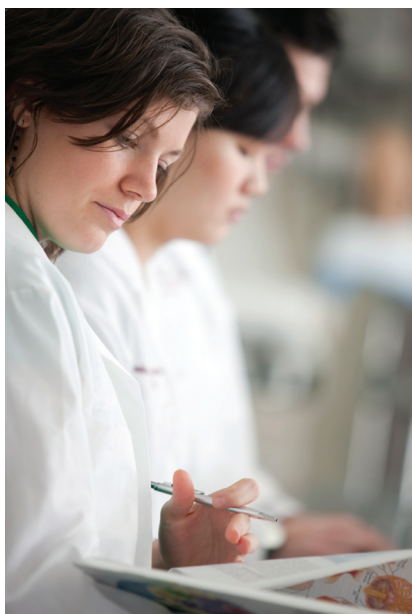
This two-day course is designed for advanced dissolution analysts and individuals involved with analytical method development and validation, as well as quality control/assurance, formulations, stability, pharmacology, pharmacokinetics and regulatory affairs. In vitro dissolution tests seem to be the most reliable predictors of in vitro availability. While the bioavailability of drug substances and drug products in humans can provide evidence of a potential relationship between dissolution and physiological availability, it is often impractical to perform extensive and expensive human testing. The goal of the course is to learn how to assess and develop methods of correlating in vitro and in vivo performance parameters.

### Topics:

- Fundamentals of correlation
- Bioavailability assessment
- Dissolution and bioavailability
- Basics of in vitro / in vivo correlation
- Characterization of dissolution data
- IVIVC parameters

Upon successful completion of this course the attendee should be able to:

- Discuss relevant aspects of dissolution and bioavailability
- Describe essentials of bioavailability assessment regarding various dosage forms
- Outline fundamentals of interpretation of dissolution profiling and data
- Explain regulatory perspective of IVIVC and SUPAC guidelines
- Characterize dissolution data
- Reduce, analyze, and interpret IVIVC data



## In Vitro Dissolution of Ointments, Creams, and Transdermals

Designed for academic researchers and industry scientists with interests in evaluating drug release from topical preparations, the goal of the two-day course is for the participant to learn the application of current dissolution testing techniques and equipment in the evaluation of drug release from semisolids and transdermal drug delivery systems (both immediate and controlled release). Discussion includes the use of this technology in product development and quality control. This course is designed for individuals involved in the development, manufacturing, or quality control of topical products.

### Topics:

- Compendial testing with Apparatus 5, 6, and 7
- New compendial chapters on diffusion cell technology
- Method validation
- Noncompendial testing
- Aspects of membrane selection
- Proposed calibration methodology
- SUPAC guidance
- Use of the Enhancer Cell and Franz Cell
- Method development
- World community regulatory requirements

The hands-on workshop includes:

- Use of the Enhancer Cell and Franz Cell
- Data analysis
- Method development
- Demonstration of Apparatus 5, 6, and 7

Upon successful completion of this course the attendee should be able to:

- Describe basics of compendial dissolution testing with USP Apparatus 5, 6, and 7
- Outline uses and restrictions of non-compendial testing and apparatus
- Explain uses of the Enhancer Cell and Franz Cell
- Describe ointment, cream, and transdermal method development and validation techniques
- Describe SUPAC guidelines for topicals
- Explain regulatory requirements with perspective on the world community





## Dissolution and Bioequivalence of Generic Pharmaceuticals

This intensive two-day course is designed for the advanced dissolution analyst, as well as those involved in drug metabolism, drug disposition, generics, pharmacokinetics, and analytical method development. Participants involved with research and development, quality control/quality assurance, and pharmacokinetics learn how to demonstrate bioavailability and bioequivalence of pharmaceutical formulations without designing and executing time consuming and expensive clinical trials in humans. Two pharmaceutical formulations are considered bioequivalent (BE) when their respective rate and extent of bioavailability (BA) following administration of a unit dose under standard clinical experimental conditions are substantially similar. In vitro testing is an ideal surrogate for predicting BA or BE of pharmaceutical formulations. This course presents the fundamental considerations necessary to understand BA or BE and the utility of in vitro dissolution testing in the prediction of BA or BE.

### Topics:

- Biopharmaceutics Classification System (BCS)
- Dissolution method development for generic formulations
- Characterization/computation of dissolution parameters
- $f_1$  and  $f_2$  equations
- IVIVC relevant to generics
- Computation of PK parameters for BA/BE
- Worldwide regulatory requirements for demonstration of BE, design of a clinical protocol

Upon successful completion of this course the attendee should be able to:

- Understand BCS and dissolution testing
- Develop dissolution test method development for generic formulations
- Use  $f_1$  and  $f_2$  expressions in generic drug development
- Comprehend IVIVC relevant to generic pharmaceuticals
- Compute PK parameters for BA and BE
- Design basic clinical protocol

### Dissolution Seminar Series

For more information on dissolution seminars, contact us at **dissolution.hotline.agilent.com**.

For more information regarding on-site courses, contact your local Agilent representative.

## Dissolution Exchange

Learn. Solve. Discuss.

The Agilent Dissolution Exchange is a free and interactive resource to learn about dissolution testing, solve laboratory testing challenges and discuss topics related to the dissolution industry. It offers an expansive set of resources in the learn, solve and discuss areas of the program. These resources include:

- Dissolution 1-on-1 self-paced dissolution tutorial developed by knowledgeable Agilent chemists
- Recorded webinars and presentations
- Dissolution Discussion Group
- White papers, posters, newsletters, etc.
- Contact resources for dissolution-related questions, including instrument selection, qualification, method development and more

For more information, visit <http://dissolution.chem.agilent.com>



Be a part of the Dissolution Exchange

## Dissolution 1-on-1

Standardize your laboratory training with Agilent's self-paced course

### DID YOU KNOW?

#### Dissolution 1-on-1

Now available in Chinese and Spanish.

To make it easier for analysts to get up-to-date dissolution training, Agilent recently launched a newly updated version of Dissolution 1-on-1, its industry-leading, self-paced training course on the Dissolution Exchange. This comprehensive online course is free and can serve as a training resource for new analysts or as a refresher for experienced dissolution chemists, technicians, reviewers, and metrologists.

