


# FLOM Products Catalog



VER. 6.0  
WINTER 2017

## Fluid Control Systems and Parts

(for HPLC and Industrial Use)

Plunger pumps

Valves

Degassing units

Liquid Level Sensor

Plumbing  
(Fittings, Joints and Tubings)



## Message to Our Customers

Inception	Our company started in October 1990 as a developer and manufacturer of components for liquid flow control, particularly as it applied to liquid chromatography. At first we focused on supplying the large OEMs involved in analytical instrumentation with high-pressure valves and related products.
Growth	The next year we began selling our GASTORR line of super-compact, high performance degassing systems to the OEM, general, and overseas markets. In 1992 we reached another milestone with the development of the super-compact non-pulsatile feedback control pump. We were highly gratified to see this pump, embodying a revolutionary feedback system, become a major hit widely used in a multitude of analytical applications.
Expansion	We have introduced many new products to the market since our inception, and in every instance we have focused on our core mission as a component maker, always striving to develop and manufacture products with ever high performance and quality. As part of our international sales effort, we aggressively market our components in the US, Europe, Australia, and many parts of Asia, exhibiting not only at Pittcon, the world's largest analytical fair, but in many other venues throughout the world as well. And every year we announce and demo our latest creations to manufacturers and distributors throughout the industrialized world.
Our Mission	Current analytical applications demand not only ever higher performance and precision, but also demand products with minimal environmental impact (which includes resource recycling). In line with this new realities, we at FLOM have rededicated ourselves to providing high performance, compact, light, and low cost components that amply comply with the latest environmental regulations and recycling initiatives. As good corporate citizens we take pride in developing new products that contribute to the growth of the analytical market, and to the greater benefit of human society as well.

FLOM Corp.

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PUMPS

VALVES

DEGASSING UNITS

LIQUID LEVEL SENSOR

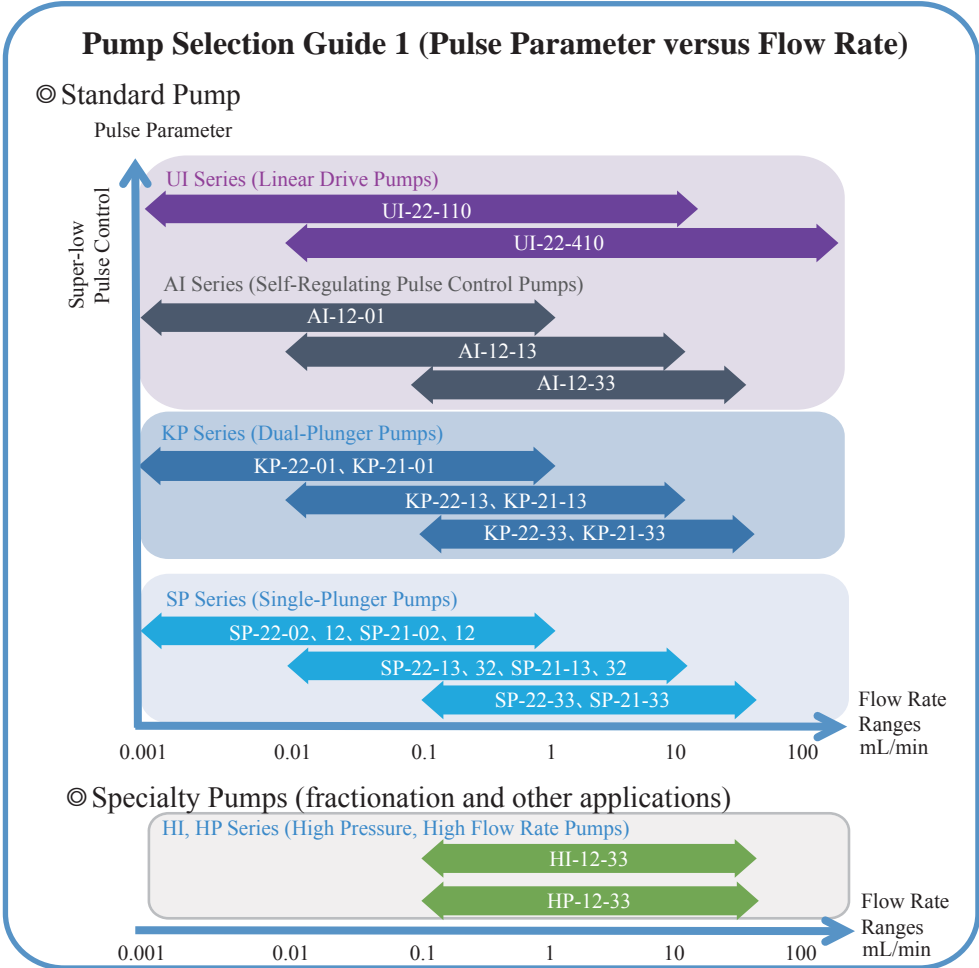
PLUMBING

OTHER PARTS



Guide for Plunger Pump Selection

FLOM Plunger Pumps are compact and easy to use. Use the guide below to select the pump that is right for your application, whether handling high viscosity solvents, bubble-sensitive situations, super-low pulsation and high throughput or high pressure applications. Also match the pump head material to the application at hand, whether SUS (stainless steel), PEEK (polyetheretherketone), plastic or PCTFE.



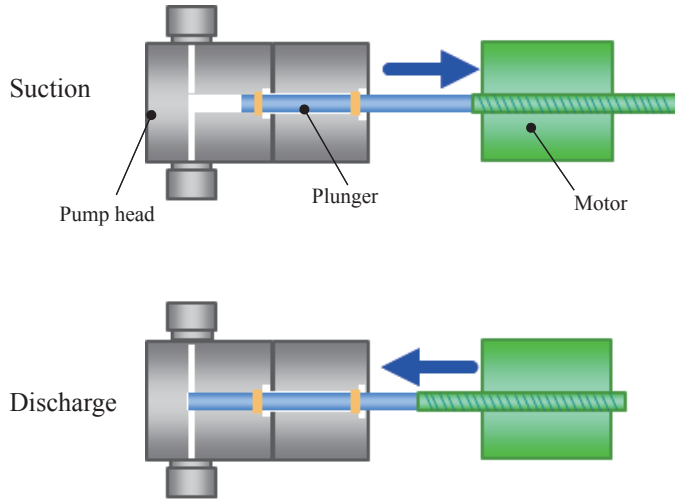
Pump Selection Guide 2 (Pump Head Material)			
Pump Head Material	PCTFE	PEEK (Polyetheretherketone)	SS (Stainless Steel)
Applica-tion	Sulfuric Acid Solutions	Saline Solutions, Ionic Component Analysis	Organic Solvents, etc.
Max Pressure	2 MPa	20 MPa	35 MPa

# Plunger Pump Design and Features

FLOM Plunger Pumps come in two configurations: linear drive and cam drive.

PUMP UNIT

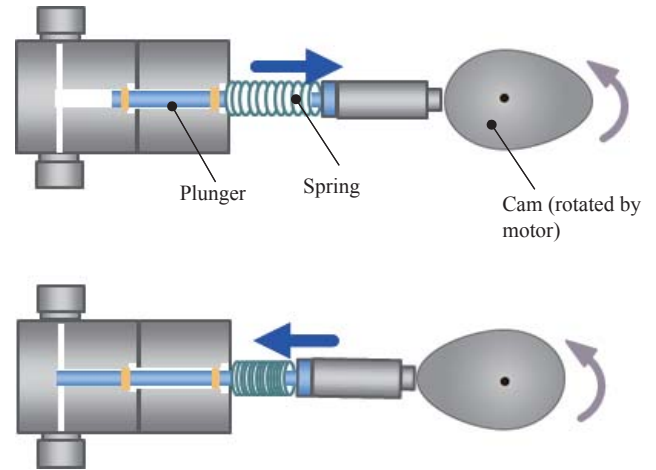
## Linear Drive (UI Series)



In a linear drive, the plunger moves along the same axis as the motor. In the graph above, the plunger moves left/right.

- Since the stroke is long, suction is greatly increased.
- With the elimination of vertical play, abrasion on the plunger is reduced.
- Highly wear-resistant plunger seals drastically reduce seal leaks even with highly volatile liquids, leading to longer pump life.

## Cam Drive (AI, KP, SP Series)



In this configuration, a cam is used to translate the motor's circular motion into linear motion. The forward motion of the cam supplies the energy needed by the spring for the return motion.

- Since a portion of the energy used to push the plunger is needed to compress the spring, a stronger motor is required.
- The movement of the cam produces vertical play causing wear, which requires periodic replacement of the plunger.



Intelligent Pump  
UI-22-110, SS

## Linear Drive Pulse Control Intelligent Pump UI-22 Series

Combines High Precision Flow with Ease of Use

### Features

- Reduces pulsation to an absolute minimum, making super low pulsation flow possible
- Problems with bubbles greatly reduced
- Plunger seal life extended
- Limit switches for both high and low pressures
- Space-saving compact design
- 2 or more pumps can be externally controlled thru RS-232C interface
- Choose either PEEK or Stainless Steel to match solvent used

PUMP UNIT

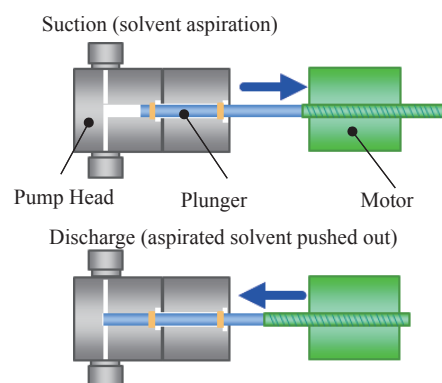
Product name	Intelligent Pump			
Part number	UI-22-110		UI-22-410	
pump head material	SS	PEEK*2	SS	PCTFE
Max pressure*1	35 MPa	20 MPa	5 MPa	2 MPa
Flow rate range	0.001~9.999 mL/min		0.01~99.99 mL/min	
Flow per stroke	80 μL		708 μL	
Plunger stroke	10 mm			
Flow accuracy	< 0.3 %			
Features	Active pulse reduction, Flow volume calibration, Upper and lower pressure limmeter			
Pressure accuracy	< 5%			
Wetted materials	SS type: SS, Sapphire, Rubby, PTFE, PCTFE PEEK type: PEEK, Sapphire, Rubby, PTFE, PCTFE PCTFE type: PCTFE, Sapphire, Rubby, PTFE, ETFE			
Remote control	Input: Pump on/off, Output: Error signal			
Communication	RS232C			
Dimensions	144 (H) x 105 (W) x 240 (D)			
Weight	5.6 kg			
Order code	SLP-P509	SLP-P514	SLP-P511	SLP-P510

\*1: Maximum pressure is only sustained intermittently. Continuous pump operation at maximum pressure cannot be guaranteed.

\*2: Will release on Summer 2017

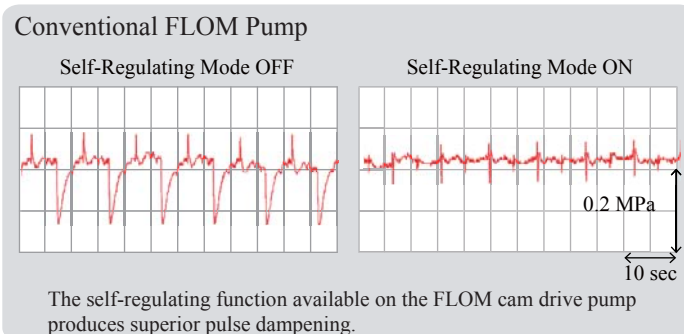
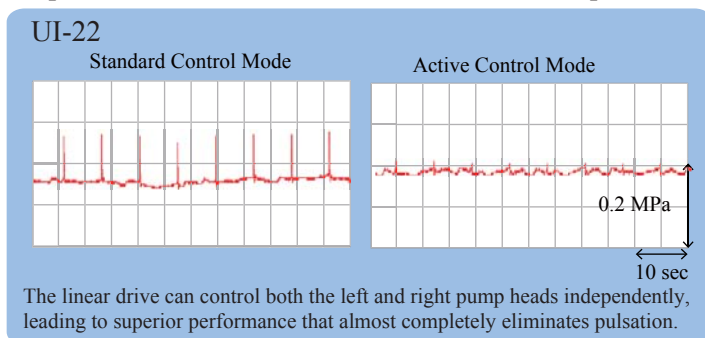
Note: The specifications and product design may change without prior notice.

