K-Prep

HPLC system High Performance Preparative HPLC System K-Prep system

Fully automated preparative liquid chromatograph designed for continuous operation from bench-scale to product-scale.

Our fully automated preparative liquid chromatograph is perfect for the discovery and study of physiologically active substances and the isolation and purification of high-value substances such as API, peptides and proteins, and fine-chemical products.

Key features

- *Fully automated continuous operation via computer control.*
- *User friendly interactive interface.*
- *Precise and speedy isolation by gradient elution.*
- *Compact and mobile design.*
- *Equipped with security functions.*
- *Design allows easy maintenance.*
- *Easily upgradeable.*
- *Compatibility with GLP/GMP validation.*
- *Numerous options including recycle column.*

Exceptional functionality

K-Prep LAB

Application: For purposes such as discovery and development and investigation of commercialization feasibility.

Standard specifications

Standard column size	Ø 20, 30, 50, 100mm
Pump	double plunger cam
Flow rate	100, 300mL/min
Type	single gradient
Detector	ultra-violet spectrometer detector
Maximum pressure	15MPa(100mL/min), 10MPa(300mL/min)
Pressure gauge	digital pressure gauge (per PC)
Fraction	10ch (20ch)
Sample injection	auto-injector
Control and display	lap-top PC or programmable computer
Options	various

In compliance with your wishes, we will offer the best suited suggestions.
The result of a verification test during the feasibility study can be evolved smoothly.
We will cooperate with the user in the study of scale-up through the consulting service.

K-Prep FC

Application: commercialization investigation or industrial use.

Standard specifications

Standard column size	∅ 50, 100, 150, 200mm
Pump	double plunger cam
Flow rate	500, 1000mL/min
Type	single gradient
Detector	UV spectrometer detector
Maximum pressure	10MPa
Pressure gauge	digital gauge(displayed on PC)
Fraction	5ch
Sample injection	automatic (50mL,100mL)
Control and display	PC with touch screen display
Options	various

The internal layout of the system is designed for easy maintenance and optional upgrades.

Valves, pressure gauges or gradient mixers including their associated parts are installed in unit of equal dimensions, so that each module can be replaced easily.

K-Prep EX

Key features: Each one is custom-designed.
Fully explosive-proof preparative chromatography system.
Installed in hazardous areas and safe areas respectively.
The control software runs on Windows OS using a PC and is capable of fully automated operation.
The system and software are compatible with GLP/GMP validation.

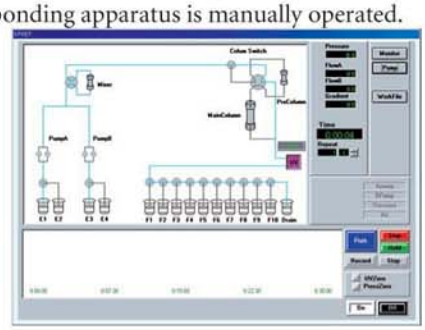
*Depicted in this photograph is an example with a flow rate of 26L/min, a UV detector, and columns measuring 450mm in the internal radius.

software designed for safety, with user-friendliness and various valuable features.

K-Prep

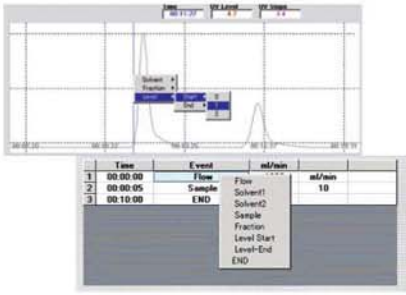
Main control screen

Main screen contains all the necessary information.
Graphic part of the screen depicts a flow diagram of the instrument process
By clicking an icon on the diagram, the corresponding apparatus is manually operated.
The chromatogram is depicted in the lower part of the screen and indicates the start and completion of the fractioning.



Work file creation screen

A work file for automated operation is created in this screen. Here operation for each instrument is configured. Users can insert into the workfiles time and levels of fractionation parameters of solvent selection, gradient parameters, sample injection or fraction valve switching simply by double-clicking the corresponding depicted area in the chromatogram.
Selecting a workfile and assigning a number repetition allow automated isolation operation.