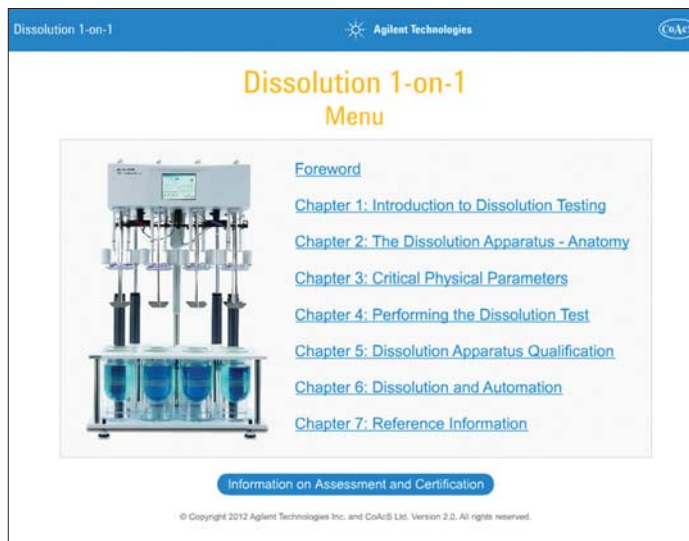
Agilent has partnered with CoAcS, Ltd. to produce a comprehensive assessment package that you can purchase to test analysts on the course material. This testing package allows you to identify managers by site or department that can in turn identify those that need training and assessment. The training package offers up to three opportunities for successful completion, at which time the user and associated manager receive confirmation of satisfactory completion. Training packages are managed and tracked online for your convenience.

### Dissolution 1-on-1

Dissolution 1-on-1 includes the latest industry changes regarding dissolution apparatus qualification, plus an introduction to dissolution testing.

The course covers:

- The Dissolution Apparatus – Anatomy
- Critical Physical Parameters
- Performing the Dissolution Test
- Dissolution Apparatus Qualification
- Dissolution and Automation



Dissolution 1-on1 Self-paced Training Course

## Video Training

### Labcast: Live from the Agilent Global Broadcast Studio



#### What is Labcast?

In simple terms, Labcast is a way for Agilent to communicate through video directly to your PC, tablet or phone. Video broadcasting from our studios in Cary, NC allows instantaneous conferencing, training and services to all points around the globe. Agilent trainers can televisit you and your employees to explore the latest methods and techniques for effective dissolution testing. Keep your lab personnel updated on new practices with ongoing education programs and even link with other locations for standardized training sessions. All this without leaving home. Contact our team at [dissolution.hotline@agilent.com](mailto:dissolution.hotline@agilent.com) to learn more!

### Dissolution Apparatus Qualification; PVT versus MQ, What is Right For Your Laboratory

#### 60-minute module

Agilent's Laboratory Services has prepared a one-hour seminar on the qualification of USP Apparatus 1 and 2. Significant changes have occurred in dissolution apparatus qualification during the last several years. The USP Performance Verification Test (PVT) migrated from a range test to a much more definitive test which focuses greatly on accuracy and variability of the dissolution apparatus through new acceptance criteria highlighting the geometric mean and %CV. Likewise, the alternative approach towards apparatus qualification, enhanced Mechanical Qualification (MQ) will also be highlighted and discussed in detail.

The module addresses the following topics:

- Overview of the Dissolution Performance Verification Test
- Background of Performance Qualification (PQ) and Analytical Instrument Qualification (AIQ)
- Dissolution Mechanical Qualification (MQ) standards, requirements, specifications and tolerances
- PVT and MQ: finding the right test for your laboratory
- Evaluation of why laboratories are using the MQ test



## Dissolution Aberrant Data Investigation

### 60-minute module

Lack of proper failure investigation and documentation generally leads the list of problems in FDA observations of analytical laboratories. Many standard operating procedures for handling out-of-specification data do not properly deal with dissolution data. Join our chemists for a live seminar on the proper procedures for investigating and documenting out-of-specification dissolution test results in your lab.

The module addresses the following topics:

- Detailed procedures for properly investigating and documenting out-of-specification results
- Ideas about how rudimentary investigations may uncover calculation or standard preparation errors proceeding to additional testing
- Discussion on how proper investigation and reporting can limit the possibility that an analyst will repeat an error in a second test
- Review of actual FDA observations

## Apparatus 3

### 60-minute module

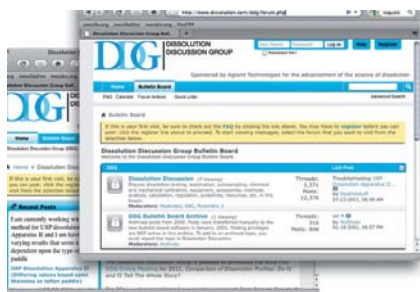
The reciprocating cylinder, or Apparatus 3, became an official method in the USP XXII, Fifth Supplement. Given the increasing introduction of modified and extended release products, this valuable tool is growing in usage. This one-hour presentation covers the historical development as well as the principles of the operation and is designed for anyone interested in learning how the instrument operates.

The module addresses the following topics:

- Evolution of Apparatus 3 from previous dissolution apparatus
- Principles of operation
- Demonstration of Apparatus 3
- When to consider Apparatus 3 in method development
- Calibration requirements
- Automation of the sampling process
- Options / accessories for unique dosage forms

## Dissolution Discussion Group

Tap into the knowledge-base from dissolution users around the world!



[www.dissolution.com](http://www.dissolution.com)

## Practical Solutions Newsletter

You can have this dissolution-specific newsletter delivered right to your inbox! With the latest on our dissolution products, services and the ever-evolving regulatory environment, Practical Solutions is your resource to stay informed.

To receive your copy, register at

[www.agilent.com/en-us/promotions/practical-solutions](http://www.agilent.com/en-us/promotions/practical-solutions)



## Dissolution Hotline

Agilent's dissolution chemists are always available to assist with questions about finding the instrument that best supports your laboratory, method development and regulatory support.

Contact our team at [dissolution.hotline@agilent.com](mailto:dissolution.hotline@agilent.com)



Apparatus 6	132
Apparatus 7	9, 54-56, 73-74, 76-79, 82, 94, 155, 167, 171, 154
Autocalibration	16, 47-49, 66, 72, 93, 155
Automated Sampling, Autosampling, Autosampler	16, 47-49, 66, 72, 93, 155
Automated UV Dissolution Systems	95
AutoTemp In-vessel Temperature Measurement	16-17, 19-20, 47-49, 94
<b>B</b>	
Barbed Angle Adapter	62
Barbed Fitting	149
Baskets	
Bolus	25, 33, 36-37, 141
Gold-plated	25, 33, 36, 77-79, 137, 154-155
Mesh	25, 33, 36, 77-79, 137, 154-155
Mini	25, 33, 36, 74
PTFE-coated	9, 25, 33, 36, 142, 154
Sinkers	46
Stainless Steel, Electropolished	25, 38, 141-142
Suppository	24, 32, 36
Verified (with Certificate)	17, 19, 24-25, 32, 36-38, 141-142
Bucket Shaft	159
Battery	47-49, 147
Bent Canula	
BIO-DIS Reciprocating Cylinder	9, 65-68, 94, 167
BIO-DIS Reciprocating Cylinder	67
Cask	65
Canister	64
Carrier	
Cartridge, Peristaltic Pump	
Cary 60 UV Dissolution System	94, 120-121
Cary 60 UV-visible Spectrophotometer	97-99, 115-116, 121
Cary 8454 UV Dissolution Spectrophotometer	
Cary WinUV Dissolution Software	
Cell Changer	
Centering	
Ring	
Tool	
Certificate of Conformance (COC)	24, 30, 14, 18
ChemStation UV-visible Software	
Chinese Pharmacopoeia (CP)	
Crimp, Taring	
COC (Certificate of Conformance)	
Collet	
Color coded Taring	
Compendial	
Compliance Services	
Critical Head Shaft	
Connector	
Contact Lens	
Contact Uniformity	
Controlled Release	
Conventional Filtration	
Conversion Kit	2



