autosamplers

AS40 Autosampler

The AS40 Autosampler provides high-performance, automated sample processing for ion chromatography applications. It combines common autosampler functions with automated sample pretreatment capabilities. Its metal-free flow path ensures compatibility with all common ion chromatography samples and eluents. The AS40 features a simple front panel that is easy to learn and use.

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Offers Connectivity with Dionex Systems

The AS40 is a sample-loading device that can use the injector valve housed in the LC10, LC20, LC25, and LC30 modules. Added flexibility for automation control with ICS-2500, ICS-2000, ICS-1500, ICS-1000, and ICS-90 is achieved using the output relay function. All components of the autosampler are designed according to IEC guidelines for safety. An automatic switching power supply provides universal input voltage and simplifies instrument setup. The power supply is autosensing, so voltage adjustment is not required.

Provides Chemically Inert Fluid Paths and Vials

The AS40 utilizes nonmetallic fluid path components to reduce potential sources of contamination and eliminate corrosion. The disposable PolyVial™ sample vials (available in both 0.5-mL and 5-mL sizes) are compatible with a variety of samples.

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Concentrates Samples Automatically

The AS40's unique positive displacement piston delivers sample to a concentrator column against back-pressures of up to 690 kPa (100 psi), without the need for an external sampling pump. For sample preconcentration, volumes of up to 5 mL can be loaded onto an IonPac concentrator column. The AS40 can deliver up to 5 mL of sample through a precolumn to remove interfering components prior to introducing the sample to the analytical column.

Automatically Filters as It Samples

Each sample can be automatically filtered during loading by an optional 20-µm filter in the vial cap, so particulates can be removed during sampling. The tedious task of prefiltering samples is eliminated, resulting in significant savings in both time and cost. The filter also acts as a seal to minimize contamination and evaporation of samples before analysis. Caps without filters are also available for ultrapure water analysis.

Rinses or Regenerates Between Samples

The AS40 allows you to intersperse any rinse vial for flushing the system. A rinse cycle between samples can be used to minimize cross-contamination between different types of samples or to regenerate a concentrator column.

Delivers Multiple Injections

The AS40 can be programmed to deliver up to three injections from each vial. The volume delivered can be set to a constant one-third of the vial volume, or to the maximum proportion available (e.g., half of the vial when two injections per vial is selected, one-third when three injections per vial is selected). Any air trapped in the vial when the filter cap is inserted can be automatically bled off before sampling. Alternatively, the air can be delivered in front of the sample, separating that sample from the previous one.

Positive Displacement Sampling

The AS40 Autosampler is based on a positive displacement sampling technique. A cap is pressed into a vial containing the sample. The moving cap acts as a piston to force the liquid from the vial. The cap itself is then pushed down into the vial, displacing the vial contents. The sample is transferred through the probe tip to the injection valve. This method allows samples to be loaded without the use of an external sampling pump. Positive displacement provides reliable and efficient transfer of the sample from the vial to the injection valve. Because the sample is displaced mechanically, there is no viscosity dependence in the sample transfer from vial to valve. Due to its simple design, the AS40 can be quickly serviced through the interchange of components.

Sampling Mechanism

The AS40 sampling mechanism consists of an input tray, a sampling head, and an output tray (see Figure 1). The input tray holds cassettes (see Figure 2) that have been loaded with PolyVials containing the sample or rinse. Cassettes containing vials are placed in the input tray ahead of a spring-loaded pusher. Molded teeth on the back of the cassette mesh with the toothed belt on the cassette drive to move the front-most cassette to the right, positioning a vial under the sampling head. Because there is no connection between the cassettes and the mechanism, any cassette not under the sampling head can be removed or replaced without interrupting operation. The sampling head delivers sample from vials to the "Sample Out" port. The output tray holds the cassettes after sampling is complete.