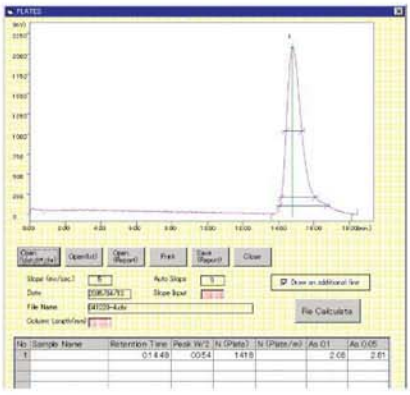


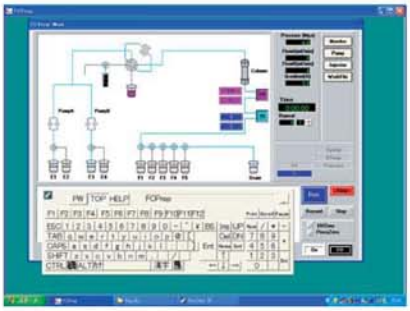
Compliance with GMP validation

The software complies with the validation procedure undertaken on installing the hardware.
Every access from log-in to log-out for every day is documented in one file, one file per day. Operation management requires a password and identification code so as to prevent unauthorized access and to ensure security.
Operation of the instrument is automatically documented.
File names are automatically created and protected so as not to be overwritten.

Data processing screen

Normally, a peak is detected automatically at a slope of 5. The retention time, the peak width of half height (W/2), the number of the theoretical plate (N) the asymmetry of 10% (As0.1), and the asymmetry of 5% (As0.05) of each peak are calculated and the result is listed.
Keying the column length number starts the calculation of the theoretical number of plates per length (m) and the result is displayed at the field of the N (plate/m) in the list.





Touch panel operation

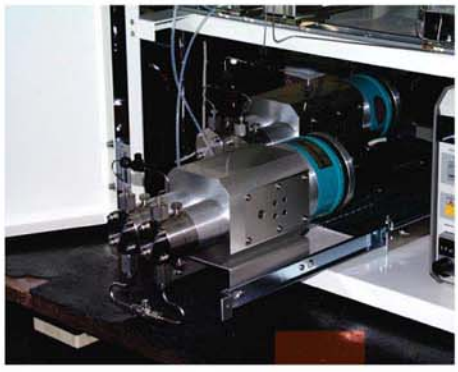
K-Prep FC uses a touch panel for easy operation on site. Remote control is also possible when using another monitor and keyboard.

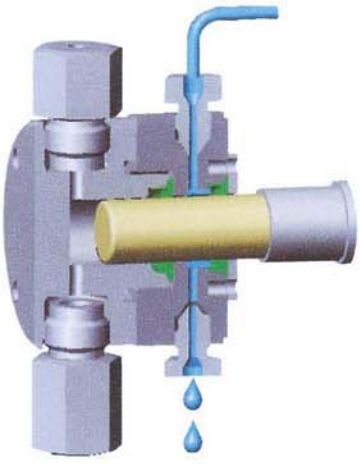
Interior of the apparatus is easily maintained and expanded.

K-Prep

A powerful and high precision pump unit

Adoption of double plungers and a high precision servo allows minimized pressure pulses and allows high precision delivery of the solvent down to 1/1000 of the maximum flow rate. G type (dual pumps system) allows high precision and a high pressure gradient.





Pump head with self-washing capability (optional)

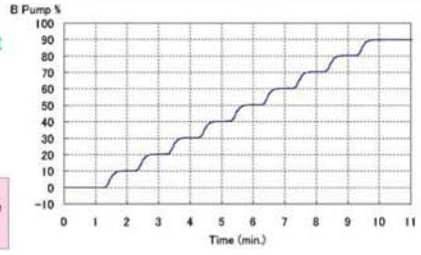
There is a wash chamber between the plunger seal and wash seal and cleaning fluid is pumped through dual port (IN and OUT) cleaning the plunger so that even highly condensed salt can be used.

Continuous flow type automatic injector

The automatic injector was adopted for its convenience during continuous flow injection. The automatic injector is equipped with a sample loop in conjunction with a high pressure 6 port valve and a syringe. The sample is drawn into the loop as many times as needed, using the syringe, so that the required quantity of the sample can be injected. Where a large quantity of sample is necessary, the injection is made by means of a pump.

Gradient accuracy and reproducibility

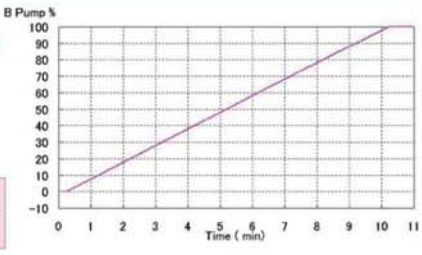
Data for step gradient experiment



detection criteria

Liquid A : Methanol
Liquid B : Methanol+Acetone
Flow rate : 25mL/min
Detection : UV254nm

Data for linear gradient experiment



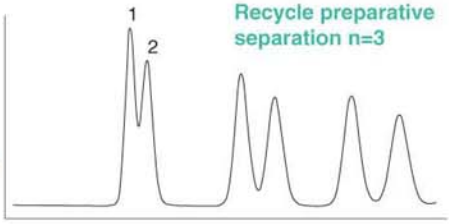
detection criteria

Liquid A : Methanol
Liquid B : Methanol+Acetone
Flow rate : 50mL/min
Detection : UV254nm

Excellent for preparative recycling separations.

