ADVANTEC MFS, Inc.

FRACTION COLLECTOR

Microcomputer Controlled

SF-3120

From open column to HPLC liquid chromatography and general liquid samplings, the Super Fraction Collector, model SF-3120 has a wide range of uses.

The SF-3120 is a fraction collector with increased reliability, employs an X-Y movement mechanism based on long years of technological accumulation, a new vertical movement apparatus and a large display screen for easier use than ever. The SF-3120 holds up to 120 vessels, and can handle a variety of vessel diameters and lengths. With its numerous fraction functions, the SF-3120 boasts a wide range of applications.

■ Features

- **Easier operation with a large display screen**
  With 9 operation keys and a large 40 characters x 8 row display screen, it is easier than ever to input programming and parameter settings. The graph display of chromatography signals makes it easy to determine the status of fraction collection.

- **Reliable construction**
  The water-sensitive operation panel as well as the mechanical and electronic parts are placed behind the test tube rack to protect against water droplets for a practical, long-lasting design.

- **Supports different sized collection vessels**
  The vertical dial allows 70 mm of movement to adjust the dropper nozzle position to the test tube length (105 ~ 180mm). The standard test tube rack will hold 120 tubes with a diameter of 12 ~15mm (maximum of 18.1 mm with the standard rack holder removed). Large volume vessels can be set when the rack lid is removed.

- **Quick nozzle movement with higher resolution**
  A sturdy frame and higher resolution stepping motor are used. The nozzle moves accurately to the set position, from tube to tube in 0.1 seconds.

- **Unneeded constituents drained**
  Waste constituents are drained out so test tubes are not unnecessarily contaminated.

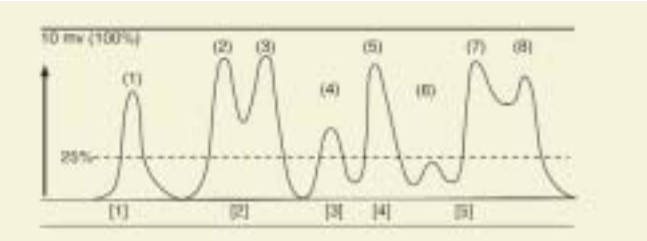
- **Safe, chemically resistant material**
  The exterior of the unit is made of flame retardant ABS plastic, and the test tube rack and drain are made of chemically resistant polypropylene.

■ Loaded with Unique Collection Functions

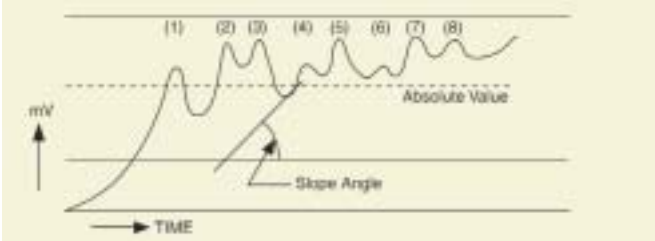
- **Simple mode:** Collect by time, drops, volume or signal.

- **Peak Mode:** Specify up to a maximum of 10 peaks for identification. Peak determination may be made using a combination of absolute value and slope angle.

Example of peak absolute value setting Set the percent value using an input signal full scale of 100%. Peaks above the set absolute value are identified.



Example of slope angle setting As shown in the graph at right, because of base line drift, only three peaks are identified at 1, 2/3 and 4/5/6/7/8 by absolute value setting. However, by using a slope setting, all 8 peaks are identified.



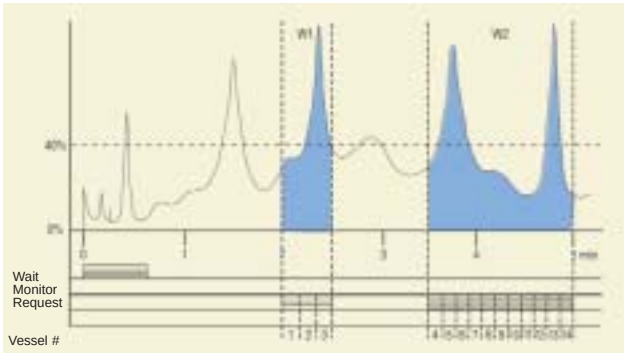
- **Window mode**

A maximum of 10 windows (time ranges) may be set so that peaks are identified and fraction collection occurs only within each window. By setting the monitor time, non-peaks may also be collected in the test tubes.