### Linear Drive Design

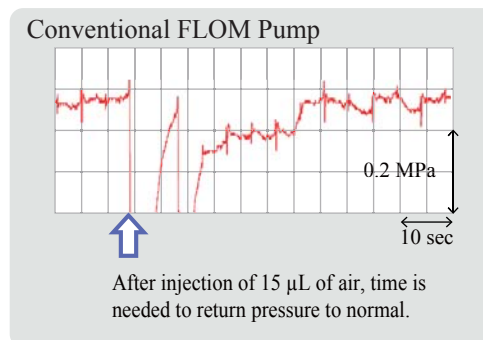
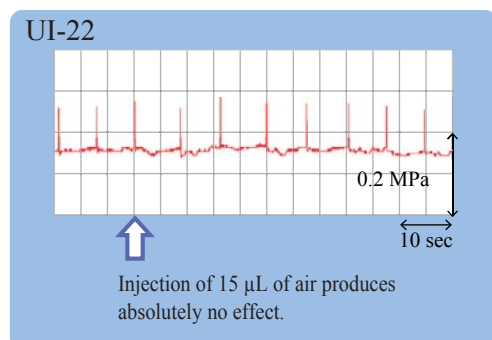


The UI-22 pump uses a linear driver mechanism in which the plunger moves in line with the motor's axis. Because aspirated air can be easily discharged, and with the seal suffering almost no wear, tiny leaks from the seal are eliminated, which means that even highly volatile solvents can be efficiently pumped.

### •Comparison of Pulsation with a Conventional Pump



### •Air Mixture Tests







Intelligent Pump  
AI-12-13, SS

Intelligent Pump  
AI-12-13, PEEK

## Pulse Control Pumps Intelligent Pump AI-12 series

A high performance pump with pressure sensing and real-time pulse control.

### Features

- High precision and stable flow volumes
- Self-regulating mechanism greatly reduces pressure fluctuations
- Upper and lower-pressure limit setting
- RS-232C interface for computer control
- Multi-layer, solvent-resistant seal design
- Choose from 3 different models to match desired flow ranges
- Choose either PEEK or Stainless steel (SS) to match solvent used

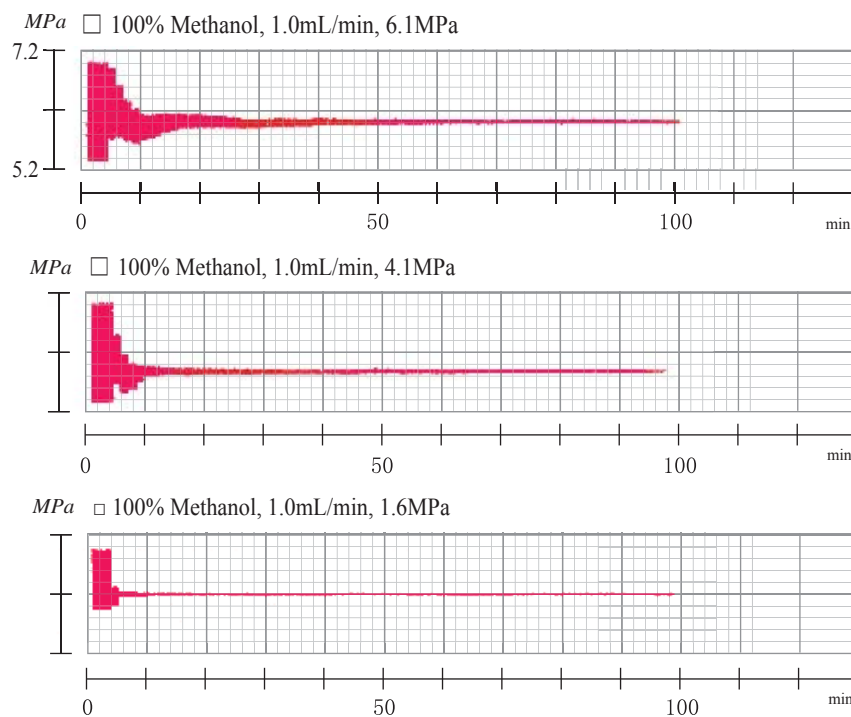
Product name	Intelligent pump					
Part number	AI-12-01		AI-12-13		AI-12-33	
Pump head material	SS	PEEK	SS	PEEK	SS	PEEK
Max pressure* <sup>1</sup>	30 MPa	20 MPa	30 MPa	20 MPa	5 MPa	5 MPa
Flow rate range	0.001~0.999 mL/min		0.01~9.99 mL/min		0.1~50.0 mL/min	
Flow per stroke	4 μL		32 μL		154 μL	
Flow accuracy	± 0.3 %					
Features	Active pulse reduction, Flow volume calibration, Upper pressure limiter, Lower pressure limiter, gradient flow* <sup>2</sup>					
Pressure accuracy	±5 %					
Wetted materials	SS type: SS, Sapphire, Ruby, PTFE, PCTFE PEEK type: PEEK, Sapphire, Ruby, PTFE, PCTFE					
Remote control	Input: Pump on/off, Output: Error signal					
Communication	RS232C					
Dimensions	144(H) x 79 (W) x 305(D) mm					
Weight	SS type: 4.3 kg, PEEK type: 3.8 kg					
Order code	SIP-P2006	SIP-P2005	SIP-P2002	SIP-P2001	SIP-P2004	SIP-P2003

\*1: Maximum pressure is only sustained intermittently. Continuous pump operation at maximum pressure cannot be guaranteed.

\*2: At least 2 pumps needed for gradient flow.

Note: The specifications and product design may change without prior notice.

### Pressure Pulsation Data







Dual Pump  
KP-22-13, SS

Dual Pump  
KP-22-13, PEEK

Dual Pump  
KP-22-13, PCTFE

## Medium to High Pressure Pumps Dual Pump KP-22 Series

A general-use pump with pressure sensor

### Features

- High precision and stable flow volumes
- Equipped with pulse control for reduced fluctuations in pressure
- Real-time display of pressure
- Metered flow mode allows setting to desired flow volumes
- Upper and lower pressure limiter
- RS-232C interface for computer control
- Variety of seals to choose from depending on solvent
- Choose from 3 different models to match desired flow ranges
- Choose from 3 different pump head materials

Product name	Dual pump							
Part number	KP-22-01		KP-22-13			KP-22-33		
Pump head material	SS	PEEK	SS	PEEK	PCTFE	SS	PEEK	PCTFE
Max pressure*1	25 MPa	20 MPa	25 MPa	20 MPa	2 MPa	5 MPa	5 MPa	2 MPa
Flow rate range*2	0.001~1.000 mL/min		0.01~10.00 mL/min			0.1~50.0 mL/min		
Flow per stroke	4 μL		32 μL			154 μL		
Flow accuracy	± 0.3%							
Features	Pulse control*3, Flow volume calibration, Upper and lower pressure limiter, Constant pressure flow*4, Set volume dispensing							
Pressure accuracy	± 5 %							
Wetted materials	SS type: SS, Sapphire, Ruby, PTFE, PCTFE PEEK type: PEEK, Sapphire, Ruby, PTFE, PCTFE PCTFE type: PCTFE Sapphire, Ruby, PTFE, ETFE							
Remote control	Input: Pump on/off, Output: Error signal							
Communication	RS232C							
Dimensions	144(H) x 79(W) x 285(D) mm							
Weight	SS type: 4.3 kg, PEEK and PCTFE type: 3.8 kg							
Order code	SDP-P1081	SDP-P1080	SDP-P1077	SDP-P1076	SDP-P1114	SDP-P1079	SDP-P1078	SDP-P1111

\*1: Maximum pressure is only sustained intermittently. Continuous pump operation at maximum pressure cannot be guaranteed.

\*2: The unit cannot run continuously at maximum flow rate.

\*3: Pulse control is activated below the flow pressure of 5 MPa.

\*4: Constant pressure flow mode adjusts the flow rate in real time to stabilize the pressure at the set range.

Note: The specifications and product design may change without prior notice.



Dual Pump  
KP-21-13, SS

Dual Pump  
KP-21-13, PEEK

## Medium to High Pressure Pumps Dual Pump KP-21 Series

A general-use pump without pressure sensor

### Features

- High precision and stable flow volumes
- RS-232C interface for computer control
- Variety of seals to choose from depending on solvent
- Choose from 3 different models to match desired flow ranges
- Choose from 2 different pump head materials

Product name	Dual pump					
Part number	KP-21-01		KP-21-13		KP-21-33	
Pump head material	SS	PEEK	SS	PEEK	SS	PEEK
Max pressure* <sup>1</sup>	25 MPa	20 MPa	25 MPa	20 MPa	5 MPa	5 MPa
Flow rate range* <sup>2</sup>	0.001~1.000 mL/min		0.01~10.00 mL/min		0.1~50.0 mL/min	
Flow per stroke	4 μL		32 μL		154 μL	
Flow accuracy	± 0.3 %					
Features	Flow volume calibration, Set volume dispensing					
Pressure accuracy	—					
Wetted materials	SS type: SS, Sapphire, Rubby, PTFE, PCTFE PEEK type: PEEK, Sapphire, Ruby, PTFE, PCTFE					
Remote control	Input: Pump on/off, Output: Error signal					
Communication	RS232C					
Dimensions	144(H) x 79(W) x 285(D) mm					
Weight	approx. 3.4 kg					
Order code	SDP-P1087	SDP-P1086	SDP-P1083	SDP-P1082	SDP-P1085	SDP-P1084

\*1: Maximum pressure is only sustained intermittently. Continuous pump operation at maximum pressure cannot be guaranteed.

\*2: The unit cannot run continuously at maximum flow rate.

Note: The specifications and product design may change without prior notice.

PCS Pump  
SP-22-13, SSPCS Pump  
SP-22-13, PEEK

## Single Plunger Pump PCS Pump SP-22 Series

Single plunger pump equipped with pressure sensor

### Features

- Low-cost, simple to operate single plunger pump
- Equipped with pulse reduction mechanism (quick return mode)
- Real-time pressure display
- Upper pressure limiter
- Convenient precision metered solvent volume dispensing
- Choose from 5 different models to match desired flow ranges

Product name	PCS Pump with pressure sensor									
Part number	SP-22-02		SP-22-12		SP-22-13		SP-22-32		SP-22-33	
Pump head material	SS	PEEK	SS	PEEK	SS	PEEK	SS	PEEK	SS	PEEK
Max pressure* <sup>1</sup>	20 MPa	20 MPa	20 MPa	20 MPa	10 MPa	10 MPa	5 MPa	5 MPa	2 MPa	2 MPa
Flow rate range* <sup>2</sup>	0.001~1.000 mL/min		0.01~2.00 mL/min		0.1~5.0 mL/min		0.1~10.0 mL/min		0.1~20.0 mL/min	
Stroke length	8 μL		16 μL		32 μL		77 μL		154 μL	
Flow per stroke	2 mm		2 mm		4 mm		2 mm		4 mm	
Flow accuracy	± 0.5%									
Features	Pulse control* <sup>3</sup> , Flow volume calibration, Upper and lower pressure limiter, Constant pressure flow* <sup>4</sup> , Set volume dispensing									
Wetted materials	SS type: SS, Sapphire, Ruby, PTFE, PCTFE PEEK type: PEEK, Sapphire, Ruby, PTFE, PCTFE PCTFE type: PCTFE Sapphire, Ruby, PTFE, ETFE									
Remote control	Input: Pump on/off, Output: Error signal									
Communication	RS232C									
Dimensions	144(H) x 79(W) x 285(D) mm									
Weight	approx. 3.0 kg									
Order code	SSP-P3062	SSP-P3061	SSP-P3064	SSP-P3063	SSP-P3066	SSP-P3065	SSP-P3068	SSP-P3067	SSP-P3070	SSP-P3069

\*1: Maximum pressure is only sustained intermittently. Continuous pump operation at maximum pressure cannot be guaranteed.