Its low dead volume allows optimal preparative recycling separations. The recycle preparative separation improves efficiency of both the solvent and the operation.

Recycle preparative separation n=3



1. Isopropyl *p*-hydroxybenonate
2. Propyl *p*-hydroxybenonate

Sample 50mL (20mg/200mL)

YMC*GEL ODS-A 20μm 12nm
ϕ50, 235mm (DAU-50)
55%MeOH
200mL/min
UV at 254nm
System: LAB-300S

Standard specifications

K-Prep LAB

System name		LAB-100S	LAB-100G	LAB-300S	LAB-300G
Pump	Type	K-100	two K-100s	K-300	two K-300s
	Gradient capability	no	yes	no	yes
	Pumping method	double plunger, linear cam, pulse-free			
	Tubing connection	SUS-316 zirconia, PEEK reinforced Teflon, ruby, sapphire			
	Flow rate range	0.1~100mL/min	0.1~100mL/min	0.3~300mL/min	0.3~300mL/min
	Flow rate accuracy	•2% (10mL and above)	•2% (10mL and above)	•2% (30mL and above)	•2% (30mL and above)
	Pressure	15MPa	15MPa	10MPa	10MPa
Tubing	High pressure	1/16" - 0.8 SUS-316	1/16" - 0.8 SUS-316	1/8" - 2 SUS-316	1/8" - 2 SUS-316
	Suction	1/8" - 2 PFA	1/8" - 2 PFA	1/4" - 3.9 PFA	1/4" - 3.9 PFA
	Solvent channel	2ch	4ch	2ch	4ch
	Solvent changeover valve	1/8" ball valve	1/8" ball valve	1/4" ball valve	1/4" ball valve
Pressure meter	Method	digital (displayed on PC)			
	Max. and min. setting	set via PC			
Fraction collector		10ch drop method			
Sample injection		automatic injector IS-50		automatic injector IS-100	
	Sample loop	50mL		100mL	
	Sample syringe	25mL(reciprocating for larger quantity)			
detector	Type	UV spectrometer S-3120			
	Wavelength range	195~370nm			
	Cell tubing	1/16"	1/16"	1/8"	1/8"
	Optical path length	1mm	1mm	1mm	1mm
Control and display		laptop PC or programmable logic controller			
Software operating system		Windows XP			
Power requirement		Selectable from AC100V to AC240V 50/60Hz			
		0.6kW	1.1kW	0.6kW	1.1kW
Dimensions		800(W) x 650(H) x 600(D) Excluding protrusion			

Standard specifications

K-Prep FC

System name		FC-500S	FC-500G	FC-1000S	FC-1000G
Pump	type	K-500	two K-500s	K-1000	two K-1000s
	Gradient capability	no	yes	no	yes
	Pumping method	double plunger, linear cam, pulse-free			
	Tubing connection	SUS-316 zirconia, PEEK reinforced Teflon, ruby, sapphire			
	Flow rate range	0.5~500mL/min	0.5~500mL/min	1~1000mL/min	1~1000mL/min
	Flow rate accuracy	•2% (50mL and above)	•2% (50mL and above)	•2% (100mL and above)	•2% (100mL and above)
	Pressure	10MPa	10MPa	10MPa	10MPa
Tubing	high pressure	1/8" - 2 SUS-316	1/8" - 2 SUS-316	1/4" - 4 SUS-316	1/4" - 4 SUS-316
	Suction	1/4" - 3.9 PFA	1/4" - 3.9 PFA	1/4" - 3.9 PFA	1/4" - 3.9 PFA
	Solvent channel	2ch	4ch	2ch	4ch
	Solvent changeover valve	1/4" ball valve	1/4" ball valve	1/4" ball valve	1/4" ball valve
Pressure meter	method	digital (displayed on PC)			
	max. and min. setting	set via PC			
Fraction collector		5ch valve exchange method			
Sample injection		automatic injector IS-50		sample pump (100ml/min)	
	sample loop	100mL			
	sample syringe	25mL(reciprocating for larger quantity)			
detector	type	UV spectrometer S-3120			
	Wavelength range	195~370nm			
	Cell tubing	1/8"	1/8"	1/4"	1/4"
	Optical path length	1mm	1mm	1mm	1mm
Control and display		PC with touch screen or programmable logic controller			
Software operating system		Windows XP			
Power requirement		Selectable from AC100V to AC240V 50/60Hz			
		0.6kW	1.1kW	0.6kW	1.1kW
Dimensions		700(W) x 1200(H) x 600(D) Excluding protrusion			

K-Prep EX

This is an explosion-proof preparative chromatography system.
Each system is designed to order. The control software can run automated, continuous operation on Windows OS on a PC. The system and software are compliant with GLP/GMP validations. We will build the system based to the specifications that you request.