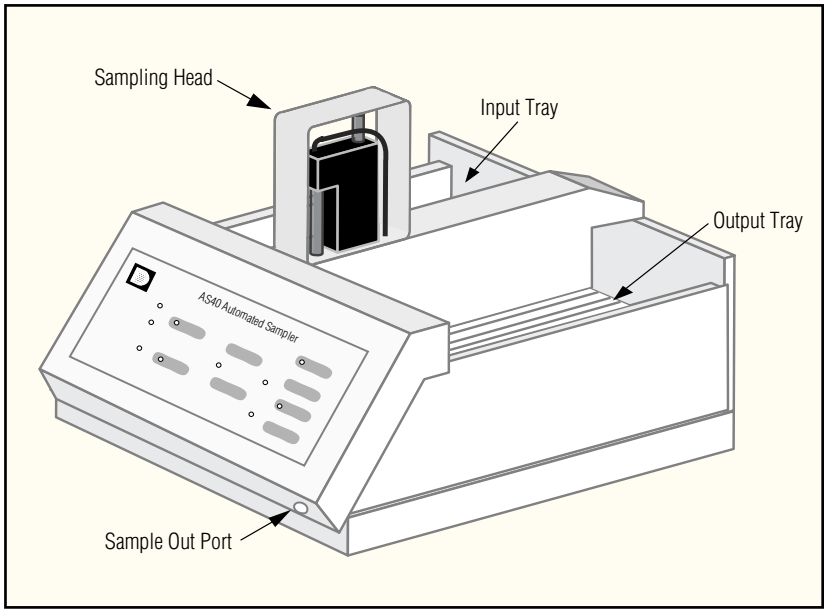

Figure 1. *AS40 sampling mechanism.*

Fluid Path

After being displaced by the cap, the sample is transferred to the bleed valve. This air-actuated valve is isolated in its own compartment and is located at the bottom of the AS40. The bleed valve is controlled by the "Bleed On/Off" switch. When "Bleed On" is selected, the valve automatically directs the excess sample, and any air trapped in the sample vial, to waste (see Figure 3). This ensures the delivery of uniform, reproducible volumes for each injection, regardless of the filling accuracy of the sample vials. After any excess volume bleeds off, the valve automatically switches to direct the remaining volume to the "Sample Out" port. After leaving the "Sample Out" port, the sample travels to the Rheodyne valve and is ready to fill the loop.