\*2: The unit cannot run continuously at maximum flow rate.

\*3: Pulse control is activated below the flow pressure of 5 MPa.

\*4: Constant pressure flow mode adjusts the flow rate in real time to stabilize the pressure at the set range.

Note: The specifications and product design may change without prior notice.

PCS Pump  
SP-21-13, SSPCS Pump  
SP-21-13, PEEK

## Single Plunger Pump PCS Pump SP-21 Series

Single plunger pump equipped without pressure sensor

### Features

- Low-cost, simple to operate single plunger pump
- Equipped with pulse reduction mechanism (quick return mode)
- Convenient precision metered solvent volume dispensing
- RS-232C interface for computer control
- Choose from 5 different models to match desired flow ranges
- Choose either SS or PEEK pump head materials

Product name	PCS Pump without pressure sensor									
Part number	SP-21-02		SP-21-12		SP-21-13		SP-21-32		SP-21-33	
Pump head material	SS	PEEK	SS	PEEK	SS	PEEK	SS	PEEK	SS	PEEK
Max pressure*1	20 MPa	20 MPa	20 MPa	20 MPa	10 MPa	10 MPa	5 MPa	5 MPa	2 MPa	2 MPa
Flow rate range*2	0.001~1.000 mL/min		0.01~2.00 mL/min		0.1~5.0 mL/min		0.1~10.0 mL/min		0.1~20.0 mL/min	
Flow per stroke	8 μL		16 μL		32 μL		77 μL		154 μL	
Stroke length	2 mm		2 mm		4 mm		2 mm		4 mm	
Flow accuracy	± 0.5 %									
Features	Flow volume calibration*3, Set volume dispensing*4									
Pressure accuracy	—									
Wetted materials	SS type: SS, Sapphire, Ruby, PTFE, PCTFE PEEK type: PEEK, Sapphire, Ruby, PTFE, PCTFE									
Remote control	Input: Pump on/off, Output: Error signal									
Communication	RS232C									
Dimensions	144(H) x 79(W) x 285(D) mm									
Weight	approx. 3.0 kg									
Order code	SSP-P3052	SSP-P3051	SSP-P3054	SSP-P3053	SSP-P3056	SSP-P3055	SSP-P3058	SSP-P3057	SSP-P3060	SSP-P3059

\*1: Maximum pressure is only sustained intermittently. Continuous pump operation at maximum pressure cannot be guaranteed.

\*2: The unit cannot run continuously at maximum flow rate.

\*3: Pulse reduction does not imply that pulses will be eliminated completely.

\*4: The range of settable volume is 0.01~1000 mL or 0.1~1000 mL, depending on the model.

Note: The specifications and product design may change without prior notice.



Intelligent Pump  
HI-12-33

## Pulse Control Fractionating High Pressure Pump Intelligent Pump HI-12-33

Through real time pulsatile control this pump can dispense at rates up to 50 mL/min (at 10 MPa).

### Features

- Can produce high flow rates with high pressure
- Easy to read backlit LCD displays show real-time flow pressures
- Self-regulating mechanism greatly reduces pressure fluctuations
- Column integrity protected by convenient upper-limit pressure switch
- Low-pressure limit switch allows automatic shutdown upon leak detection
- Computer control of 2 or more units through RS232C interface possible

Product name	<b>Intelligent Pump</b>
Part number	<b>HI-12-33</b>
Pump head material	SS
Max pressure*1	20 MPa (0.1~25 mL/min), 10 MPa (25~ 50 mL/min)
Flow rate range	0.1~50.0 mL/min
Flow per stroke	154 $\mu$ L
Flow accuracy	$\pm 0.3\%$
Features	Active pulse reduction, Flow volume calibration, Upper pressure limiter, Lower pressure limiter, gradient flow*2
Pressure accuracy	$\pm 5\%$
Wetted materials	SS Sapphire, Ruby, PTFE, PCTFE
Remote control	Input: Pump on/off, Output: Error signal
Communication	RS232C
Dimensions	184(H) x 110(W) x 395(D) mm
Weight	7.5 kg
Order code	SIP-P2104

\*1 Maximum pressure does not guarantee the continuous pump operation at the highest pressure. It may result in damage of the pump.

\*2 At least 2 pumps needed for gradient flow.

Note: The specifications and product design may change without prior notice.



Dual Pump  
HP-12-33

## Fractionating High Pressure Pump Dual Pump HP-12-33

A general-use, high pressure and high flow rate fractionating pump with exceptionally stable pressure and flow. Flow rates up to 50 mL at 10 MPa.

### Features

- Can produce high flow rates with high pressure
- Easy to read backlit LCD displays show real-time flow pressures
- Column integrity protected by convenient upper-limit pressure switch
- Special steady-state pressure mode provides stable flow
- Computer control of 2 or more units through RS232C interface possible

Product name	<b>Dual Pump</b>
Part number	<b>HP-12-33</b>
Pump head material	SS
Max pressure*1	20 MPa (0.1~25 mL/min), 10 MPa (25~ 50 mL/min)
Flow rate range	0.1~50.0 mL/min
Flow per stroke	154 $\mu$ L
Flow accuracy	$\pm 0.5\%$
Features	Flow volume calibration, Steady-state pressure mode, Set volume dispensing
Pressure accuracy	$\pm 5\%$
Wetted materials	SS, Sapphire, Ruby, PTFE, PCTFE
Remote control	Input: Pump on/off, Output: Error signal
Communication	RS232C
Dimensions	184(H) x 110(W) x 395(D) mm
Weight	7.5 kg
Order code	SDP-P1102

\*1 Maximum pressure is only sustained intermittently. Continuous pump operation at maximum pressure cannot be guaranteed.

\*2 Even when steady-state mode is operative, there will be some pulse fluctuations within the margin of error.

Note: The specifications and product design may change without prior notice.



Gradient Controller  
GE-11

Gradient Controllers  
Gradient Controller GE-11

An easy to program controller for gradient flow applications using 2 or more pumps.  
Connects to all FLOM pumps.




Features

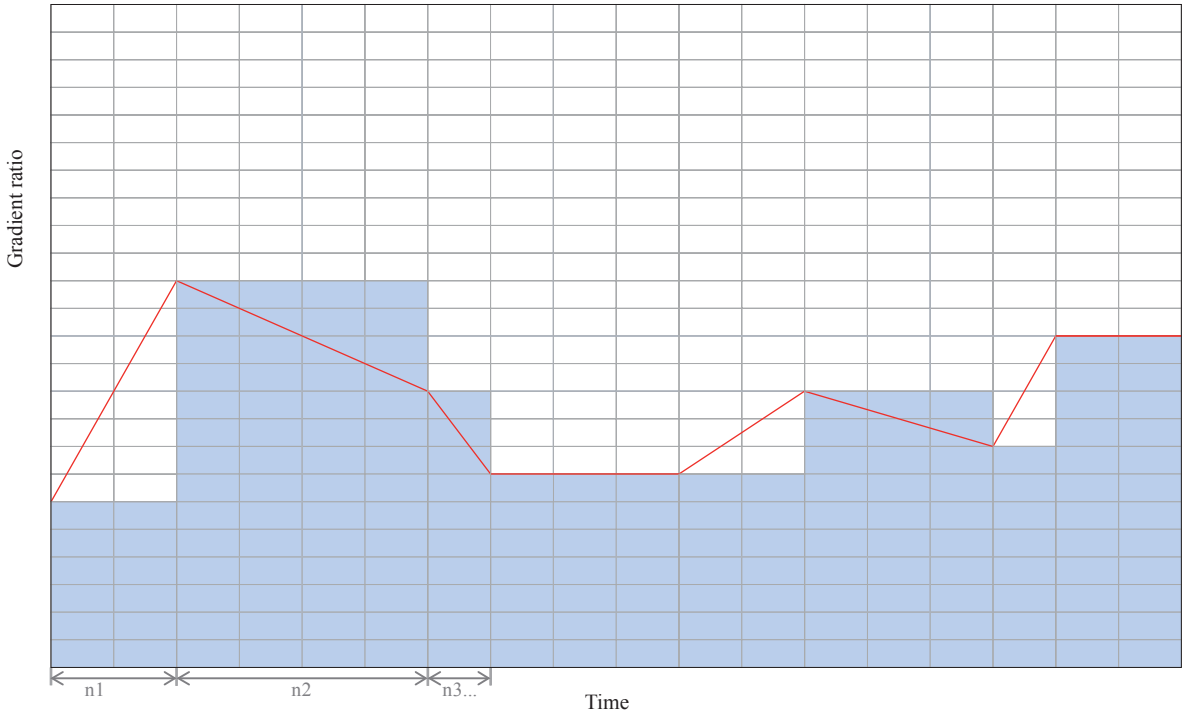
- Easy to operate gradient control
- Connects with all FLOM pumps
- Timer function allows automatic valve switching  
comes with RS-232C cabling for connection to FLOM pumps
- 2 standard modes: Linear/Step

Product name	Gradient Controller
Part number	GE-11
Max. Files	99
Inout Signal	Pump Start, Gradient Start
Output Signal	Valve Change, Error
Compatible pumps	UI, AI, KP, SP, CP, HI, HP series
Dimensions	70 (H) x 140 (W) x 200 (D) mm
Weight	0.5 kg
Order code	SGC-B201

Note: The specifications and product design may change without prior notice.

Sample Gradient Program

- ☐  Step gradient
- ☐  Liner gradient
- ☐  Step No.



## ○ Pump Accessories

### Pulse Dampers

These pulse dampers will improve flow performance on SP and KP type pumps. Choose either high or low pressure types depending on flow pressure.



High Pressure Damper 9810



Low Pressure Damper 9800

Product name	High Pressure Damper	Low Pressure Damper
Part number	9810	9800
Max pressure	20 MPa	2 MPa
Pulse control range	8~12 MPa	0.1~0.7 MPa
Internal volume	3.5 mL	0.8 mL
Wetted materials	PEEK, PTFE	PEEK, FEP
Thread size	No.10-32UNF	No.10-32UNF
Dimensions <sub>(mm)</sub>	φ50 x 36.5	φ45 x 33
Weight	0.3kg	0.3 kg
Order code	PDM-F001	PDM-F002

\* The specifications and product design may change without prior notice.

\* For custom specifications, contact FLOM.

### Side Panels for Valve Attachment

For attachment of switch valves, sample injectors, and other accessories to pumps. Can be attached to all AI, KP, and SP type pumps.



Side Panel 4512  
Injector type



Side Panel 4513  
Injector/Damper type



Side Panel 4514  
Small manual valve type

Product name	Side Panel		
Part number	4512	4513	4514
Pump type	AI-12, KP-12, KP-11, SP-12, SP-11 series		
Attachable parts	VI-11, VI-12, MI-11, V series	9800, 9810, VI-11, VI-12, MI-11, V series	V200 series
Dimensions <sub>(mm)</sub>	144(H) x 60(W) x 44(D) (excluding protuberances)		
Order code	PB1001-10	PB1001-09	PB1001-11

\* The specifications and product design may change without prior notice.

\* For custom specifications, contact FLOM.

## Addendum 1: Material Abbreviations

Throughout this catalog we abbreviate the names of the various materials used. The simple legend below will help you connect the abbreviation with its proper name, and contains a brief description of the properties of each material.

