



PROMOCHROM
TECHNOLOGIES

Single-channel Automated SPE

SPE-01

For automatic cleanup of food
and environmental samples

12-sample capacity



About PromoChrom

PromoChrom Technologies focuses on the development of sample preparation solutions for trace analysis.

Since **2005**, PromoChrom has developed the SPE-01 and SPE-03 cleanup stations, SPE-04 online/offline SPE's, LC-04 online SPE, RT-01 sample purifier and SPE-06 mini SPE. Each of the instruments target specific applications.

In **2011**, PromoChrom developed the flow-path-integration technique for liquid handling. It combines various switching valves into one liquid handling module. This technique simplified the structure of our instruments considerably, making the instruments more affordable and more reliable.

In **2017**, "Two-tier online SPE" was invented by PromoChrom which uses a second SPE column for online SPE. This method significantly increased the detection sensitivity and mitigated column compatibility and clogging issues commonly found in online SPE systems

Today, we continue to look for more opportunities and breakthroughs in laboratory process automation

SPE-01

An Economic and Versatile Option

SPE-01 solid phase extraction system is designed for automatic sample cleanup in the analysis of food and environmental samples. Up to 12 samples can be processed sequentially. Its intuitive touchscreen interface makes method editing and sample selection quick and easy. By providing constant flow rates and well-controlled elution procedures, SPE-01 helps to improve quality and reproducibility of trace analysis and relieve chemists from tedious sample preparation routines. SPE procedures such as column conditioning and washing, sample loading and rinsing, fraction collection, air purge and even solvent mixing are achieved through just one of our valves, making it a versatile yet low-cost option for labs.

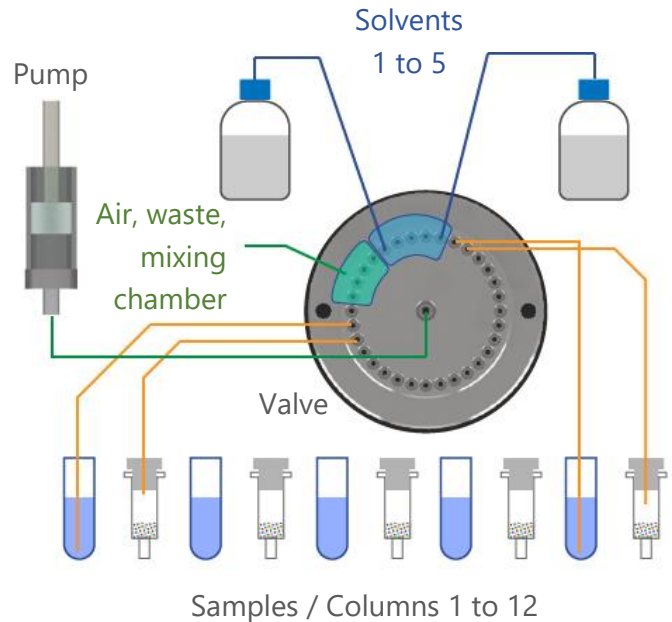


1. Working Principle

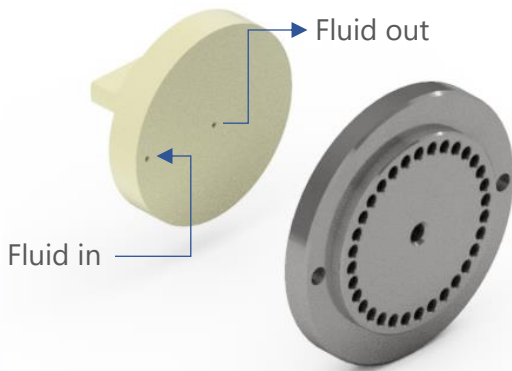
Simple and robust design

Single Valve and Pump System

SPE-01 uses a stream selection valve and a syringe pump to transfer solution solvents, air and sample liquid to the SPE columns. Although all 12 samples share the same valve and pump, cross-contamination is avoided since the flow paths are continuously washed during the elution procedures. The instrument also has built-in cleaning procedures for washing the sample tubing, valve and pump.



Minimal Contamination Flow Path



The flow path in the valve rotor is specifically designed with a hidden channel so that the sample liquid has minimum contact with the stator surface when the valve is turning. This feature is very effective in avoiding contamination of sticky compounds (such as benzopyrene) on the stator surface.