Window mode setting, example 1

Window 1 is set between 2min00sec and 2min32sec at request time of 12sec. Window 2 is set between 3min32sec and 5sec00sec at 8 sec request time.

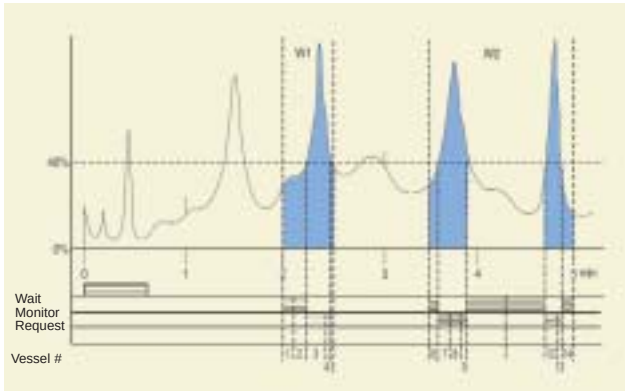
Main settings	Wait timeL [40 sec]
	Non-window monitor time: [0 sec]
Window settings	01: Start [2min00sec] ~ End [2min32sec]
	Request time [12 sec]
	02: Start [3min32sec] ~ End [5min00sec]
	Request time [8 sec]
Peak parameters	Absolute value: [0%], Slope angle: [5min00sec]
	Response: [*HIGH], Delay time: [0 sec]



Window mode setting, example 2 (peak identification)

Peaks within the windows are identified. Fraction collection is set at 12 seconds during peaks for window 1. For non-peaks, the monitor time interval is 8 seconds.

Main settings	Wait timeL [40 sec]
	Non-window monitor time: [0 sec]
Window settings	01: Start [2min00sec] ~ End [2min32sec]
	Request time [12 sec]
	Monitor [08 sec]
	02: Start [3min32sec] ~ End [5min00sec]
	Request time [8 sec]
	Monitor [24 sec]
Peak parameters	Absolute value: [40%]
	Slope angle: [20 mV/min]
	Response: [*HIGH]
	Delay time: [0 sec]

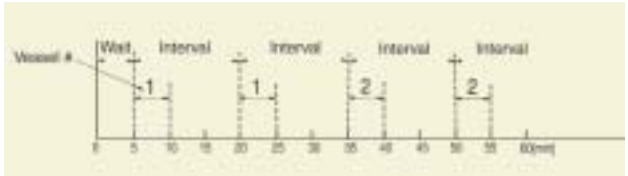


- **Manual mode**

Collect fractions while watching the chromatography signals displayed on the screen. A fraction may be reviewed under playback mode.

- **Sampling mode**

Collect fractions for a set interval during a set period. Multiple collections may be set per test tube. In the sample below, wait time is 5 minutes, each test tube has 2 repeats of 5 minutes intervals every 15 minutes.



- **Multiple sample functions**
  After a fraction collection has completed, the next fraction sampling begins at the next test tube or after skipping one tube.

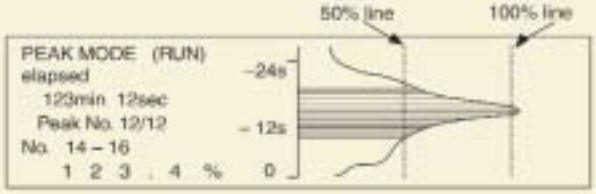
- **Synchronize the chromatogram and collection using the time delay function**
  Because of the distance from the UV absorption detector, refractometer or other instruments to the fraction collector dispense nozzle, there is a delay from the point of graphing until the sample is collected in the tube. By inputting the lag time, the collected sample can be set to accurately conform to the record (chromatogram).