Material Abbreviations	Description
SS	Stainless Steel. “SS” is the prefix used before the number describing the material’s properties. Pronounced “suss”. The materials is mainly steel, but is corrosion resistant due to the chromium alloy, which forms a chromium oxide layer on the surface. Since it cannot be corroded by organic solvents and is highly pressure resistant, it is commonly used in HPLC pump heads, columns, tubing, fittings, and valve stators.
PEEK	This is a plastic, polyetheretherketone. Rather expensive, but displays superlative chemical and mechanical resistance properties. It has much higher mechanical resistance than other plastics. In HPLC applications, it is used for pump heads, columns, tubing, fittings, and valve rotor seals, and often employed for systems using strongly acidic solvents, or for applications where SUS might affect the analysis, such as those with ionic components like ion chromatography. For tubes and fittings, PEEK is superior since it is easier to process than SUS, for example when forming bent tubing or making fittings to be hand-tightened, but without the high mechanical resistance of SUS it can only be used in applications up to about 30 MPa.
PCTFE	A fluorocarbon polymer, its full name is Polychlorotrifluoroethylene. Exhibits superior chemical and mechanical resistance. FLOM uses this material in some of our pump heads. Pump heads made with PCTFE can be used to pump concentrated sulfuric acid solvents, which SUS and PEEK cannot handle.
PTFE	Another fluorocarbon polymer, its full name is Polytetrafluoroethylene. Pronounced just as written, “P.T.F.E”, or simply called by its brand name, “Teflon®”. Used in plunger seals and similar components.
ETFE	Yet another fluorocarbon polymer, its full name is Ethylene Tetrafluoroethylene. Pronounced just as written, “E.T.F.E”, or simply called by its brand name, “Tefzel®”. Low pressure resistance but it does offer transparency. Used in tubing and fittings.
PP	This is polypropylene. Used in fittings.
PPS	This is Polyphenylene Sulfide. Used to form the inner chambers in degassing devices.
POM	This plastic is Polyoxymethylene, also known as Polycetal. Used to make fittings.
Teflon AF	As porous Teflon tubing, used in degassing tubing inside degassing devices.
Ceramics	FLOM uses an Al <sub>2</sub> O <sub>3</sub> ceramic material for its valve stator faces. This material exhibits high mechanical resistance.
Ruby	Used in the ball of the pump’s check valve.
Sapphire	Used in pump plungers.



## 2. Valves

We at FLOM have many years developing switching valves and injectors featuring a variety of materials and functionality. The trend in recent years has been to increase our line-up with more compact and high-pressure products. If you don't see what you're looking for here, let us know what you want! We can probably design a product that fits your needs perfectly.

### Guide for Valve Selection

FLOM valves come in 3 varieties of drive: manual, automatic, or pneumatic (air-driven). Our automatic drive valves come as either stand-alone or OEM-embeddable types.

#### Types of FLOM Valves

Manual	Automatic		Pneumatic (anti-explosive)
	Stand-alone	OEM-embeddable	
Injector – VI Series (Standard)	VA-11 Series (Super high pressure, analytical or fractionation applications, 4 port, rotary, etc.)	VA-11A, 12A Series (Standard)	415 Series
Injector – MI-11 (super high pressure)		VF-02 Series (Fast switching)	
Switching Valve V Series			

#### Types of Valve Heads (some examples)

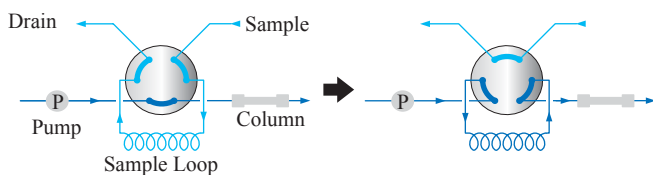
<b>4-port switching</b>  	<b>6-port switching</b>  	<b>16-port switching</b>  
<b>3-port 2-way switching</b>  	<b>4-port 2-way switching</b>  	<b>4-port rotary</b>  
<b>6-port rotary</b>  	<b>8-port rotary</b>  	<b>12-port rotary</b>  



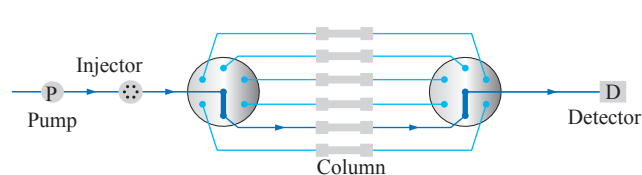
# Examples of Valve Switching Configurations

These are only a few representative possibilities – there are countless others. If you don't find the configuration you're looking for here, please contact us directly.

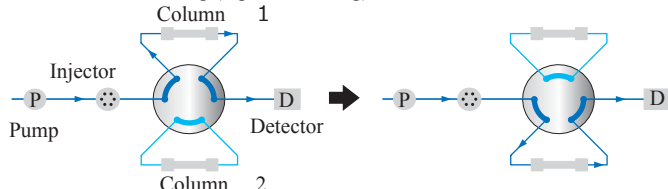
① Sample Injection (6-port switching)



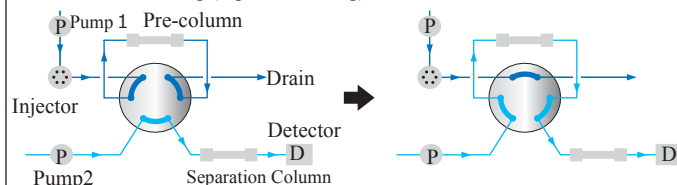
② Column Switching (6-port rotary)



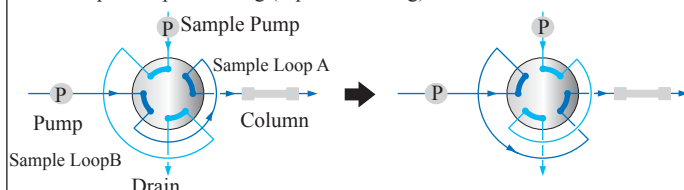
③ Column Switching (6-port switching)



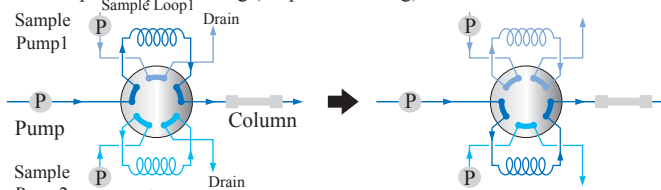
④ Column Switching (6-port switching)



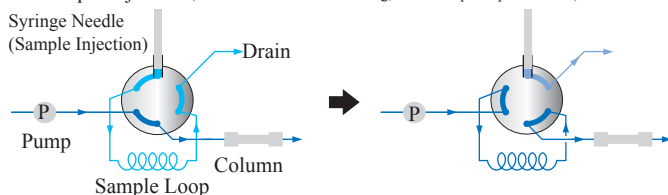
⑤ Sample Loop Switching (8-port switching)



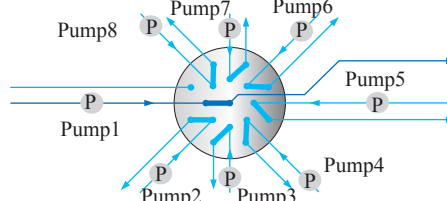
⑥ Sample Loop Switching (10-port switching)



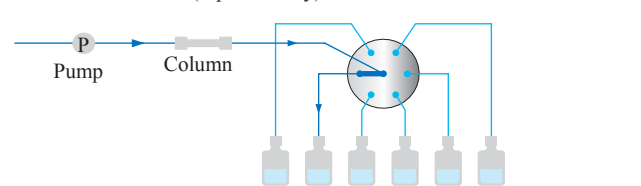
⑦ Sample Injection (Vertical Port 6-Port Switching, Auto Sampler Specification)



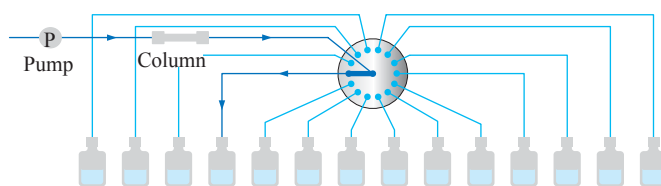
⑧ Pump Selection (Specialty Non-Clogging 8-Port Rotary)



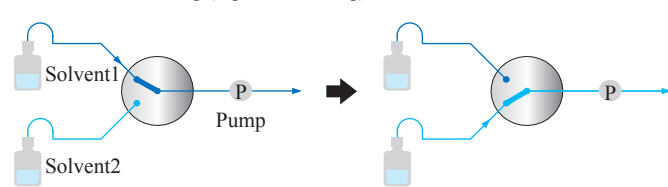
⑨ Peak Fractionation (6-port Rotary)



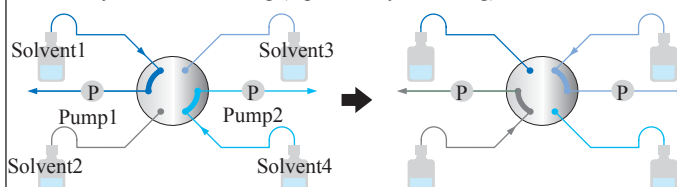
⑩ Peak Fractionation (14-port Rotary)



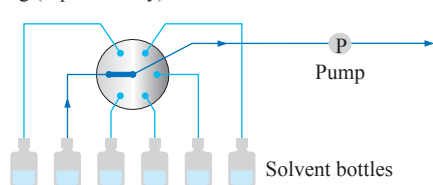
⑪ Solvent Switching (2-port Switching)



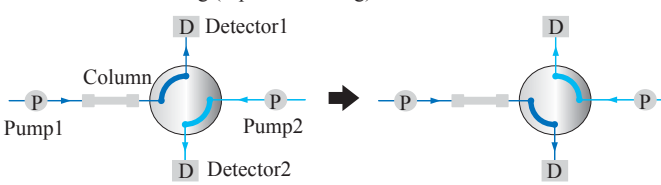
⑫ 2-way Solvent Switching (3-port 2-way Switching)



⑬ Solvent Switching (6-port Rotary)



⑭ Detector Switching (4-port Switching)





Manual Sample Injector VI-11

## Manual Sample Injectors

### Manual Sample Injector VI Series

Equipped with built-in injection marker. Specify either Stainless Steel or PEEK as your fluid path material.

#### Features

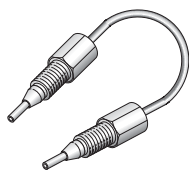
- Choose either Stainless Steel or PEEK for the fluid path
- Maximum pressure 35 MPa
- Equipped with injection marker
- Optional syringe needle made of inert material

Product name	Manual Sample Injector	
Part number	VI-11	VI-12
Wetted materials	SS, PEEK, Ceramic	Ceramic, PEEK
Max pressure	35 MPa	
Tube OD	1/16"	
Path diameter	0.5 mm (0.02")	
Port thread size	No.10-32UNF	
Sample loop	20 µL (SS, 1/16")	
Injection marker	Built-in (1.5 m lead wire)	
Order code	VH-V271	VH-V276

Note: The specifications and product design may change without prior notice.

#### Optional accessories

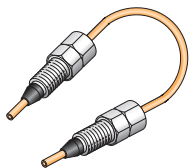
##### SS, 20 µL loop



##### Sample loop (1/16" stainless steel)

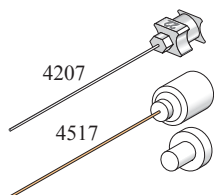
Part No.	Volume
7501	10 µL
7502	20 µL
7503	50 µL
7504	100 µL
7505	200 µL
7506	500 µL
7507	1 mL

##### PEEK, 20 µL loop



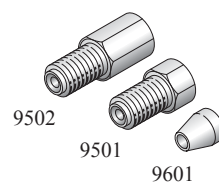
##### Sample loop (1/16" PEEK)

Part No.	Volume
7201	10 µL
7202	20 µL
7203	50 µL
7204	100 µL
7205	200 µL
7206	500 µL
7207	1 mL



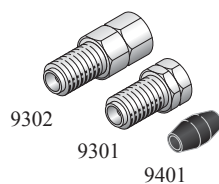
##### Syringe needle

Part No.	Description
4207	SUS22G (ID 0.5 mm)
4517	PEEK(OD 0.7 mm x ID 0.3 mm)



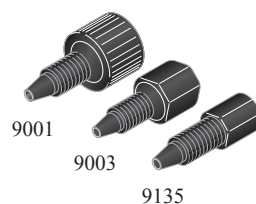
##### VI-11 Fittings (10/pkg)

Part No.	Description
9502	1/16 Nut L
9501	1/16 Nut S
9601	1/16 Ferrule



##### VI-12 Fittings (10/pkg)

Part No.	Description
9302	1/16 DoubleLock Nut L
9301	1/16 DoubleLock Nut S
9401	1/16 DoubleLock Ferrule



##### PEEK fittings (10/pkg)

Part No.	Description
9001	Easy Fitt
9003	Hex Fitt
9135	Hex Fitt Mini



##### Specialty fittings (10/pkg)

Part No.	Description
9611	Tri-Fitt Set
9612	Tri-Fitting
9605	Replacement ferrule S
9606	Replacement ferrule P

##### Injector panel \*

Part No.	Description
4515	Injector panel

\* The valve in the picture is not included and must be purchased separately.

