

## Ion chromatography

# Thermo Scientific Dionex AS-DV autosampler

### Keywords

Thermo Scientific, Dionex, AS-DV, autosampler, ion chromatography, Chromatography Data System (CDS), Chromeleon, IC analysis, IonPac, PolyVial

### Introduction

The Thermo Scientific™ Dionex™ AS-DV autosampler provides high-performance, automated sample processing for ion chromatography applications. The random access and sample preparation capabilities provide easily automated sample introduction to the chromatograph. The Thermo Scientific™ Chromeleon™ Chromatography Data System (CDS) software control provides high flexibility to select the optimum injection parameters for filling injection loops or loading concentrator columns. Interactive software panels help to visualize advanced sample preparation methods, such as matrix elimination and analyte concentration.

### Versatile and economical

With dedicated full-loop and optional concentrator loading, the Dionex AS-DV autosampler is the optimum device for standard IC analysis. Chromeleon CDS software control, random access, and optional automated sample preparation capabilities make routine IC analysis a breeze.

### High flexibility

The Dionex AS-DV autosampler uses very precise mechanics to accurately control dispense speed and volume, resulting in highly reproducible results. Users can control speed from 0.1 to 5.0 mL/min in 0.1 mL/min increments. Variable volume can be controlled also from 0.1 mL to 5.0 mL in 0.1 mL increments. Thus, multiple injections per vial can be programmed.

## Automated sample preparation

The Dionex AS-DV autosampler provides automated sample solutions with optional filters in cap in different dimensions and optional 6-port or 10-port valves.

### Variable filter options

Each sample can be automatically filtered during loading by an optional 20 µm filter in the vial cap, so that particulates can be removed during sampling. The tedious task of prefiltering samples is eliminated, resulting in significant savings in 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.

### Optional 6-port and 10-port valves

A high-pressure switching valve can be installed in the Dionex AS-DV autosampler. Two models are available: 6-port and 10-port.

The valves can perform the following functions:

- Bleed valve
- Injection valve
- Matrix elimination
- Concentration
- Large loop/small loop reinjection

## Sampling mechanism

The Dionex AS-DV sampling mechanism consists of a sampling carousel and a sampling head. The carousel holds up to 50 PolyVials™ containing sample or rinse solution. The sampling head delivers sample from the vials to the Sample Out line. The sampling carousel holds up to fifty 0.5 mL or 5.0 mL PolyVials or a combination of the two. The 0.5 mL vials must be placed in vial adapters before they are loaded into the carousel. The vials can be placed in any order. All sequencing is controlled through the Chromeleon CDS software.

## Chromeleon control

Chromeleon CDS software and random access provide high flexibility to select the optimum injection parameters. Panels and reporting capabilities in audit trails provide reliability and less labor to users. Time savings are achieved by utilizing the sample overlap capability of the Dionex AS-DV autosampler and Chromeleon CDS software.

## Positive displacement sampling

The Dionex AS-DV 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 Dionex AS-DV autosampler can be quickly serviced through the interchange of components.

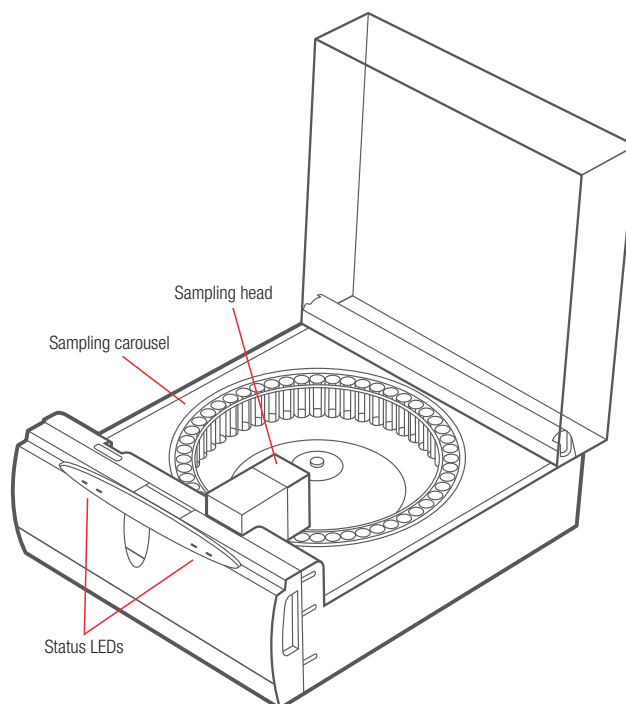


Figure 1. Dionex AS-DV sampling mechanism.