# ALPHABETICAL INDEX

## 1

100 Automated Disintegration  
Apparatus..... 62, 137, 167  
100 mL Conversion Kit ..... 43-44, 145  
10-degree Lift (Wedge)..... 161  
1220 Infinity II LC System..... 133  
1260 Infinity II LC System..... 133  
1290 Infinity II System..... 132

## 2

200 mL Conversion Kit ..... 43-44, 145  
21 CFR Part 11 ..... 82, 86, 96, 100,  
..... 107, 117-118, 129-130  
250 Friability Tester – Legacy instrument,  
accessories available ..... 161  
280-DS Mechanical Qualification  
System..... 84-85, 87, 168

## 3

350 Tapped Density Tester – Legacy  
instrument, accessories available ... 162

## 4

400-DS Apparatus 7 ..... 75-80, 167

## 5,6

500 mL Sampling Kit ..... 48

## 7

708-DS Dissolution Apparatus..... 17, 19-20,  
..... 94, 167

## 8, 9

810 Peristaltic Pump – Legacy instrument,  
accessories available, see  
850-DS Dissolution Sampling Station.....91  
850-DS Dissolution Sampling  
Station..... 66, 72, 93, 167

## A

Abrasion Drum..... 161  
Acoustic Cabinet..... 162  
Acrylic Water Bath ..... 62  
Adjustment Tool ..... 58  
Alignment Tool ..... 58  
American Society of Testing and Materials  
(ASTM).....5, 8, 87, 163  
Analytical Instrument Qualification  
(AIQ)..... 15, 137, 178  
Apparatus 1 ..... 9, 17, 19-20, 24-25,  
..... 82-83, 94, 171, 178

Apparatus 2 ..... 9, 17, 19-20, 24-25, 82,  
..... 171, 178  
Apparatus 3 ..... 9, 82, 65, 67, 94, 171  
Apparatus 5 ..... 9, 17, 19-20, 54-56, 82,  
..... 94, 171  
Apparatus 6 ..... 9, 17, 19-20, 54-56, 82-83,  
..... 94, 171  
Apparatus 7 ..... 9, 54-56, 70-74, 76-79,  
..... 82, 94, 155, 167, 171  
Autocalibration ..... 154  
Automated Sampling, Autosampling,  
Autosampler ..... 16, 47-49, 66,  
..... 72, 93, 155  
Automated UV Dissolution Systems ..... 95  
AutoTemp In-vessel Temperature  
Measurement.....16-17, 19-20,  
..... 47-49, 94

## B

Barbed Angle Adapter..... 62  
Barbed Fitting..... 149  
Baskets  
Bolus ..... 141  
Gold-plated ..... 25, 33, 36-37,  
Mesh..... 25, 33, 36, 77-79, 137, 154-155  
Mini..... 25, 33, 36, 74  
PTFE-coated ..... 9, 25, 33, 36, 142, 154  
Sinker ..... 46  
Stainless Steel, Electropolished..... 25,  
..... 38, 141-142  
Suppository ..... 24, 32, 36  
Verified (with Certificate) ..... 25  
Basket Shaft ..... 17, 19, 24-25,  
..... 32, 36-38, 141-142  
Battery..... 159  
Bent Cannula..... 47-49, 147  
BIO-DIS Reciprocating  
Cylinder ..... 9, 65-68, 94, 167  
BIO-DIS Reciprocating Cylinder  
Caps ..... 67  
Conversion Kit ..... 65  
Outer Media Tube ..... 64  
Screen ..... 64, 68  
Tubes ..... 64, 67  
Vessel Carrier ..... 64, 67  
Brush, Tablet Fragment ..... 159

## C

Cabinet, Acoustic..... 162  
Calibration ..... 159  
Cannula  
Extension..... 147

Return ..... 30, 102, 112, 147  
Sample/Return..... 149  
Sampling ..... 21, 30-31, 48-49, 51,  
..... 102, 112-114, 147  
Cap  
Decanting..... 158  
Upper and Lower ..... 64  
Viton Liner ..... 157  
Capsule..... 9, 45, 127  
Carryover ..... 114, 128  
Cartridge, Peristaltic Pump ..... 154, 157  
Cary 60 UV Dissolution  
System.....94, 120-121, 123  
Cary 60 UV-visible Spectrophoto-  
meter..... 97-99, 115-116, 122-123  
Cary 8454 UV Dissolution System or  
Spectrophotometer .....97-99  
Cary WinUV Dissolution  
Software..... 117-120, 123  
Cell Changer..... 122  
Centering  
Ring ..... 149  
Tool ..... 153  
Certificate of Conformance  
(COC)..... 24-30, 33, 35-39, 42,  
..... 44, 58, 141-142, 154  
ChemStation UV-visible Software..... 107  
Chinese Pharmacopeia (CP).....29, 42, 44  
Clamp, Tubing..... 62  
Collet ..... 142  
Color-coded Tubing ..... 156  
Compendial ..... 8, 77, 155, 171, 174  
Compliance Services ..... 166  
Conical Head Shaft..... 33, 37  
Connector..... 149  
Contact Lens.....77-79  
Content Uniformity ..... 125  
Controlled Release ..... 170  
Conventional Filter Tip ..... 50  
Conversion Kit.....27-29, 43-44,  
..... 65, 149, 158  
Converter..... 123  
Correlating Dissolution and Bioavailability:  
Understanding IVVC Seminar..... 173  
Cover, Evaporation ..... 16, 19-21, 27-31,  
..... 42-44, 53, 58, 123, 145  
Cream ..... 9, 57, 174  
Cup, Suspension ..... 56  
Cuprophane..... 58  
Cuvette Holder..... 123  
Cylinder, Graduated..... 162