\* This cannot be attached to FLOM pumps. See page 9 for side panels for valve attachment to FLOM pumps.





UHPLC Micro Injector MI-11

## Manual Micro-injectors for Ultra High Pressure UHPLC Micro Injector MI-11

For UHPLC applications (100 MPa). Can also be used for regular micro-analytical applications.

### Features

- Ultra high pressure spec (100 MPa) allows sample injection into high pressure fluid pathways
- Ultra high precision minimizes sample loss
- 0.25 mm flowpath reduces sample diffusion
- Micro-switch injection marker prevents errors
- Comes with 5 $\mu$ L sample loop and 10  $\mu$ L micro-syringe

Product name	<b>UHPLC Micro Injector</b>
Part Number	<b>MI-11</b>
Wetted materials	SS, PEEK, Ceramic
Max pressure	100 MPa (15000 psi)
Tube OD	1/16"
Path diameter	0.25 mm (0.01")
Port thread size	No.10-32UNF
Sample loop	5 $\mu$ L (SS, 1/16")
Injection marker	Built-in, (1.5 m lead wire)
Order code	VH-V340

Note: The specifications and product design may change without prior notice.

### Optional accessories

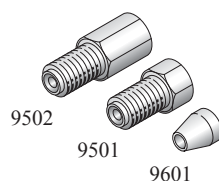
5  $\mu$ L SS loop

Sample loop (1/16" stainless steel)

Part No.	Volume
7500M	5 $\mu$ L

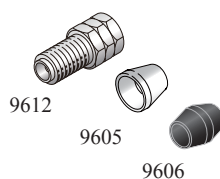
Syringe

Part No.	Description
4701	SS26G (ID 0.25 mm)



VI-11 Fittings (10/pkg)

Part No.	Description
9502	1/16 Nut L
9501	1/16 Nut S
9601	1/16 Ferrule



Specialty fittings (10/pkg)

Part No.	Description
9611	Tri-Fitt Set
9612	Tri-Fitting
9605	Replacement ferrule S
9606	Replacement ferrule P



Injector panel \*

Part No.	Description
4515	Injector panel

\* The valve in the picture is not included and must be purchased separately.

\* This cannot be attached to FLOM pumps. See page 9 for side panels for valve attachment to FLOM pumps.



V05

V200

V239




## Manual Valves

### Manual Valve V Series

A convenient manual valve for high pressure flow applications. Choose from either Stainless Steel or PEEK as your fluid path material.

#### Features

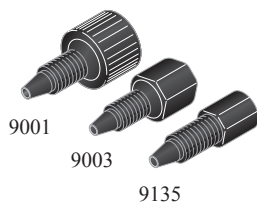
- Low torque design allows low power switching (V05)
- Since handle is placed in front, if panel is installed allows operation from the valvehead side (V200 Series)
- Choose either Stainless Steel or PEEK as your fluid path material

Product number	V05	V200	V201	V204	V239
Feature	High pressure, SS	PEEK	PEEK	Analytical, PEEK	Fractionation, PEEK
Path position	6 port 2 position 		Dual 3 port 2 ways 	2 port selector (1-2 rotary) 	
Max pressure	40 MPa (5800 psi)	20 MPa (2900 psi)	20 MPa (2900 psi)	20 MPa (2900 psi)	1 MPa (145 psi)
Wetted materials	SS, PEEK	PEEK	PEEK	PEEK	PEEK
Tube OD	1/16"	1/16"	1/16"	1/16"	3.0 mm, 1/8"
Path diameter	0.4 mm (0.016")	0.6 mm (0.024")	0.6 mm (0.024")	0.8 mm (0.03")	1.0 mm (0.04")
Order code	VH-V05	VH-V200	VH-V201	VH-V204	VH-V239

Note: The specifications and product design may change without prior notice.

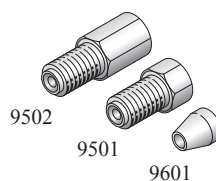
Note: Other switching valves besides those shown above are available.

#### Optional accessories



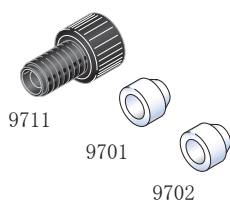
PEEK fittings (10/pkg)

Part No.	Description
9001	Easy Fitt
9003	Hex Fitt
9135	Hex Fitt Mini



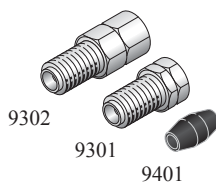
Fittings (10/pkg)

Part No.	Description
9502	1/16 Nut L
9501	1/16 Nut S
9601	1/16 Ferrule



Fittings (10/pkg)

Part No.	Description
9711	1/8 Flat Seal Nut
9701	φ3 Flat Seal Ferrule
9702	1/8 Flat Seal Ferrule



Fittings (10/pkg)

Part No.	Description
9302	1/16 DoubleLock Nut L
9301	1/16 DoubleLock Nut S
9401	1/16 DoubleLock Ferrule

Attachment panel for V series  
For V200, 201, 204, 239

Part. No	Description
45150	Attachment panel

Note: Please see page14 about attachment panel for V05



Specialty fittings (10/pkg)

Part No.	Description
9611	Tri-Fitt Set
9612	Tri-Fitting
9605	Replacement ferrule SS
9606	Replacement ferrule PEEK



Valve Unit VA-11

## Valve Unit

Product name	Valve Unit
Part number	VA-11
Automatic control	Direct drive by DC motor
Switching Modes	2 port switching, rotary
Manual Input	Position change, position, reset
Remote input/output	Drive Input: position change, position selection, home position reset, CPU reset Status Output: port position, Error
Voltage range	AC100~240V 50/60Hz
Dimensions	144(H) x 79(W) x 285(D) mm
Weight	2.3 kg

\* The specifications and product design may change without prior notice.

\* Due to continual product improvements, latest models may differ somewhat from the pictures/descriptions in the User's Manual and the FLOM catalog.


## Automatic Valve Valve Unit VA-11 Series





FLOM's standard automatic valve series for general use. Useful in a variety of applications from general analysis, to fractionating high-speed analytical applications.



## Features

- Multiple flow patterns can be adapted to your specific analytical setup
- Can be setup with a variety of flow diameters from micro-analysis to fractionating applications
- Can be configured with inert materials for fluid contact areas
- Useful for UHPLC chromatography
- Over 300 different types of valve heads available<sup>\*1</sup>

## Valve Heads (Examples)

Product number	VA-11-385	VA-11-386	VA-11-65	VA-11-66	VA-11-68	VA-11-381
Feature	Super high pressure, SS	Super high pressure, SS	High pressure, SS	Standard pressure, PEEK	SS, M8	PEEK, M8
Path position	6 port 2 position 					
Max pressure	125 MPa (18000 psi)	104 MPa (15000 psi)	35 MPa (5000 psi)	20 MPa (2900 psi)	10 MPa (1450 psi)	5 MPa (725 psi)
Wetted materials	SS, hi pressure polymer	SS, PEEK, Ceramic	SS, PEEK	PEEK (SS exterior)	SS, PEEK	PEEK (SS exterior)
Tube OD	1/16"	1/16"	1/16"	1/16"	3.0 mm, 1/8"	3.0 mm, 1/8"
Path diameter	0.25 mm (0.01")	0.4 mm (0.016")	0.6 mm (0.024")	0.6 mm (0.024")	2.0 mm (0.079")	2.0 mm (0.079")
Order code	SAV-VA-11-385	SAV-VA-11-386	SAV-VA-11-65	SAV-VA-11-66	SAV-VA-11-68	SAV-VA-11-76

Product number	VA-11-213	VA-11-140	VA-11-120	VA-11-127	VA-11-108
Feature	High pressure, SS	PEEK	SS	Low pressure, PEEK, M8	SS
Path position	4 port 2 position 		Dual 3 port 2 way 	8 port selector (1-8 rotary) 	12 port selector (1-12 rotary) 
Max pressure	35 MPa (5000 psi)	20 MPa (2900 psi)	20 MPa (2900 psi)	5 MPa (725 psi)	15 MPa (2175 psi)
Wetted materials	SS, PEEK	PEEK (SS exterior)	SS, PEEK	SS, PEEK	SS, PEEK
Tube OD	1/16"	1/16"	1/16"	1/8"	1/16"
Path diameter	0.6 mm (0.024")	0.6 mm (0.024")	0.6 mm (0.024")	1.4 mm (0.055")	0.6 mm (0.024")
Order code	SAV-VA-11-213	SAV-VA-11-140	SAV-VA-11-120	SAV-VA-11-127	SAV-VA-11-108

Product number	VA-11-249	VA-11-141	VA-11-67	VA-11-74	VA-11-69	VA-11-77
Feature	SS	PEEK	High pressure, SS	PEEK	Low pressure, SS, M8	Low pressure, PEEK, M8
Path position	4 port selector (1-4 rotary) 		6 port selector (1-6 rotary) 			
Max pressure	20 MPa (2900 psi)	20 MPa (2900 psi)	40 MPa (5800 psi)	15 MPa (2175 psi)	5 MPa (725 psi)	5 MPa (725 psi)
Wetted materials	SS, PEEK	PEEK (SS exterior)	SS, PEEK	PEEK (SS exterior)	SUS, PEEK	PEEK (SS exterior)
Tube OD	1/16"	1/16"	1/16"	1/16"	3.0 mm or 1/8"	3.0 mm or 1/8"
Path diameter	0.6 mm (0.024")	0.8 mm (0.031")	0.8 mm (0.031")	0.8 mm (0.031")	2.0 mm (0.079")	2.0 mm (0.079")
Order code	SAV-VA-11-249	SAV-VA-11-141	SAV-VA-11-67	SAV-VA-11-74	SAV-VA-11-69	SAV-VA-11-77

\* The specifications and product design may change without prior notice.

\* Due to continual product improvements, latest models may differ somewhat from the pictures/descriptions in the User's Manual and the FLOM catalog.



Auto Valve VA-11A



Auto Valve VA-12A

## Automatic Valves for OEM Systems Auto Valve VA-11A/VA-12A Series

This is the VA-11 type auto valve in an embeddable configuration for OEM systems.

### Features

- Space-saving compact design
- Can be equipped with large size high torque valveheads for high volume flow applications
- The super-small VA-12A Series takes up even less space and weighs less than the already compact VA-11A series<sup>\*1</sup>

### Valve Drive


Product name	Auto Valve	
Part number	VA-11A	VA-12A*1
Automatic control	Direct drive by DC motor	
Remote input/output	Drive Input: position change, home position reset, CPU reset Status Output: port position, Error	
Voltage range	DC24V	
Weight*2	1.0 kg	0.8 kg





\* Due to continual product improvements, latest models may differ somewhat from the pictures/descriptions in the User's Manual and the FLOM catalog.



\*1 The model VA-12A can only be installed on a limited number of pumps. Contact FLOM for more details

\*2 The weigh of each model varies, depending on the valvehead. Contact FLOM for more details.