- **Verify the fraction collection results by looking at the graph**
  The results of up to 500 events can be displayed. Chromatography signals are displayed in peak, window and manual modes.

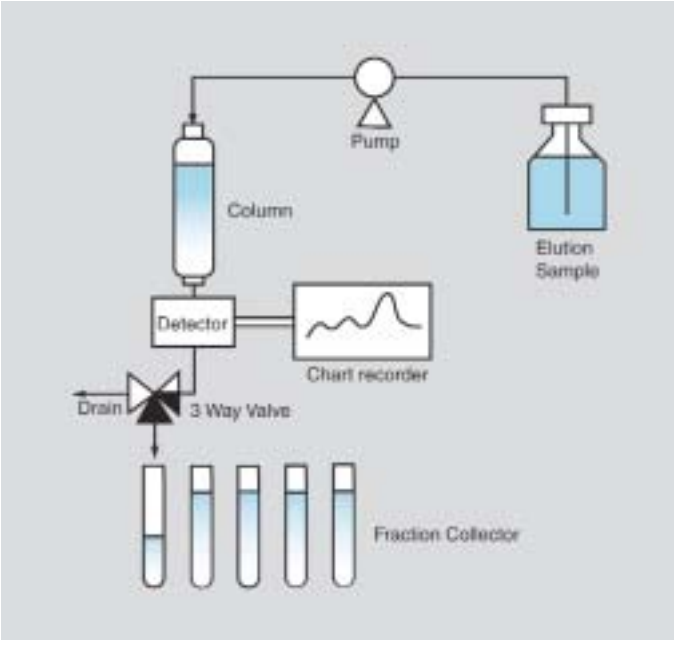
- **Operate using a computer**
  Using a computer, the parameter settings for each mode as well as starting, ending, pausing and advancing can be controlled. By loading up to 500 fraction results into the computer, the operation history of the equipment and test results can be easily verified.

DISPLAY RESULT (TIME MODE)

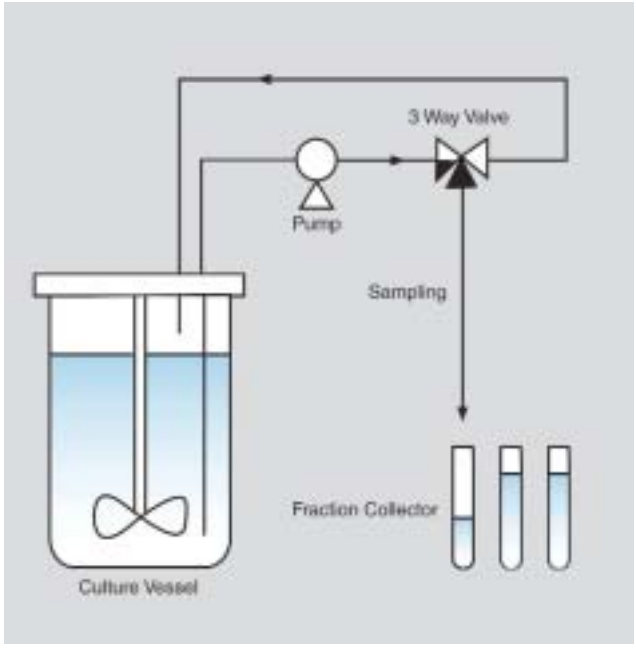
V. NO.	EVENT	TRIG.	START T.	LAP TIME
0	START	KEY	0	0m 30s
1	TIME		0m 30s	0m 20s
2	TIME		0m 50s	0m 20s
3	TIME	V. NO.	1m 10s	0m 20s
4	TIME		1m 30s	0m 20s



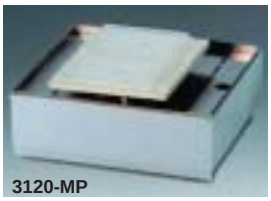
Sample liquid chromatography system set-up
After inserting the sample into the top of the column, the elute separates out. While characteristics are measured with detectors, the separated substances are eluted into the fraction collectors.



Example of sampling system set-up
A small amout is sampled at a fixed interval, and inserted into the fraction collectors.