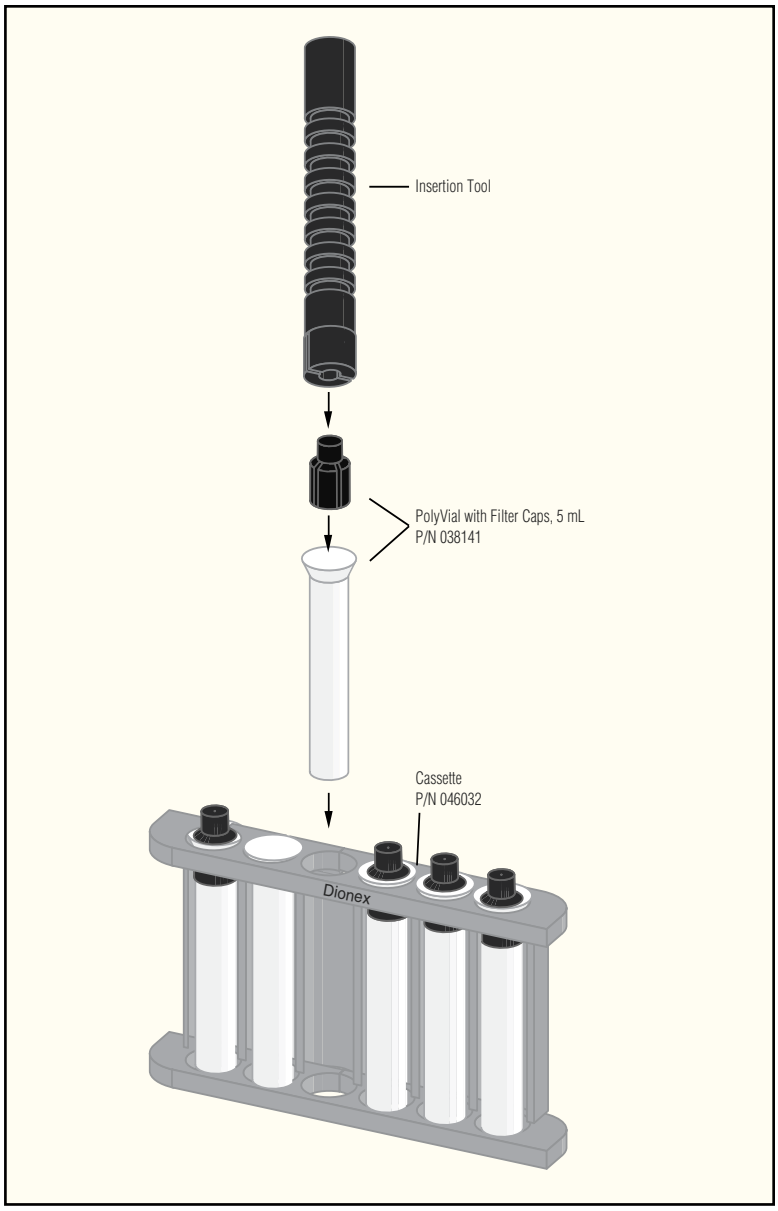

Figure 2. *5-mL sample vial cassette for PolyVials.*

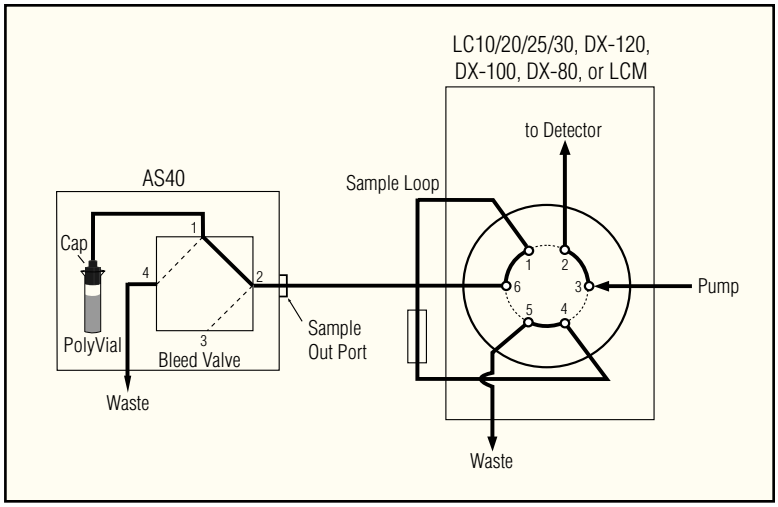

Figure 3. *AS40 fluid path with injector valve on "Load" position.*

SPECIFICATIONS

Sample Delivery Method:
Positive displacement against backpressure of up to 690 kPa (100 psi)

Capacity:
11 cassettes of either six 5-mL or eight 0.5-mL PolyVials

Vial Size:
0.5 or 5 mL

Filter Pore Size:
20 micron

Minimum Volume Delivered:
0.5 mL vials: 0.17 mL per injection
5.0 mL vials: 1.7 mL per injection

External Control:
Input: Load
Output: Ready

Injections Per Vial:
One, two, or three

Injection Type:
Loop: Delivers sample rapidly to sample loop (~ 4 mL/min)
Concentrator: Delivers sample against backpressure of up to 690 kPa (100 psi) at approximately 0.4 mL/min (0.5-mL vials) or 1 mL/min (5-mL vials)

Injection Mode:
Proportional: Delivers volume inversely proportional to the number of injections per vial
Constant: Delivers fixed volume independent of the umber of injections per vial

Bleed Function:
On: Displaces excess sample and any trapped air through bypass valve before sampling
Off: Delivers sample and any trapped air directly to injection valve

Power Supply:
Automatic switching power supply for universal input voltage (90 to 265 V ac), (47 to 63 Hz)

Dimensions (H × W × D):
28.7 × 36.3 × 44.5 cm
(11.3 × 14.3 × 17.5 in.)

Weight:
8.9 kg (19.5 lb)

ORDERING INFORMATION

In the U.S., call 1-800-346-6390 or contact the Dionex regional office nearest you. Outside the U.S., order through your local Dionex office or distributor. Refer to the following part numbers.

Description	Part Number
AS40 with 5-mL Starter Vial Kit*	046029
AS40 with 0.5-mL Starter Vial Kit*	046028
*AS40 Starter Vial Kits include 12 cassettes and 1 box of vials with filter caps.	
AS40, Acid Resistant, with 5-mL Starter Vial Kit	055539
Six-position cassettes, box of six, for 5-mL vials	046032
Eight-position cassettes, box of six, for 0.5-mL vials	046031
PolyVials and Filter Caps, 250 each, for 5-mL vials	038141
for 0.5-mL vials	038142
PolyVial and Plain Caps, 250 each, for 5-mL vials	039532
Sample Tip Replacement Kit	040835
Peak Performance (PM Kit)	055647

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