### Valve Heads (Please contact us for any type of valves are not in here)

Product number	VA-11A-385	VA-11A-386	VA-11A-65	VA-11A-66	VA-11A-68	VA-11A-381
Feature	Super high pressure, SS	Super high pressure, SS	High pressure, SS	PEEK	SS, M8	PEEK, M8
Path position	6 port 2 position 					
Max pressure	125 MPa (18000 psi)	104 MPa (15000 psi)	35 MPa (5000 psi)	20 MPa (2900 psi)	10 MPa (1450 psi)	5 MPa (725 psi)
Wetted materials	SS, polymer	SS, PEEK, Ceramic	SS, PEEK	PEEK (SS exterior)	SS, PEEK	PEEK (SS exterior)
Tube OD	1/16"	1/16"	1/16"	1/16"	3.0 mm or 1/8"	3.0 mm or 1/8"
Path diameter	0.25 mm (0.01")	0.4 mm (0.016")	0.6 mm (0.024")	0.6 mm (0.024")	2.0 mm (0.079")	2.0 mm (0.079")

Product number	VA-11A-213	VA-11A-140	VA-11A-120	VA-11A-127	VA-11A-108
Feature	High pressure, SS	PEEK	SS	Low pressure, PEEK, M8	SS
Path position	4 port 2 position 		Dual 3 port 2 way 	8 port selector (1-8 rotary) 	12 port selector (1-12 rotary) 
Max pressure	35 MPa (5000 psi)	20 MPa (2900 psi)	20 MPa (2900 psi)	5 MPa (725 psi)	15 MPa (2175 psi)
Wetted materials	SS, PEEK	PEEK (SS exterior)	SS, PEEK	SS, PEEK	SS, PEEK
Tube OD	1/16"	1/16"	1/16"	1/8"	1/16"
Path diameter	0.6 mm (0.024")	0.6 mm (0.024")	0.6 mm (0.024")	1.4 mm (0.055")	0.6 mm (0.024")

Product number	VA-11A-249	VA-11A-141	VA-11A-67	VA-11A-74	VA-11A-69	VA-11A-77
Feature	SS	PEEK	High pressure, SS	PEEK	Low pressure, SS, M8	Low pressure, PEEK, M8
Path position	4 port selector (1-4 rotary) 		6 port selector (1-6 rotary) 			
Max pressure	20 MPa (2900 psi)	20 MPa (2900 psi)	40 MPa (5800 psi)	15 MPa (2175 psi)	5 MPa (725 psi)	5 MPa (725 psi)
Wetted materials	SS, PEEK	PEEK (SS exterior)	SS, PEEK	PEEK (SS exterior)	SS, PEEK	PEEK (SS exterior)
Tube OD	1/16"	1/16"	1/16"	1/16"	3.0 mm or 1/8"	3.0 mm or 1/8"
Path diameter	0.6 mm (0.024")	0.8 mm (0.031")	0.8 mm (0.031")	0.8 mm (0.031")	2.0 mm (0.079")	2.0 mm (0.079")

\* The specifications and product design may change without prior notice.

\* Due to continual product improvements, latest models may differ somewhat from the pictures/descriptions in the User's Manual and the FLOM catalog.

\* For custom specifications, contact FLOM.





Auto Valve VF-02-1005

## High Speed Auto Valves for OEM Systems Auto Valve VF-02 Series

A new generation of automatic valves for high pressure OEM applications, featuring long life and high switching speed. Super compact design that incorporates the control board and the motor drive in one. Also includes detachable valveheads.

### Features

- Space-saving super compact design
- High revolving speed (60°, 0.1 second) reduces pressure shock the ceramic type seal improves seal life to 100,000 cycles
- Can switch in valvehead rated to 100 MPa for super high speed analytical applications
- Detachable valvehead permits fast, efficient maintenance

### Valve driver

Product name	AutoValve
Part number	VF-02
Automatic control	Direct drive by stepmotor
Manual control	-
Remote input/output	Drive Input: Position change, Home position reset, CPU reset (CPU reset not available on VF-02 Series) Status Output: Port position, Error
Voltage range	DC 24 V
Weight	0.7 kg


\* The specifications and product design may change without prior notice.




\* Due to continual product improvements, latest models may differ somewhat from the pictures/descriptions in the User's Manual and the FLOM catalog.



\* For custom specifications, contact FLOM.

\* Durability data comes from tests performed in-house at FLOM.

Valve heads (Please contact us for any type of valves are not in here)

Product number	VF-02-1002	VF-02-1003	VF-02-1005	VF-02-1103	VF-02-1104	VF-02-1036
Feature	Super high pressure, SS	Super high pressure, PEEK	High pressure, PEEK	High durability, SS	High durability, PEEK	Micro analysis, SS
Path position	6 port 2 position 					
Max pressure	40 MPa (5800 psi)	40 MPa (5800 psi)	20 MPa (2900 psi)	40 MPa (5800 psi)	40 MPa (5800 psi)	40 MPa (5800 psi)
Wetted materials	SS, PEEK	PEEK (SS exterior)	PEEK	SS, PEEK, Ceramic	PEEK, Ceramic	SS, PEEK
Tube OD	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"
Path diameter	0.4 mm (0.016")	0.4 mm (0.016")	0.4 mm (0.016")	0.4 mm (0.016")	0.4 mm (0.016")	0.25 mm (0.01")

Product number	VF-02-1037	VF-02-1056	VF-02-1010	VF-02-1012	VF-02-1013	VF-02-1015
Feature	Low dead volume, SS	Low dead volume, PEEK	High pressure, SS	PEEK	High pressure, SS	PEEK
Path position	6 port 2 position 		Dual 3 port 2 way (Path selection) 		4 port 2 position 	
Max pressure	40 MPa (5800 psi)	20 MPa (2900 psi)	40 MPa (5800 psi)	20 MPa (2900 psi)	40 MPa (5800 psi)	20 MPa (2900 psi)
Wetted materials	PEEK (SS exterior)	PEEK (SS exterior)	SS, PEEK	PEEK	SS, PEEK	PEEK
Tube OD	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"
Path diameter	0.25 mm (0.01")	0.25 mm (0.016")	0.4 mm (0.016")	0.4 mm (0.016")	0.4 mm (0.016")	0.4 mm (0.016")

Product number	VF-02-1040	VF-02-1058	VF-02-1050	VF-02-1065
Feature	Low dead volume, SS	Low dead volume, PEEK	High pressure, SS	PEEK
Path position	8 port 2 position 		6 port 2 position, Vertical injection port 	
Max pressure	40 MPa (5800 psi)	20 MPa (2900 psi)	40 MPa (5800 psi)	20 MPa (2900 psi)
Wetted materials	SS, PEEK	PEEK	SS, PEEK	PEEK
Tube OD	1/16"	1/16"	1/16"	1/16"
Path diameter	0.25 mm (0.01")	0.25 mm (0.01")	0.4 mm (0.016")	0.4 mm (0.016")

\* The specifications and product design may change without prior notice.

\* Due to continual product improvements, latest models may differ somewhat from the pictures/descriptions in the User's Manual and the FLOM catalog.

\* For custom specifications, contact FLOM.





Valve Unit 415

## Pneumatic Drive Valves Air Valve 415 Series

A pneumatic drive valve that safely switches without requiring an electric motor. Of particular use in environments where anti-explosion measures are required.


### Features

- Valve switching done pneumatically (no electric power required)
- Compact design allows embedding within larger systems
- High pressure, long life valveheads
- Optional external magnetic switch for monitoring

### Valve drive

Product name	<b>Air Valve</b>
Part number	<b>415</b>
Drive method	Pneumatic drive
Air tube OD	1/8", 6.0 mm

### Valve heads (Please contact us for any type of valves are not in here)

Product number	<b>414-65</b>	<b>414-66</b>	<b>415-86</b>	<b>415-58</b>	<b>415-327</b>	<b>415-68</b>	<b>415-381</b>
Feature	Super high pressure, SS	High pressure, PEEK	SS	PEEK	High pressure, SS	Fractionation, SS	Fractionation, PEEK
Path position	6 port 2 position 						
Max pressure	35 MPa (5000 psi)	20 MPa (2900 psi)	25 MPa (3600 psi)	10 MPa (1450 psi)	40 MPa (5800 psi)	10 MPa (1450 psi)	5 MPa (725 psi)
Wetted materials	SS, PEEK	PEEK (SS exterior)	SS, PEEK	PEEK	SS, PEEK	SS, PEEK	PEEK (SS exterior)
Tube OD	1/16"	1/16"	1/16"	1/16"	1/16"	1/8" or 3.0 mm	1/8" or 3.0 mm
Path diameter	0.6 mm (0.024")	0.6 mm (0.024")	0.6 mm (0.024")	0.6 mm (0.024")	0.4 mm (0.016")	2.0 mm (0.079")	2.0 mm (0.079")

\* The specifications and product design may change without prior notice.

\* Due to continual product improvements, latest models may differ somewhat from the pictures/descriptions in the User's Manual and the FLOM catalog.

\* For custom specifications, contact FLOM.

### 3. Degassing Units

#### Solvent Degassing Systems

#### Gastorr BG Series

A degassing system with settable vacuum levels and self-cleaning function.

##### Features

- Complete self-cleaning function with independent chamber and vacuum pump
- Settable vacuum levels to handle specialty solvents
- New chamber design for thorough degassing of even low volumes
- CPU control achieves stable vacuum control
- Real time display of chamber vacuum level
- Independent chamber design prevents solvent contamination
- Error detection alerts user to faulty degassing operation
- RS-232C interface for computer control
- Choose from 2 channel or 4 channel configurations



Gastorr BG-32

Gastorr BG-34

Product name	Gastorr			
Part number	BG-32-02	BG-34-02	BG-32-10	BG-34-10
Channels	2	4	2	4
Internal volume	510 μL		1021 μL	
Max flow rate	10 mL/min			
Degassing efficiency	Refer to below “Flow Rate and Dissolved Oxygen Level”			
Vacuum level	Adjustable with Up/Down keys (70~170 hPa)			
Vacuum range	2 hPa			
Thread size	1/4-28UNF			
Wetted materials	Teflon AF® , ETFE, PPS , (PEEK)*1			
Communication	RS232C			
Dimensions	130 (H) x 70 (W) x 271 (D) mm (excluding protuberances)			
Weight	2.4 kg			
Power consumption	0.8 A, 80 VA			
Voltage range	AC100~240 V 50/60 Hz			
Order code	SGA-G2001	SGA-G2002	SGA-G2005	SGA-G2006

\*1 PEEK is an option for the material in the wetted path.

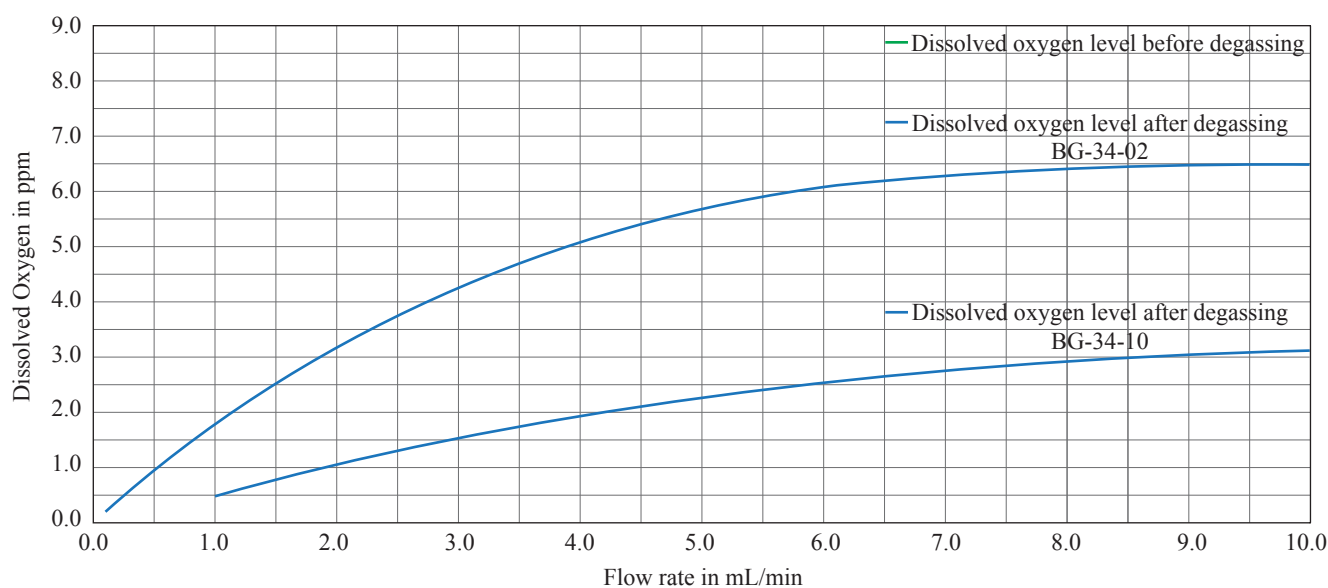
Note: The specifications and product design may change without prior notice.