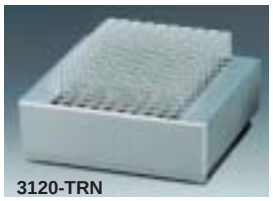


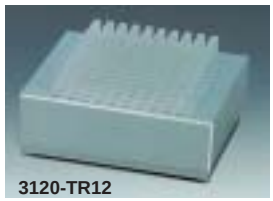
SF-3120 Accessories


3120-MP


3120-V28


3120-V17


3120-TRN

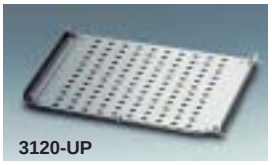

3120-TR12

■ Optional racks and rack accessories Non -standard test tube racks available.

Product	Model	Vessels	Holding qty
96 well microplate Rack	3120-MP	96 well microplate	2
27.5 mm vial Rack	3120-V28	27.5 mm (OD) X 57 mm scintillation vials	56
16.5 mm vial Rack	3120-V17	16.5 mm (OD) x 54 mm scintillation vials	120
Test tube Rack (without holder) for 155 mm OD and up test tube	3120-TRN	15 – 18.1 mm (OD) x 105 – 18 mm (L) test tubes	120
Test tube Rack (with 12 mm OD holder) for 12 mm OD test tube	3120-TR12	12 mm (OD) x 105 – 180 mm (L) test tubes	120

* Microplates, scintillation vials and test tubes are not included with racks.


3120-TH12

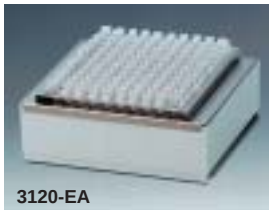

3120-UP

Product	Model	Specifications
12 mm holder	3120-TH12	Test Tube rack (12 mm OD holder), holds 30 12-mm test tubes
Rack middle plate	3120-UP	Place in the test tube rack (standard, 15 mm OD or larger, or 12 mm OD) to allow use of 35~105 (L) mm tubes.

■ Eppendorf tube adapter

Use to adapt the standard test tube rack to Eppendorf tubes

Model	3120-EA
Max. no. of fractions	120
Usable test tubes	1.5 mL (40 mm high, 11 mm body circumference)
Material	Stainless steel
Dimensions	275 (w) x 248 (d) x 115 (h) mm


3120-EA

* Test tube rack and Eppendorf tubes are not included with the Eppendorf tube adapter.

■ Preparative Options

Prep. Funnel (3120-PF) and Prep. Funnel Rack (3120-FR) allow the end user to collect fractions in large volume containers.


3120-PF

Product	Model	Specifications
Prep. Funnel	3120-PF	30 fraction funnels in each 3120-PF
Prep. Funnel Rack	3120-FR	Holds up to 3 3120-PFs (3x30 pos.)
Prep. Tygon Tubing	3120-TT	TYGON TUBE (6.35X9.52mm) X 5M)
Prep. Mobile Cart	3120-MC	Cut out hole on the Top table

■ 3-Way diverter valve

Prevent the sample from spillage out from the tubes while the nozzle is in transit. Also, use the included seal adapter to use the valve as a stop valve. May be set to drain to prevent residual sample in the valve from the previous peak from being mixed in with the next fraction. The 3-way valve 3120-SV3d has a low residual volume to decrease contamination.


3120-SV3

3120-SV3d

Product		3-Way diverter valve	Low residual 3-Way valve
Model		3120-SV3	3120-SV3d
Inlet pressure		294 kPa (3 kg-f/cm^2)	196 kPa (2kg-f/cm^2)
Connector Material		Teflon, Diflon (PCTFE)	
Residual volume (μL)	IN	26	14
	NC	66	7
	NO	66	7
Power consumption		2.2 VA max.	

* The 3120-SV3d has a flow volume approximately 40% less than the 3120-SV3.