**D**

Decanting Cap ..... 158  
 Disintegration  
   100 Automated Disintegration  
     Apparatus ..... 62, 135, 137-138, 163-166  
     Basket ..... 136-137  
     Beaker ..... 136, 137  
     Fluted Disks ..... 136, 138  
 Disk, Plastic ..... 137  
 Dissolution 1-on-1 Training Course ..... 177  
 Dissolution and Bioequivalence of  
   Generic Pharmaceuticals Seminar .. 175  
 Dissolution Apparatus  
   400-DS ..... 11, 76-79,  
   708-DS ..... 9, 11, 17-21, 94  
   Apparatus 1 ..... 12-13, 15-25, 32-33,  
     ..... 36-38, 58, 66, 72, 82-83, 93-94,  
     ..... 141-142, 153, 166, 171, 178  
   Apparatus 2 ..... 12-13, 15-25, 32, 36-38,  
     ..... 58, 66, 72, 82-83, 141-142,  
     ..... 153, 166, 171, 178  
   Apparatus 3 ..... 65-68, 72-73, 82-83, 167, 171  
   Apparatus 5 ..... 12-13, 15-23, 55-56,  
     ..... 66, 72, 82-83, 171  
   Apparatus 6 ..... 12-13, 15-23, 55-56,  
     ..... 66, 72, 82-83, 171  
   Apparatus 7 ..... 55-56, 65-67, 70-73,  
     ..... 76-77, 82-83, 167, 171  
   BIO-DIS ..... 65-68, 94  
   Paddle Over Disk ..... 9, 55  
   Reciprocating Cylinder ..... 9, 65-68,  
     ..... 73-74, 94, 151  
   Reciprocating Holder ..... 9, 71-74, 94  
   Rotating Basket ..... 9  
   Rotating Cylinder ..... 9, 20, 54, 94, 151  
   Rotating Paddle ..... 9  
 Dissolution Discussion Group  
   (DDG) ..... 180  
 Dissolution Exchange ..... 176  
 Dissolution Hotline ..... 180  
 Dissolution Method Development and  
   Validation Seminar ..... 172  
 Dissolution Sampling Station,  
   Automated ..... 66, 72, 93, 155  
 Dissolution Workstation Software ..... 81  
 Dosage/dosage form ..... 9, 33, 41, 46,  
   ..... 64, 94, 126, 179  
 Dosage Delivery Module  
   (DDM) ..... 16-19,  
   ..... 30-31, 48, 150  
 Drug-eluting Stent (DES) ..... 9

Drug Release ..... 75, 171  
 Drum, Friability ..... 161  
 Dual-chamber Friability Drum ..... 161  
 DVH (Direct Vessel Heating) ..... 144

**E**

EaseAlign Vessels/  
   Centering Ring ..... 143, 145, 150  
 Educational Seminars ..... 170  
 Enhancer Cell ..... 9, 27, 58  
 Evaporation Cover ..... 16-17, 19-21,  
   ..... 27-31, 42-44, 53, 150  
 Evaporation Plug ..... 21, 31, 53  
 Extended Release ..... 8-9, 69, 73, 75, 94, 127

**F**

Fiber Optic Online UV Dissolution  
   System ..... 122-123  
 Fiber Optic Probe ..... 97, 122-123  
 Filter  
   Conventional Filter Tip ..... 91  
   Full Flow Filter ..... 91  
 Fitting, Water Bath ..... 62  
 Float-A-Lyzer Holder ..... 37  
 Floating Dosage Form ..... 9  
 Flow Cell  
   Content Uniformity ..... 126-130  
   UV ..... 96, 104, 120-121  
 Fluted Disk ..... 136  
 Food and Drug Administration  
   (FDA) ..... 5, 8, 13, 42, 165  
 Franz Cell ..... 57, 174  
 Fundamentals of Dissolution ..... 171

**G**

Gel ..... 9, 57  
 Graduated Cylinder ..... 162

**H**

Heater/Circulator ..... 16-17, 19, 30,  
   ..... 64, 70, 136  
 Height Gauge ..... 153  
 High Performance Liquid Chromatography  
   (HPLC) ..... 132-133  
 Holder  
   Acrylic Pointed Rod ..... 70  
   Angled Disks ..... 70  
   Cuvette ..... 123  
   Filter ..... 49  
   Float-A-Lyzer ..... 25, 32, 36-38,  
     ..... 141-142, 154  
   Intrinsic ..... 60

Reciprocating ..... 9, 54, 65, 70-73  
 Sample ..... 25, 72  
 Spring ..... 71-73  
 Stent ..... 70, 77  
 Transdermal ..... 54, 70  
 Weighted ..... 56  
 HPLC ..... 132-133

**I**

Implants ..... 8-9  
 In Situ ..... 20, 96, 115  
 Interchangeable  
   Paddle/Basket Shafts ... 24-25, 34, 38-39  
 Intrinsic Dissolution Apparatus ..... 60, 151  
 In Vitro / In Vivo Correlation  
   (IVIVC) ..... 172, 175  
 In Vitro Dissolution of Ointments,  
   Creams and Transdermals  
   Seminar ..... 174

**J**

Japanese Pharmacopeia (JP) ..... 46  
 Japanese Sinkers Basket ..... 46

**L**

Labcast ..... 178  
 Legacy Instruments -  
   Accessories and Parts ..... 139  
 Luer Lock Type Cannula ..... 47-49

**M**

Manifold ..... 17, 19-21, 27-32, 42-44,  
   ..... 47-49, 97, 102-105, 109-110,  
   ..... 112-116, 147-149  
 Manual Sampling ..... 17-20, 30-32,  
   ..... 47-49, 94, 147  
 MCT (Multicell Transport) ..... 96  
 Media Replacement ..... 76, 91, 112, 154  
 Mesh ... 9, 24-25, 32-33, 36-38, 46, 55-56,  
   ..... 65-68, 73-74, 77-79, 137, 158  
 Microparticle ..... 9  
 Modified Release ..... 9  
 Motorized Sampling Manifold ..... 47-49  
 Multicell Changer ..... 97, 123  
 Multicell Transport (MCT) ..... 96  
 Multicell UV Dissolution  
   System ..... 94, 97, 120-121  
 Multicomponent Analysis ..... 96, 98-99, 101  
 Multiplexer ..... 97, 115-116, 122-123

**N**

NIST ..... 98

## O

Offline UV Dissolution..... 106-107  
Ointment..... 9, 57, 170  
Online UV Dissolution..... 100  
Osmotic Pump..... 9, 69, 94

## P

Paddle Over Disk..... 9, 55  
Paddles..... 25, 32, 36-38  
Paddles  
Electropolished..... 25, 34, 39, 142  
Mega..... 25, 34, 39, 142  
Mini..... 25, 34, 39, 142  
PEEK..... 25, 34, 39, 142  
PTFE-coated..... 25, 34, 39, 142  
Stainless Steel..... 25, 34, 39, 142  
Storage Rack..... 33, 38, 58, 142  
Verified (with Certificate)..... 25, 29, 38-39  
Paper, Printer..... 30  
Path Length..... 101, 119-121  
Performance Verification Testing  
(PVT)..... 7, 86, 165  
Peristaltic Pump..... 66, 72, 96, 104-105,  
..... 109, 112, 114, 118,  
..... 120, 123, 154, 157  
Pharmacopeia..... 5, 8  
Physical Parameter..... 13, 15, 16,  
..... 22, 86, 166  
Plastic Disk..... 138  
Platform, Tapped Density Tester..... 140, 162  
Plunger Assembly..... 137  
Powder..... 9, 46, 127  
Preventive Maintenance (PM)..... 165  
Printer Paper..... 30-32, 147, 152, 154  
Printer Paper  
Ribbon..... 152  
Thermal..... 32  
Probe  
Fiber Optic..... 97, 115-116, 122-123  
Temperature..... 17, 19-20, 76-77,  
..... 84, 87, 138  
PTFE Cell..... 57  
Punch..... 60