For custom specifications, contact FLOM.

All trademarks are property of their respective owners.

#### Flow Rate and Dissolved Oxygen Level

- Solvent: Distilled water 25  $^{\circ}$ C
- Vacuum level: 70 hPa
- Degassing unit: BG-34-02/BG-34-10



\* The data is the result from experiments performed at our factory. Contact FLOM for details.



Gastorr AG-32

Gastorr AG-34

## Solvent Degassing Systems Gastorr AG Series

The AG Series is a smaller form-factor, lower-cost system with the same degassing functionality as the BG Series.

### Features

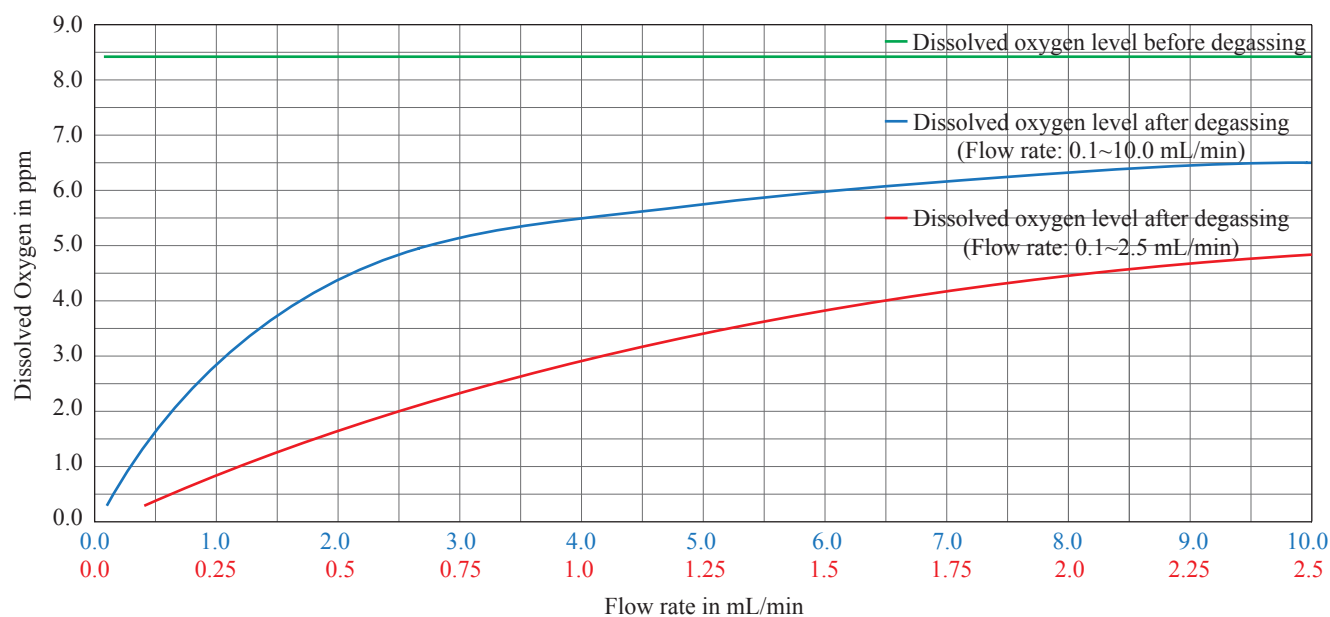
- New chamber design for thorough degassing of even low volumes
- CPU control achieves stable degassing
- Auto cleaning function prevents vacuum pump deterioration
- Independent chamber design prevents solvent contamination
- Error detection alerts user to faulty degassing operation
- Choose from 2 channel or 4 channel configurations

Product name	Gastorr	
Part number	AG-32-01	AG-34-01
Channels	2	4
Internal volume	340 $\mu$ L	
Max flow rate	10 mL/min	
Degassing efficiency	Refer to below "Flow Rate and Dissolved Oxygen Level"	
Vacuum level	100 hPa	
Vacuum range	2 hPa	
Thread size	1/4-28UNF	
Wetted materials	Teflon AF <sup>®</sup> , ETFE, PPS	
Communication	-	
Dimensions (mm)	108 (H) x 70 (W) x 240 (D) mm (excluding protuberances)	
Weight	1.9 kg	
Power consumption	0.8 A, 80 VA	
Voltage range	AC100~240 V 50/60 Hz	
Order code	SGA-G2008	SGA-G2009

Note: The specifications and product design may change without prior notice.  
For custom specifications, contact FLOM.  
All trademarks are property of their respective owners.

### Flow Rate and Dissolved Oxygen Level

- Solvent: Distilled water 25  $^{\circ}$ C
- Vacuum level: 70 hPa
- Degassing unit: AG-34-01



\* The data is the result from experiments performed at our factory. Contact FLOM for details.



Gastorr  
PG-31, PEEK

Gastorr  
PG-32, SS

## Solvent Degassing for Fractionating Applications Gastorr PG Series

Flow rates up to 50 mL/min with these degassing systems for fractionating applications.

### Features

- Maximum flow rate of 50 mL/min
- CPU control achieves stable degassing
- Automatic cleaning function prevents vacuum pump deterioration
- Easy to read backlit LCD display
- Real time display of chamber vacuum level
- Choose from either Stainless Steel or PEEK as your fluid path material
- Independent chamber design eliminates solvent contamination
- Error detection alerts user to faulty degassing operation
- Choose from 1 channel or 2 channel configurations

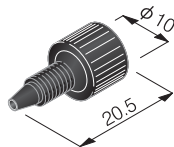
Product name	Gastorr			
Part number	PG-31S	PG-31P	PG-32S	PG-32P
Channels	1		2	
Internal volume	62.0 mL			
Max flow rate	50.0 mL/min			
Vacuum level	150 hPa			
Vacuum range	2 hPa			
Port thread size	No.1/4-28UNF			
Wetted materials	PTFE, ETFE, SUS	PTFE, ETFE, PEEK	PTFE, ETFE, SUS	PTFE, ETFE, PEEK
Dimensions	180 (H) x 90 (W) x 400 (D) mm			
Weight	5.5 kg	5.0 kg	6.5 kg	6.0 kg
Voltage range	AC100~240 V, 50/60 Hz			
Order code	SGA-G2101	SGA-G2103	SGA-G2102	SGA-G2104

Note: The specifications and product design may change without prior notice.  
For custom specifications, contact FLOM.

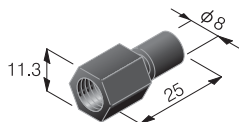
## Addendum 2. Fitting and Tubing Sizes

In catalogs about fittings and tubing for analytical instrumentation, you will run across many unfamiliar and little-used values and units, such as inches, No.10-32 UNF, 1/16, 1/8, and so on. Each country may use different units (inches or millimeters) or have different standards in screw threads, and since these different units and standards have a long history behind them, achieving a unified standard is not possible at this time. Since many of our customers have noted the difficulties in understanding the sizing terms used in HPLC fittings and tubing, we have prepared the explanation below to help clarify matters.

### Fittings and Union Sizes



Product: Easy Fitt 100  
Model Number: 9001  
Material: PEEK  
Size: 1/16"(inch) tubing  
Standard: No.10-32UNF



Product: Reducing Union  
Model Number: 9008  
Material: PEEK  
Standard: M8, No.10-32UNF

The picture on the left shows a typical fitting and reducing union (union between tubes of different diameters).

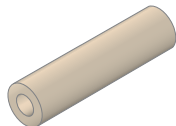
“Standard” refers to the type of screw thread standard, either No.10-32UNF or M8. “UNF” stands for “Unified Fine Thread” (a thread standard in inches), and the “M” in “M8” stands for “Metric Screw Thread”.

Also, the symbol “Ø” in the picture on the left indicates “diameter”.

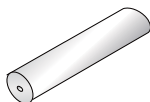
- No.10-32UNF : Diameter 4.826 mm, Thread number is 32 threads in 25.4 mm (1 inch)
- M8 : Diameter is 8 mm screw threads\*

\* for more details, consult Industry Standards JIS B0208, B0209.

### Tube Sizes



Product: PEEK tubing  
Model Number: 6004  
Outer Diameter: 1/8"  
Inner Diameter: 1/16"



Product: SS tubing  
Model Number: 7021  
Outer Diameter: 1/16"  
Inner Diameter: 0.25 mm

The tubing pictured on the left have inner and outer diameters of 1/8" and 1/16". 1/16" means “one-sixteenth of an inch”, indicating the outer diameter value and units. 1 inch is approximately 25.4 mm.

- 1/8" : This is about 3.175 mm. 1/8" tubing is often used to connect the solvent bottle to the device inlet, or used in the drainage line.
- 1/16" : This is about 1.5875 mm. Often used to connect the pump outlet to the detector inlet.

## 4. Liquid Level Sensor



Sonic Reservoir Sensor SR-13

Product name	<b>Sonic Reservoir Sensor</b>
Model	<b>SR-13</b>
Measurement Method	Reflected Sound Waves
Liquid Volume	Solvent: Specialty Bottle 10-1000 mL
Measurement Method	Waste: specialty waste probe detects liquid level at a distance of 75 mm PTFE, SS (waste probe)
Wetted Materials	PTFE, SS
Remote Output	Output signal: Error
Communications	RS-232C (optional)
Dimensions	115 (H) X 85 (W) X 80 (D) mm
Weight	Approx. 0.7 kg
Power Supply	DC +24V AC adapter comes as standard accessory, connects to 100-240 V, 0.62 A outlet
Product Code	FA007-500

Note: device appearance and/or specifications may change without notice.

### Liquid Level Sensor Sonic Reservoir Sensor SR-13

Non-contact liquid level sensor using sound

#### Features

- Useful to check liquid levels in both solvent bottles and waste tanks
- Liquid level displays
- Alarm sounds when volume falls to about 10%
- Remote control thru RS-232C interface (option)
- Simple, one-touch connections



Example of the SR-13 connected to both solvent bottle and waste tank

#### SR-13 Accessories

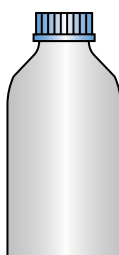
Product Code	Name
FD007-502	Solvent Probe
FD007-503	Waste Probe
FD007-504	Solvent bottle
FD007-505	Waste Tank
FD007-506	RS-232C Serial Port



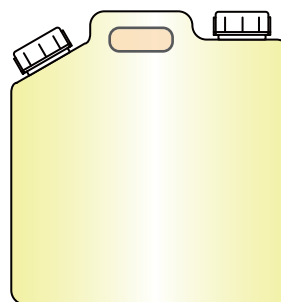
Solvent Probe



Waste Probe



Solvent Bottle




Waste Tank

## 5. Plumbing (Fittings, Joints and Tubings)

### ○ Stainless Fittings for 1/16" OD Tubing

Ultra high pressure fittings (up to 140 MPa)

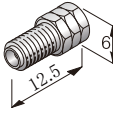


**Tri-Fitt**

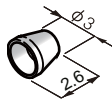
For 1/16" OD tubing  
No.10-32UNF

Features


- For super high pressure (100 MPa+) tubing applications
- Reduces tube twisting when fitting is twisted
- Replace only PEEK ferrule for long fitting life



Part Name: Tri-Fitt Set  
P/N: 9611  
Material: SS, PEEK  
Amount: 10/pkg



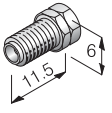
Part Name: Replacement Ferrule  
P/N: 9605  
Material: SS  
Amount: 10/pkg



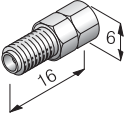
Part Name: Replacement Ferrule  
P/N: 9606  
Material: PEEK  
Amount: 10/pkg

### High pressure fittings (up to 60 MPa)

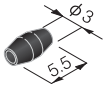
DOUBLE LOCK series (No.10-32UNF, For 1/16" OD tubing)



Part Name: 1/16 DoubleLock Fitting S  
P/N: 9301  
Material: SS  
Amount: 10/pkg



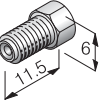
Part Name: 1/16 DoubleLock Fitting L  
P/N: 9302  
Material: SS  
Amount: 10/pkg