■ Specifications

■ Model	SF-3120
Test tube quantity	120 tubes (12 ~ 18 mm OD x 105 ~ 180 mm L) (remove tube holders for larger than 15 mm OD)
Operation modes	Simple, Peak, Window, Manual, Sampling
Collection methods	By Time, Drop count, Drop volume, Signal
Nozzle shift time	0.1 sec (tube center to center)

■ Modes of Operation

Simple mode	Time:	99 min 59 sec / tube max.
	Drop:	9999 count / tube max.
	Volume:	999.9 mL / tube max.
	Signal:	9999 count / tube max.
	Peak mode	End time: 999 min max.
	Request time:	99 min 59 sec / tube max.
	Monitor time:	99 min 59 sec / tube max.
	Fraction peak:	Up to 10 out of 99 peaks
	Peak discrimination:	Absolute value 100% max.
		Slope 100mV/min or 10 V/min max.
	Signal response:	Chromoto. signal sampling High: 0.5 sec Low: 3 sec
Window mode	Non-window monitor:	99 min 59 sec max.
	No. of windows:	10 max.
	Start/end time:	999 min 59 sec max.
	Request/Monitor time:	99 min 59 sec / tube max.
	Peak specifications:	Same as in peak mode
Manual mode	Learning response:	Chromato. signal display High: 0.5 sec Low: 3 sec.
	Playback:	Replay results of learning
Sampling mode	Interval:	99 min 59 sec max.
	Collection time:	99 min 59 sec max.
	Collection volume:	999.9 mL max.
	No. of repeats:	99 max.
Common parameters	Wait time:	99 min 59 sec max. for Simple, Peak, Window and Sampling modes
	Delay time:	9 min 59 sec max. for Peak, Window and Manual modes
	Multi-sample:	Possible in Simple, Peak and Window modes.

■ Equipment parameter specifications

Volume collection	Collection time (min) = Flow volume (mL) / flow rate (mL/min)
Multi-sample	Skip one vessel or continuous (Non-skip)
Marker (2)	ON after operation (assembled with I/O extension unit, pumps stops after operation) or OFF
Power failure	Display On or Off
RS-2323C	Baud rates 1200, 2400, 4800 Characters: 8-bit, Parity: None, Stop: 2-bit

■ Vessel parameter specifications

Rack selection	Standard test tube Rack (3120-TR) Eppendorf tube Rack (3120-EA) Scintillation vial (16.5mm) Rack (3120-V17) Scintillation vial (27.5mm) Rack (3120-V28) Microtiter plate (96well x2) Rack (3120-MP) Prep. Funnel (3120-PF) Rack (3120-FR)

■ Self position arrangement

Arbitrary arrangement	Matrix arrangement:	2 patterns
	Arbitrary arrangement:	1 pattern
Matrix arrangement	Max. 12 rows x 12 columns (121 pos. max.)	
Random arrangement	Max. 100 positions	

■ External signals

Event marker	2 contact point output circuits: 1. Pulse signals 2. Level signals
Chromato, signal input	10 mV or 1 V full scale
External start input	ON START
External end input	ON END
External count input	ON COUNT
Serial interface	RS-232C (9-pin connector)

■ Accesories	
	Test tube rack 3120-TR (1) Drain (1) Dust cover (1) I/O terminal connector (1) Sample tubing: Teflon 2 mm OD x 1 mm ID x 1 M (1) Drain tubing: Silicon 8 mm OD x 5 mm ID x 0.5 M (1) Tube Suspender (2) Power cord (1) Installation & Operation Manual (1)

■ General electrical specifications

Clock	Quartz oscillation
Operation Display	40 characters x 8 rows (LCD w/backlight)
Parameter memory	Battery back-up
Temperature range	2 ~ 40°C (35 ~104°F)
Power	AC 100 V, 115 V, 240 V, 0.23 A max.
External dimensions	266 (w) x 359 (d) x 335 (h) mm
Weight	Approx. 7 kg (15.4 lbs)

■ Replacement items

Product	Model	Material/specs
Test Tube rack	3120-TR	Polypropylene
Drain	3120-DR	Polypropylene
Dust Cover	3120-DC	PVC
Std. rack holder	3120-THU	for 3120-TR, holds 30 tubes

ADVANTEC MFS, Inc.

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