## Q

QA/QC..... 4  
Qualification..... 85-88, 165

## R

Reciprocating Disk..... 71-73  
Release Rate..... 54, 57, 64-68  
Replacement Needle Kit..... 155

Replacement Screens..... 55, 158  
Replacement Valve Kit..... 155  
Resident Probe..... 30-31, 47-49, 150  
Resident Sampling Kit..... 47-49  
Rinse Tray..... 32, 154  
RPM Sensor..... 152

## S

Sample Tray..... 17, 20, 66, 73, 120, 123  
Sample Tubes..... 64, 67-68  
Sampling  
Autosampling..... 16, 47-49  
Manifold..... 17, 19, 29-30, 47-49,  
Manual..... 13, 18, 17-20, 32, 47-49, 145, 147  
Station..... 72, 149, 155-157, 167  
Tray..... 154  
Screen..... 9, 54-55, 64-68, 158  
Seminar  
Correlating Dissolution and Bioavailability:  
Understanding IVIVC..... 173  
Dissolution and Bioequivalence of  
Generic Pharmaceuticals..... 175  
Dissolution Method Development and  
Validation..... 172  
Fundamentals of Dissolution..... 171  
In Vitro Dissolution of Ointments,  
Creams and Transdermals..... 174  
Services..... 164-168  
Shaft, Basket and/or Paddle..... 17, 19-20,  
..... 24-25, 33, 37  
Shield..... 159  
Sinkers..... 46  
Sipper..... 106  
Software  
Cary 60 Dissolution  
Software..... 120-121, 123  
Cary WinUV Dissolution  
Software..... 118-120  
ChemStation UV-visible Software... 107  
Dissolution Workstation Software... 82-83  
Spacer..... 145  
Stent..... 9, 70, 74-75, 77-79, 127  
Sustained Release..... 9, 63

## T

Thickness Gauge..... 159  
Training..... 166, 178  
Transdermal Patch Holder..... 50, 55  
Trim Pot Tool..... 159  
TruCenter Vessel..... 144  
Tubing..... 30-32, 62, 67, 73, 76,  
..... 101, 120-121, 148-149, 154-157

## U

UHPLC..... 132-133  
Upgrade..... 21, 30, 122, 145  
USP (United States Pharmacopeia)  
<1087>..... 59  
<1704> Semisolid Drug Products..... 57  
General Chapter <724>..... 54

## V

Valve..... 28-30, 42, 44, 58, 62, 105, 108-110, 149  
Verification Tool..... 152  
Verticality..... 26-29, 41, 86, 145  
Vessels  
100 mL..... 26-30, 42, 44, 57, 143, 145  
1L..... 26-30, 42, 44, 57, 143, 145  
200 mL..... 28-30, 42, 44, 57, 143  
2L..... 26-30, 42, 44, 57, 145  
300 mL..... 65-68,  
EaseAlign..... 41, 143, 145  
Low actinic - red..... 16-17, 19, 26-30,  
..... 42, 44, 58, 94, 143  
TruAlign..... 28-30, 41-42, 44  
TruCenter..... 28-30, 41-42, 44, 144  
Verified (with Certificate)..... 28-30,  
..... 42, 44, 143

## W, X, Y, Z

Water Bath..... 62, 151  
Weight..... 46, 126, 159  
Wire..... 45

1005-1670.....	148, 156	11-1301.....	121	12-1503.....	144	12-3200.....	49
1005-1671.....	148, 156	11-1302.....	121	12-2065.....	37	12-3210.....	49
1005-1672.....	149, 156	11-1305.....	121	12-2066.....	37	12-3215.....	147
1005-1673.....	149, 156	11-1310.....	121	12-2067.....	37	12-3216.....	147
1005-1674.....	149, 156	11-1315.....	121	12-2068.....	37	12-3217.....	147
1005-1687.....	148, 156	11-1320.....	121	12-2069.....	37	12-3219.....	49
1005-1688.....	148, 156	11-1424.....	123	12-2096.....	25, 38, 142	12-3220.....	49
1005-1692.....	148, 156	11-1425.....	123	12-2099.....	142	12-3221.....	49
1005-1693.....	148, 156	11-1426.....	123	12-2100.....	25, 36	12-3222.....	49
1005-1694.....	149, 156	11-1429.....	123	12-2100V.....	25, 36	12-3223.....	49
1005-1695.....	149, 156	11-1430.....	123	12-2102.....	25, 36	12-3230.....	49
1005-1696.....	149, 156	11-1435.....	123	12-2105.....	36	12-4000.....	58
1005-1722.....	149, 156	11-1440.....	123	12-2110.....	36	12-4001.....	58
1005-1729.....	149, 156	11-1445.....	123	12-2115.....	36	12-4002.....	58
1005-1778.....	148, 156	1200-1012.....	21, 31, 53	12-2120.....	36	12-4015.....	58
1005-1779.....	148, 156	12-0200.....	148	12-2120V.....	36	12-4020.....	58
1005-1780.....	148, 156	12-0205.....	148	12-2125.....	36	12-4021.....	58
1005-1782.....	148	12-0301.....	145	12-2130.....	36	12-4022.....	58
1005-1783.....	148	12-0308.....	146	12-2140.....	36	12-4050.....	56
1005-1784.....	148, 156	12-0310.....	145	12-2145.....	36	12-4055.....	56
1005-1785.....	148, 156	12-0312.....	146	12-2146.....	37	12-4060.....	56
1005-1786.....	149, 156	12-0314.....	146	12-2148.....	37	12-4100.....	151
1005-1787.....	149, 156	12-0315.....	146	12-2149.....	37	12-4101.....	60
1005-1791.....	156	12-0318.....	145	12-2150.....	37	12-4105.....	151
1005-1793.....	156	12-0320.....	145, 153	12-2151.....	37	12-4110.....	60
1005-1808.....	62	12-0321.....	145, 153	12-2152.....	37	12-4111.....	151
1005-1891.....	157	12-0463.....	150	12-2154.....	37	12-4120.....	60
1005-1892.....	157	12-0464.....	150	12-2155.....	37	12-4130.....	60
1005-1893.....	157	12-0592.....	123	12-2165.....	37	12-4140.....	60
1005-1894.....	157	12-0595.....	84, 87	12-2170.....	37	12-4150.....	60
1005-1897.....	21, 32, 53	12-1049.....	32	12-2180.....	37	12-4200.....	55
1005-1898.....	21, 31, 53	12-1320.....	142	12-2185.....	37	12-4200V.....	55
1005-1920.....	30, 157	12-1330.....	142	12-3000.....	46	12-4201.....	55
1005-1921.....	30, 157	12-1350.....	32, 38	12-3050.....	46	12-4209.....	55
1005-1922.....	30, 157	12-1352.....	32, 38	12-3055.....	46	12-4210.....	55
1005-1923.....	30, 157	12-1360.....	151	12-3056.....	46	12-4211.....	55
1005-1952.....	157	12-1360V.....	151	12-3060.....	46	12-4230.....	55
1005-1953.....	157	12-1370.....	58	12-3062.....	46	12-4231.....	55
1005-1954.....	157	12-1371.....	55	12-3063.....	46	12-4232.....	55
11-1011.....	123	12-1371V.....	55	12-3064.....	46	12-4300.....	55
11-1012.....	123	12-1372.....	55	12-3065.....	46	12-4310.....	55
11-1014.....	123	12-1450.....	29, 42, 44	12-3066.....	46	12-4320.....	55
11-1125.....	123	12-1451.....	29, 42, 44	12-3067.....	46	12-4330.....	55
11-1141.....	123	12-1452.....	42	12-3068.....	46	12-4400.....	55
11-1226.....	121	12-1501.....	29, 42	12-3070.....	46	12-4410.....	55
11-1300.....	121	12-1502.....	143	12-3072.....	46	12-5000.....	143-144