Design Benefits :

• Low Maintenance Requirement

With much fewer parts in operation, very little maintenance and part replacement is required.

• Small and Lightweight

The 12 sample SPE-01 is 34 x 34 x 45 cm in size and only weighs 11.5kg. It can be easily placed in the fume hood or on crowded lab benches.

- Touchscreen
- Multi channel valve
- Sample rack
- Fraction Collection Tray

2. Features

Versatile and Easy to Use



■ 12 Sample System

The SPE-01 can sequentially process 12 samples. Processing volume of up to 50 mL can be performed in the default configuration. MOD-005 can be applied to increase allowable sample volume to 2000 mL.

■ Small / Large Volume Samples

The SPE-01 sample rack can accommodate 12mL to 20mL sample tubes for small volume samples or tubing adapters for larger volume samples. The adjustable sample rack provides:

- **Open access to SPE columns**
- **Clearance for filling up sample tubes**
- **Tubing adjustment for different bottle heights**



■ Customizable Fraction Collection Tray

The default fraction collection tray on the SPE-01 can hold 5 rows of 16 x 100mm test tubes, 4 for fraction collection and 1 for waste. Per customer request, the trays can be modified to hold various test tube sizes and even autosampler vials.

■ Touchscreen Interface

Action	Inlet 1	Inlet 2 (ratio)	Flow	Volume
Elute	Solvent 1	-	10	10.0
Add Sample	Sample	Solvent 2 (50%)	5	10.0
Air-Purge W	Air	-	10	2.5
Elute	Solvent 2	-	10	10.0
Air-Purge W	Air	-	10	2.5
Collect 1	Solvent 3	Solvent 4 (20%)	3	10.0
Air-Purge 1	Air	-	10	2.0
(Add New)				

Method : Full Method 2018 - performs full cleanup process

The SPE-01 comes equipped with a resistive touch screen interface that works even under wet conditions. Sample selection and method editing can be intuitively performed in just a few steps. When running, the screen highlights the current step being run and displays its processed volume.

■ Compatible with Common SPE Columns

SPE-01 uses an innovative adapter to accommodate 1, 3 and 6 mL SPE columns. There is no need for extra adapters



■ Solvent Mixing

SPE-01 supports solvent and sample mixing to achieve gradient elution, internal standard addition and sample modification. Up to two liquids can be mixed at a time.

■ Column Blockage and Smart Detection

The system can detect the blockage of SPE columns and reduce the flow rate accordingly. If blockage continues, the instrument will pause to wait for the user to step in.

■ Automatic Washing of Sample Tubing and Container

For sample sizes under 20mL, the SPE-01 can wash the sample container using 1 or 2 solvents. The rinsate can then be added back to the columns or left in the 20mL sample tubes.

Note : For large sample bottles, we recommend adding a pause in the method steps and then do a manual rinse to reduce solvent usage.



3. Specifications

Parameters	Details
Sample capacity	12 samples
Volume of sample	0.5 mL to 50 mL (up to 2000 mL with MOD-005)
Material of wetted parts	Teflon, 316 Stainless steel or ceramic, Pyrex glass
System control	4.3-inch resistive touch screen
Solvent capacity	5 solvents
Flow rate	0.5 to 85 mL/min
Method functions	Prime – clean valve and pump with selected solvent(s) Elute – pre-condition or wash cartridge with selected solvent(s) Add Sample – load sample onto SPE cartridge Collect – elute with selected solvent(s) and collect eluent in specified fraction tubes. Can also collect sample directly into fraction tubes. Air-purge – use air to purge residual fluid through columns into fractions or waste Rinse – rinse sample containers (<20mL) and deliver rinsate into fraction tubes or waste Clean – deliver selected solvent(s) into sample containers (<20mL) Wait – pause run for a specified amount of time or until user manually triggers next step
Pressure limit of pump	6 bar
Pump reproducibility (C.V. %)	<2.5 %
Power consumption	<1.25 A at 24 VDC
Weight	11.5 kg
Dimensions	34 cm x 34 cm x 45 cm (width x depth x height)

6. Ordering Info

Part No.	Description
SPE-01	Single-channel SPE-01, 24V power supply, touch screen stylus pen, sample bottle adapter tubing, and user manual
MOD-005	Modification for extending sample volume to 2000 mL. Replaces last row of fraction collection tray with a waste trough and tubing that leads out of the equipment, allowing much larger processing volume.



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