### Concentrates samples automatically

The Dionex AS-DV autosampler's unique positive displacement piston delivers sample to a concentrator column against backpressures of up to 690 kPa (100 psi), without the need for an external sampling pump. For sample preconcentration, volumes of up to 5.0 mL can be loaded onto a Thermo Scientific™ Dionex™ IonPac™ concentrator column. The Dionex AS-DV autosampler can deliver up to 5.0 mL of sample through a precolumn to remove interfering components prior to introducing the sample to the analytical column.

### Chemically inert fluid paths and vials

The Dionex AS-DV autosampler 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.

### Rinses or regenerates between samples

Intermix sample vials and rinse vials in any order in the carousel and define them using the Chromeleon software.

### Connectivity with Dionex systems

The Dionex AS-DV autosampler is connected via a USB port. It has added flexibility for automation control with Dionex IC systems including using either Chromeleon CDS software or TTL control.

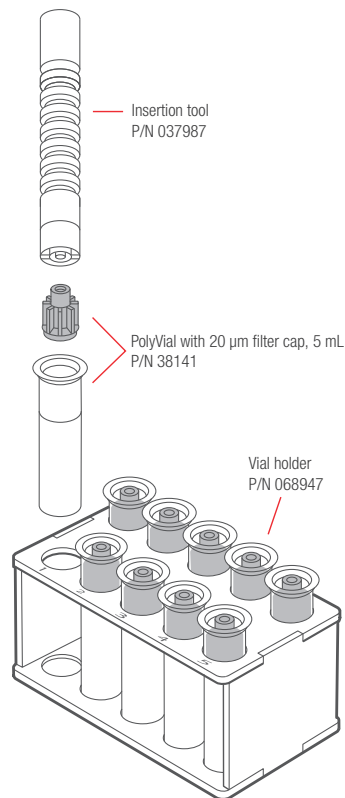


Figure 2. 5 mL sample vial holder for PolyVials.

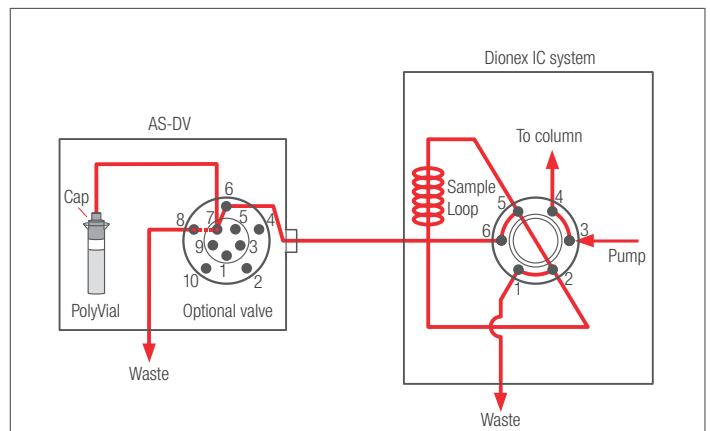


Figure 3. Dionex AS-DV fluid path with optional bleed valve and injector valve in load position.

## Specifications

### Sample delivery method

Positive displacement against backpressure of up to 690 kPa (100 psi)

### Capacity

50 PolyVials: 5 mL, 0.5 mL, or combination

### Vial size

0.5 or 5 mL

### Filter pore size

20 µm

### Volume delivered

0.1 mL to 5.0 mL in 0.1 mL increments

### Speed control

0.1 mL/min to 5.0 mL/min in 0.1 mL/min increments

### Injections per vial

Multiple injections

### Valves (optional)

High-pressure switching valve: 6- or 10-port

- Bleed valve
- Injection valve
- Matrix elimination
- Concentration

### Concentrator (optional)

Delivers sample against backpressure of up to 690 kPa (100 psi). Recommended values are ~0.4 mL/min (0.5 mL vials) or 1 mL/min (5 mL vials)

### Software control

Chromeleon CDS and random access

### External control

USB and TTL relay

### Power supply

100 to 240 V AC, 50 to 60 Hz, 45 W  
(auto-sensing power supply; no manual voltage or frequency adjustments required)

### Dimensions (h x w x d)

23 x 44.5 x 56 cm (9 x 17.5 x 22 in.)

### Weight

8.9 kg (19.5 lb)

Description	Part No.
AS-DV autosampler	068907
Vial holder for 0.5 mL vials	068948
Optional 6-port valve kit	068920
Optional 10-port valve kit	068921
PolyVials and 20 µm filter caps, 250 each,	
• for 5 mL vials	038141
• for 0.5 mL vials	038142
PolyVials and plain caps, 250 each, for 5 mL vials	038008
PolyVials and plain caps, 250 each, for 0.5 mL vials	038010
Vial holder for 5.0 mL vials	068947
Vial holder for 0.5 mL vials	068948
Sample tip replacement kit	040835
Peak Performance kit (preventative maintenance)	055647
Cap removal tool	068925

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