# PART NUMBER INDEX

12-5000V.....	143-144	12-6062.....	149	12-7335.....	55, 61	14-3603.....	25, 38
12-5010.....	143, 155	12-6065.....	149	12-9005.....	152	14-3613.....	25, 38
12-5010V.....	143	12-6070.....	149	12-9010.....	152	14-3631.....	25, 38
12-5033.....	144, 146	12-6100.....	145	12-9015.....	152	16-3602.....	25, 38
12-5034.....	144, 146	12-6100V.....	145	12-9020.....	152	16-3603.....	25, 38
12-5035.....	144	12-6101.....	145	12-9021.....	152	16-3613.....	25, 38
12-5035V.....	144	12-6115.....	149	12-9025.....	152	16-3631.....	25, 38
12-5039.....	144	12-6300.....	150	12-9988.....	32	17-0110.....	154
12-5039V.....	144	12-6301.....	150	12-9989.....	32	17-1000.....	154
12-5040.....	143	12-6310.....	150	12-9993.....	159	17-1050.....	154
12-5041.....	143	12-6311.....	150	12-9995.....	147, 152, 154, 159	17-1200.....	154
12-5050.....	143	12-6315.....	145, 150	12-9996.....	147, 152, 154, 159	17-1300.....	154
12-5051.....	143	12-6320.....	150	12-9997.....	147, 152, 154	17-1310.....	154
12-5055.....	143	12-6326.....	150	12-9998.....	159	17-1340.....	32
12-5070.....	143	12-6327.....	150	13-0010.....	29, 42	17-1341.....	32, 154
12-5070V.....	143	12-6328.....	150	13-0020.....	143	17-1345.....	32
12-5075.....	143	12-6329.....	150	13-0030.....	144	17-1351.....	32, 154
12-5080.....	143	12-6330.....	150	13-3589.....	142	17-1400.....	154
12-5120.....	144	12-6350.....	150	13-3590.....	142	17-1500.....	154
12-5120V.....	144	12-6352.....	150	13-3591.....	142	17-3100.....	148
12-5125.....	144	12-6353.....	150	13-3593.....	142	17-3102.....	148
12-5130.....	144	12-6358.....	150	13-3594.....	39, 142	17-3107.....	148
12-5145.....	28, 42	12-6368.....	29, 42, 44, 58	13-3595.....	39, 142	17-3116.....	148
12-5146.....	28, 42	12-6370.....	31, 53	13-3596.....	39, 142	17-3150.....	49, 147
12-5147.....	28-29, 42	12-7200.....	153	13-3597.....	39, 142	17-3151.....	32, 49
12-5148.....	28, 42	12-7210.....	153	13-3598.....	39, 142	17-3152.....	32, 49
12-5149.....	28, 42	12-7220.....	153	13-3599.....	39, 142	17-3300.....	147
12-5149V.....	28, 42	12-7230.....	61	13-3600.....	39, 142	17-3305.....	147
12-5152.....	28, 42	12-7240.....	61	13-3601.....	39, 142	17-3306.....	147
12-5152V.....	28, 42	12-7250.....	61	13-3604.....	25, 38	17-3307.....	147
12-5153.....	28, 42	12-7250V.....	61	13-3605.....	25, 38	17-3309.....	147
12-5153V.....	28, 42	12-7260.....	61	13-3606.....	25, 38	17-3311.....	147
12-5154.....	28, 42	12-7260V.....	61	13-3607.....	25, 38	17-3312.....	147
12-5157.....	28, 42	12-7270.....	61	13-3608.....	25, 29, 38, 58	17-3313.....	147
12-5157V.....	28, 42	12-7270V.....	61	13-3612.....	38	17-3314.....	147
12-5158.....	28, 42	12-7280.....	61	13-3614.....	38	17-3317.....	147
12-5158V.....	28, 42	12-7280V.....	61	13-3615.....	141	17-3320.....	147
12-5159.....	28, 42	12-7300.....	61	13-3620.....	36, 141	17-3330.....	48
12-5170.....	28, 42, 58	12-7300V.....	61	13-3621.....	36, 141	17-3335.....	48
12-5200.....	143	12-7301.....	61	13-3622.....	36, 141	17-4000.....	51
12-5200V.....	143	12-7301V.....	61	13-3629.....	36, 141	17-4001.....	51
12-5500.....	143	12-7310.....	153	13-3630.....	36, 141	17-4003.....	51
12-5500V.....	143	12-7310V.....	153	13-3632.....	25, 38	17-4004.....	51
12-5505.....	143	12-7325.....	61	13-3634.....	25, 38	17-4005.....	51
12-6050.....	149	12-7330.....	61	13-3636.....	25, 38	17-4010.....	51
12-6060.....	149	12-7330V.....	61	14-3602.....	25, 38	17-4011.....	51

17-4015.....	51	27-2007.....	68	27-8035.....	73	33-9049.....	79
17-4020.....	51	27-2010.....	68	27-8036.....	73	33-9050.....	79
17-4021.....	51	27-2015.....	68	27-8600.....	73	33-9051.....	79
17-4025.....	51	27-2099.....	68	27-8620.....	73	33-9052.....	79
17-4040.....	51	27-2100.....	68	27-8621.....	73	33-9053.....	79
17-4045.....	51	27-2103.....	68	27-8622.....	73	37-0200.....	138
17-4050.....	51	27-2105.....	68	3081-0004.....	51	37-1040.....	138
17-4055.....	51	27-2110.....	68	3090-0159.....	149	37-2100.....	138
17-4100.....	51	27-2115.....	68	3090-0160.....	149	37-2105.....	138
17-4110.....	51	27-2120.....	68	32-0110.....	158	37-2110.....	138
17-4120.....	51	27-2125.....	68	32-0120.....	158	37-2200.....	138
17-5001.....	93, 155	27-2200.....	68	32-1101.....	158	37-2205.....	138
17-5020.....	93, 155	27-2205.....	68	32-1105.....	158	37-2210.....	138
17-5030.....	78, 155	27-2210.....	68	32-1121.....	158	37-3001.....	137
17-5035.....	155	27-2215.....	68	32-1125.....	158	37-3001V.....	137
17-5040.....	155	27-2300.....	68	32-1205.....	158	37-3010.....	137
17-5100.....	154	27-2305.....	68	32-1225.....	158	37-3020.....	137
17-6000.....	155, 157	27-2310.....	68	32-1300.....	158	37-3030.....	137
17-6005.....	155, 157	27-2315.....	68	32-1301.....	158	37-3030V.....	137
17-6010.....	155, 157	27-2320.....	68	32-1302.....	158	37-3040.....	137
17-6050.....	154	27-2400.....	68	32-1305.....	158	37-3050.....	137
17-6070.....	154	27-2401.....	68	32-5001.....	158	37-4000.....	138
17-6200.....	155	27-3000.....	73	32-5021.....	158	37-4000V.....	138
17-6210.....	155	27-3001.....	73	32-5030.....	158	37-4010.....	138
27-0100.....	73	27-3002.....	73	32-5521.....	158	37-4020.....	138
27-0101.....	73	27-5000.....	67	32-5530.....	158	37-4100.....	138
27-0102.....	73	27-5010.....	67	33-0105.....	78	37-4110.....	138
27-0103.....	73	27-5100.....	67	33-0505.....	78	37-4120.....	138
27-0104.....	73	27-5110.....	67	33-9000.....	78	37-5000.....	138
27-0105.....	73	27-5120.....	67	33-9001.....	78	37-5000V.....	138
27-0106.....	73	27-5130.....	73	33-9002.....	78	37-5005.....	138
27-0107.....	73	27-5135.....	73	33-9005.....	78	37-5010.....	138
27-0108.....	73	27-5160.....	73	33-9006.....	78	37-5200.....	138
27-0109.....	73	27-6000.....	67	33-9007.....	78	37-5305.....	138
27-0126.....	67, 73	27-6005.....	67	33-9009.....	78	37-5305V.....	138
27-0127.....	67, 73	27-6010.....	67	33-9010.....	78	37-9000.....	138
27-1000.....	67	27-6100.....	65	33-9012.....	79	42-0120.....	159
27-1010.....	67	27-6105.....	65	33-9013.....	78	42-0250.....	159
27-1020.....	67	27-6201.....	65	33-9022.....	79	42-0300.....	159
27-1030.....	67	27-6203.....	65	33-9025.....	79	42-0355.....	159
27-1050.....	67	27-6205.....	65	33-9029.....	79	42-1000.....	160
27-1500.....	67	27-8005.....	73	33-9041.....	79	42-1005.....	160
27-1510.....	67	27-8010.....	73	33-9042.....	79	42-1010.....	160
27-1520.....	67	27-8015.....	73	33-9046.....	79	42-1015.....	159-160
27-2000.....	68	27-8020.....	73	33-9047.....	79	42-1020.....	159-160
27-2005.....	68	27-8025.....	73	33-9048.....	79	42-1025.....	159-160



# PART NUMBER INDEX

42-1030.....	159-160	52-2010.....	162	G7910A #126.....	17	G7921A.....	108
42-1035.....	159-160	52-5000.....	162	G7910A #127.....	17	G7922A.....	94, 108
42-1040.....	159-160	52-5010.....	162	G7910A #130.....	17	G7922A#205.....	109
42-1050.....	159-160	52-5020.....	162	G7910A #140.....	17	G7926A.....	94, 120
42-1200.....	159	52-5040.....	162	G7910A #145.....	17	G7926A #105.....	120
42-1205.....	159	52-5050.....	162	G7910A #44K.....	17	G7926A #110.....	120
42-1210.....	159	52-5060.....	162	G7910A #44L.....	17	G7926A #120.....	120
42-1215.....	159	60-1500.....	151	G7910A #890.....	17	G7926A #125.....	120
42-1220.....	159	60-2110.....	151	G7911A.....	19	G7926A #126.....	120
42-1225.....	159	60-2120.....	62	G7911A #101.....	19	G7926A #127.....	120
42-1230.....	159	60-2200.....	151	G7911A #102.....	19	G7926A #140.....	120
42-2000.....	159	60-2400.....	62	G7911A #103.....	19	G7926A #145.....	120
42-2005.....	159	62-9000.....	62	G7911A #104.....	19	G7926A #200.....	120
42-2010.....	159	62-9010.....	62	G7911A #105.....	19	G7926A #205.....	120
42-2020.....	159	62-9020.....	62	G7911A #110.....	19	G7926A #210.....	120
42-2030.....	159	62-9025.....	62	G7911A #115.....	19	G7926A #211.....	120
42-6105.....	159	62-9030.....	62	G7911A #120.....	19	G7926A #212.....	120
42-6110.....	159	62-9040.....	62	G7911A #125.....	19	G7926A #213.....	120
47-0153.....	161	67-0300.....	32, 138	G7911A #126.....	19	G7926A #300.....	120
47-1000.....	161	89068D.....	109-110	G7911A #127.....	19	G7926A #301.....	120
47-1000V.....	161	G1118AA.....	109-110	G7911A #130.....	19	G7926A #302.....	120
47-1005.....	161	G1126AA.....	109	G7911A #140.....	19	G7926A #303.....	120
47-1005V.....	161	G1127A.....	109-110	G7911A #145.....	19	G7926A #304.....	120
47-1010.....	161	G1128A.....	109-110	G7911A #44K.....	19	G7926A #305.....	120
47-1010V.....	161	G1129A.....	109-110	G7911A #44L.....	19	G7926A #44K.....	121
47-1015.....	161	G1130A.....	109-110	G7911A #890.....	19	G7926A #44L.....	121
47-1015V.....	161	G1313-44510.....	93	G7913A.....	20, 94	G7926A #880.....	121
47-1020.....	161	G1812AA.....	110	G7913A #105.....	20	G7926A #881.....	121
47-1030.....	161	G1813AA.....	110	G7913A #110.....	20	G7926A #900.....	121
5022-6502.....	93	G1815AA.....	110	G7913A #120.....	20	G7926A #920.....	121
5061-3396.....	109-110	G4971AA.....	121	G7913A #125.....	20	G7927A.....	122
5061-3397.....	109-110	G4972AA.....	122	G7913A #126.....	20	G7927A #105.....	122
5061-3398.....	109-110	G4973AA.....	78	G7913A #127.....	20	G7927A #110.....	122
5065-9918.....	109-110	G4974AA.....	84	G7913A #130.....	20	G7927A #120.....	122
5075-0057.....	62	G6867A.....	121	G7913A #140.....	20	G7927A #125.....	122
5075-0252.....	87	G7900AA.....	109-110	G7913A #145.....	20	G7927A #126.....	122
52-0153.....	162	G7910A.....	17	G7913A #210.....	20	G7927A #127.....	122
52-1000.....	162	G7910A #101.....	17	G7913A #211.....	20	G7927A #140.....	122
52-1010.....	162	G7910A #102.....	17	G7913A #212.....	20	G7927A #145.....	122
52-1020.....	162	G7910A #103.....	17	G7913A #213.....	20	G7927A #300.....	122
52-1030.....	162	G7910A #104.....	17	G7913A #220.....	20	G7927A #301.....	122
52-1040.....	162	G7910A #105.....	17	G7913A #44K.....	20	G7927A #302.....	122
52-1050.....	162	G7910A #110.....	17	G7913A #44L.....	20	G7927A #303.....	122
52-1060.....	162	G7910A #115.....	17	G7913A #880.....	20	G7927A #304.....	122
52-1070.....	162	G7910A #120.....	17	G7913A #881.....	20	G7927A #44K.....	122
52-1080.....	162	G7910A #125.....	17	G7920A.....	108	G7927A #44L.....	122



G7927A #880.....	122	G7972A #128.....	71	G7978A #122.....	72	K1001-01195.....	21, 31, 48
G7927A #900.....	122	G7972A #129.....	71	G7978A #123.....	72	K1001-01196.....	21, 31, 48
G7927A #920.....	122	G7972A #130.....	71	G7978A #124.....	72	K1001-01202.....	93
G792xA#44K.....	109	G7972A #131.....	71	G7978A #125.....	72	K1001-01203.....	93
G792xA#44L.....	109	G7972A #132.....	71	G7978A #126.....	72	K1001-01204.....	93
G792xA#695.....	109	G7972A #133.....	71	G7978A #127.....	72	K1002-00437.....	157
G792xA#890.....	109	G7972A #134.....	71	G7978A #128.....	72	K1002-00477.....	155
G792xA#900.....	109	G7972A #44K.....	71	G7978A #129.....	72	K1002-02045.....	30
G7930A.....	93	G7972A #44L.....	71	G7978A #130.....	72	K1005-01568.....	21, 32
G7930A #210.....	93	G7973A #120.....	72	G7978A #131.....	72	K1005-02019.....	87
G7930A #211.....	93	G7975A.....	77	G7978A #132.....	72	K1005-02024.....	87
G7930A #212.....	93	G7975A #105.....	77	G7978A #133.....	72	K1005-02066.....	93
G7930A #213.....	93	G7975A #110.....	77	G7978A #134.....	72	K1005-05160.....	21, 32
G7930A #220.....	93	G7975A #120.....	77	G7978A #150.....	72	K1005-05212.....	93
G7930A #44K.....	93	G7975A #121.....	77	G7978A #210.....	72	K1005-05218.....	31, 53
G7930A #44L.....	93	G7975A #122.....	77	G7978A #211.....	72	K1005-05225.....	31, 53
G7930A #880.....	93	G7975A #123.....	77	G7978A #212.....	72	K1200-00855.....	51
G7931A.....	93	G7975A #124.....	77	G7978A #213.....	72	K1400-00210.....	31, 53
G7962A.....	137	G7975A #125.....	77	G7978A #220.....	72	K4040-00495.....	29, 42
G7962A #110.....	137	G7975A #126.....	77	G7978A #44K.....	72	K5075-00871.....	62
G7962A #111.....	137	G7975A #127.....	77	G7978A #44L.....	72	SYS-DI-400 R26H091.....	167
G7962A #112.....	137	G7975A #128.....	77	G7978A #880.....	72	SYS-DI-400 R26J091.....	167
G7962A #113.....	137	G7975A #129.....	77	G7980AA.....	87	SYS-DI-400 R26N091.....	167
G7962A #114.....	137	G7975A #130.....	77	G7980AA #100.....	87	SYS-DI-708 R26H091.....	167
G7962A #115.....	137	G7975A #131.....	77	G7980AA #105.....	87	SYS-DI-708 R26J091.....	167
G7962A #116.....	137	G7975A #44K.....	77	G7980AA #44K.....	87	SYS-DI-708 R26M091.....	167
G7962A #880.....	137	G7975A #44L.....	77	G7980AA #44L.....	87	SYS-DI-708 R26N091.....	167
G7970A.....	65	G7977A.....	66, 94	G7980AA #650.....	87	SYS-DI-708 R26P091.....	167
G7970A #100.....	65	G7977A #100.....	66	G7986A.....	32, 62, 151	SYS-DI-708 R26T091.....	167
G7970A #105.....	65	G7977A #105.....	66	G7986A #100.....	62, 151	SYS-DI-708 R26U091.....	167
G7970A #110.....	65	G7977A #110.....	66	G7986A #101.....	62	SYS-DI-APP7 R26J091.....	167
G7970A #115.....	65	G7977A #115.....	66	G7988A.....	22	SYS-DI-APP7 R26N091.....	167
G7970A #44K.....	65	G7977A #150.....	66	G7988A#100.....	22	SYS-DI-BIO R26J091.....	167
G7970A #44L.....	65	G7977A #210.....	66	G7988A#120.....	23	SYS-DI-BIO R26N091.....	167
G7972A.....	71	G7977A #211.....	66	G7988A#44K.....	22	SYS-SW-CS-E R26J091.....	168
G7972A #100.....	71	G7977A #212.....	66	G7988A#44L.....	22	SYS-SW-CS-E R26N091.....	168
G7972A #105.....	71	G7977A #213.....	66	G9261AA.....	121	SYS-SW-CS R26J091.....	168
G7972A #110.....	71	G7977A #220.....	66	G9262AA.....	122	SYS-SW-CS R26N091.....	168
G7972A #115.....	71	G7977A #44K.....	66	G9263AA.....	78	SYS-UV-60 R26H091.....	168
G7972A #120.....	71	G7977A #44L.....	66	G9264AA.....	84	SYS-UV-60 R26J091.....	168
G7972A #121.....	71	G7977A #880.....	66	K1001-01172.....	21, 30	SYS-UV-60 R26N091.....	168
G7972A #123.....	71	G7978A.....	72, 94	K1001-01176.....	21, 30	SYS-UV-VIS R26H091.....	168
G7972A #124.....	71	G7978A #100.....	72	K1001-01184.....	21, 30	SYS-UV-VIS R26J091.....	168
G7972A #125.....	71	G7978A #105.....	72	K1001-01188.....	21, 30	SYS-UV-VIS R26N091.....	168
G7972A #126.....	71	G7978A #110.....	72	K1001-01193.....	21, 31, 48		
G7972A #127.....	71	G7978A #121.....	72	K1001-01194.....	21, 31, 48		





## NOTES

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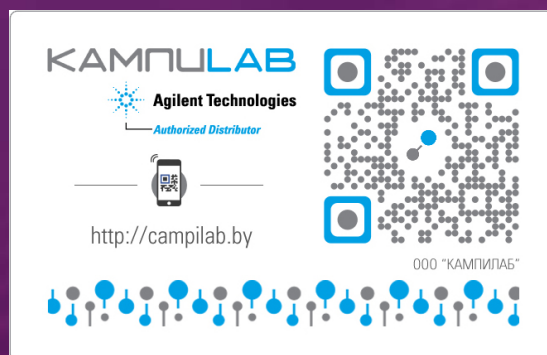
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