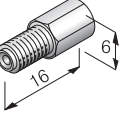
Part Name: 1/16 DoubleLock Ferrule  
P/N: 9401  
Material: PEEK  
Amount: 10/pkg

### High pressure fittings (up to 40 MPa)

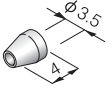
SS ferule type (No.10-32UNF, For 1/16" OD tubing)



Part Name: 1/16 Fitting S  
P/N: 9501  
Material: SS  
Amount: 10/pkg



Part Name: 1/16 Fitting L  
P/N: 9502  
Material: SS  
Amount: 10/pkg

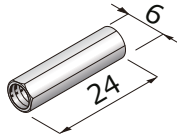


Part Name: 1/16 Ferrule  
P/N: 9601  
Material: SS  
Amount: 10/pkg

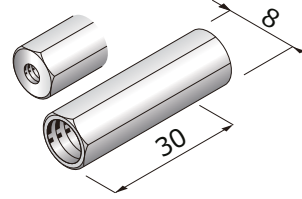


## ○ Stainless Unions, Joints and Tubings

### Stainless Union

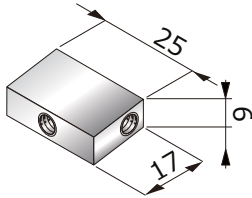


Union  
P/N 9511  
Stainless steel 316  
No.10-32UNF  
Quantity: 10

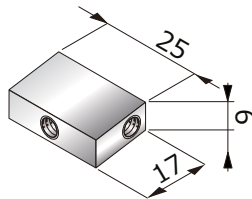


1/8-1/16 Reducing Union  
P/N 9309  
Stainless steel 316  
No. 5/16UNF, No.10-32UNF  
Quantity: 10

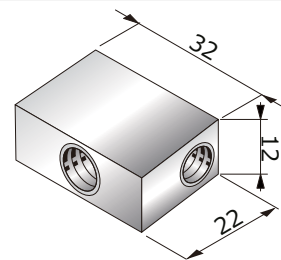
### Stainless Tee



3 way joint, Ø0.5  
P/N 9513-05  
Stainless steel 316  
No.10-32UNF  
Quantity: 10

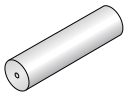


3 way joint, Ø1.0  
P/N 9513-10  
Stainless steel 316  
No.10-32UNF  
Quantity: 10

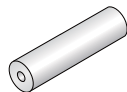


1/8" 3 way joint  
P/N 9313  
Stainless steel 316  
No.1/8" or M8  
Quantity: 10

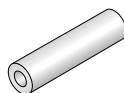
### Stainless tube (1/16", 1/8" OD)



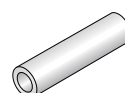
SS Tube, 0.25 mm ID  
P/N 7021  
Stainless steel 316  
1/16" OD, 0.25 mm ID  
No.10-32UNF  
Quantity: 10 m



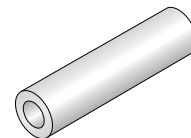
SS Tube, 0.5 mm ID  
P/N 7022  
Stainless steel 316  
1/16" OD, 0.5 mm ID  
No.10-32UNF  
Quantity: 10 m



SS Tube, 0.8 mm ID  
P/N 7023  
Stainless steel 316  
1/16" OD, 0.8 mm ID  
No.10-32UNF  
Quantity: 10 m



SS Tube, 1.0 mm ID  
P/N 7024  
Stainless steel 316  
1/16" OD, 1.0 mm ID  
No.10-32UNF  
Quantity: 10 m

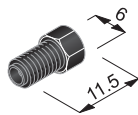


SS Tube, 2.1 mm ID  
P/N 7025  
Stainless steel 316  
1/8" OD, 2.1 mm ID  
No.10-32UNF  
Quantity: 10 m

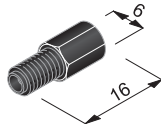
## ○PEEK Fittings

Middle pressure fittings (Up to 35 MPa)

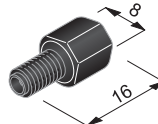
DOUBLE LOCK PEEK Series (No.10-32UNF, For 1/16"OD tube)



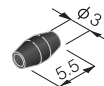
1/16 Double lock fitting S  
P/N 9411  
PEEK  
Quantity: 10/pkg



1/16 Double lock fitting L  
P/N 9412  
PEEK  
Quantity: 10/pkg



1/16 HEX double lock fitting  
P/N 9415  
PEEK  
Quantity: 10/pkg



1/16 Double lock ferrule  
P/N 9401  
PEEK  
Quantity: 10/pkg

DOUBLE LOCK PEEK Series (with PEEK ferrule)



1/16 Double lock fitting S with ferrule  
P/N 9411-9401  
PEEK  
Quantity: 10/pkg



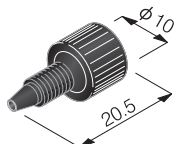
1/16 Double lock fitting with ferrule  
P/N 9412-9401  
PEEK  
Quantity: 10/pkg



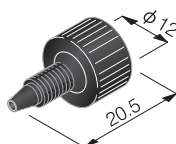
1/16 HEX Double lock fitting with ferrule  
P/N 9415-9401  
PEEK  
Quantity: 10/pkg

Middle pressure fittings (Up to 20 MPa)

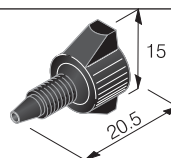
EASY FITT Series (No.10-32UNF, , For 1/16"OD tube)



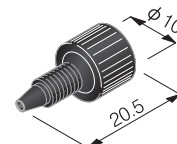
Easy Fitt 10φ  
P/N 9001  
PEEK  
Quantity: 10/pkg



Easy Fitt 12φ  
P/N 9002  
PEEK  
Quantity: 10/pkg

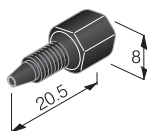


Easy Fitt Type 2  
P/N 9130  
PEEK  
Quantity: 10/pkg

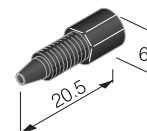


Stop Fitt  
P/N 9004  
PEEK  
Quantity: 10/pkg

HEX FITT Series (No.10-32UNF, For 1/16"OD tube)

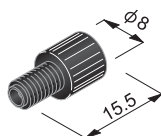


Hex Fitt  
P/N 9003  
PEEK  
Quantity: 10/pkg

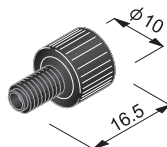


Hex Fitt Mini  
P/N 9135  
PEEK  
Quantity: 10/pkg

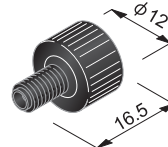
DOUBLE LOCK PEEK Series (No.10-32UNF, For 1/16"OD tube)



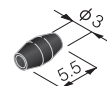
1/16 EASY 8 Double lock fitting  
P/N 9416  
PEEK  
Quantity: 10/pkg



1/16 EASY 10 Double lock fitting  
P/N 9413  
PEEK  
Quantity: 10/pkg



1/16 EASY 12 Double lock ferrule  
P/N 9414  
PEEK  
Quantity: 10/pkg



1/16 Double lock ferrule  
P/N 9401  
PEEK  
Quantity: 10/pkg

## DOUBLE LOCK PEEK Series (with PEEK ferrules)



9416



9401

1/16 EASY 8 Double lock fitting with ferrule  
P/N 9416-9401  
PEEK  
Quantity: 10 each/pkg



9413



9401

1/16 EASY 10 Double lock fitting with ferrule  
P/N 9413-9401  
PEEK  
Quantity: 10 each/pkg



9414

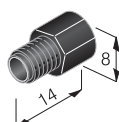


9401

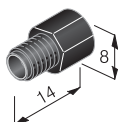
1/16 EASY 12 Double lock fitting with ferrule  
P/N 9414-9401  
PEEK  
Quantity: 10 each/pkg

## Low pressure fittings (Up to 1 MPa)

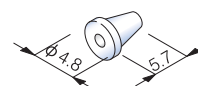
### FLAT SEAL Series (M6, For 1/16" OD tubing)



1/16 M6 Flat seal fitting  
P/N 9753  
PEEK  
Quantity: 10/pkg



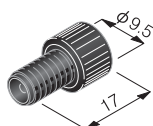
1/16 M6 Flat seal fitting  
P/N 9734  
POM  
Quantity: 10/pkg



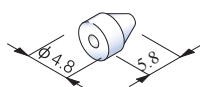
1/16 M6 Flat seal ferrule  
P/N 9706  
ETFE  
Quantity: 10/pkg

## ○ PEEK and Other Polymer Fittings, for 1/8", $\phi 3$ , $\phi 2$ OD Tubing

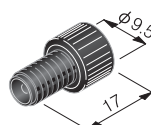
### FLAT SEAL Series (No.1/4-28UNF, For 1/16" or 2 mm OD tubing)



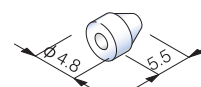
1/16 Flat seal fitting S  
P/N 9721  
PEEK  
Quantity: 10/pkg



1/16 Flat seal ferrule  
P/N 9703  
ETFE  
Quantity: 10/pkg

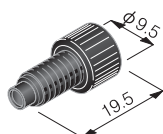


$\phi 2$  Flat seal fitting  
P/N 9730  
PEEK  
Quantity: 10/pkg

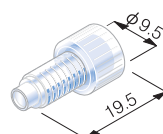


$\phi 2$  Flat seal ferrule  
P/N 9700  
ETFE  
Quantity: 10/pkg

### FLAT SEAL Plug



1/16 Flat seal plug  
P/N 9720  
PEEK  
Quantity: 10/pkg

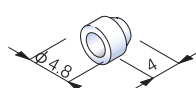


1/16 Flat seal plug  
P/N 9720P  
PP  
Quantity: 10/pkg

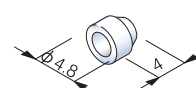
### FLAT SEAL Series (No.1/4-28UNF, For 3.0 mm or 1/8" OD tubing)



1/8 Flat seal fitting  
P/N 9711  
PEEK  
Quantity: 10/pkg

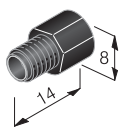


$\phi 3$  Flat seal ferrule  
P/N 9701  
ETFE  
Quantity: 10/pkg

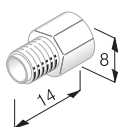


1/8 Flat seal ferrule  
P/N 9702  
ETFE  
Quantity: 10/pkg

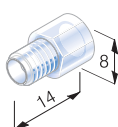
### FLAT SEAL Series (M6, For 2.0 mm OD tubing)



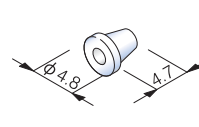
φ2•M6 Flat seal fitting  
P/N 9752  
Carbon reinforced PEEK  
Quantity: 10/pkg



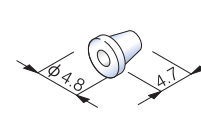
φ2•M6 Flat seal fitting  
P/N 9732  
POM  
Quantity: 10/pkg



φ2•M6 Flat seal fitting  
P/N 9762  
PP  
Quantity: 10/pkg

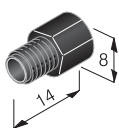


φ2•M6 Flat seal ferrule  
Penetration  
P/N 9775  
ETFE  
Quantity: 10/pkg

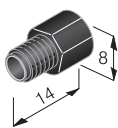


φ2•M6 Flat seal ferrule  
Non-penetration  
P/N 9705  
ETFE  
Quantity: 10/pkg

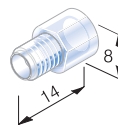
### FLAT SEAL Series (M6, For 3.0 mm OD tubing)



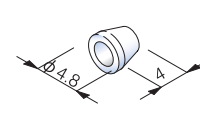
φ3•M6 Flat seal fitting  
P/N 9751  
Carbon reinforced PEEK  
Quantity: 10/pkg



φ3•M6 Flat seal fitting  
P/N 9731  
POM  
Quantity: 10/pkg

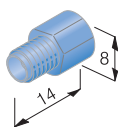


φ3•M6 Flat seal fitting  
P/N 9761  
PP  
Quantity: 10/pkg

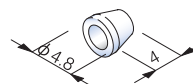


φ3•M6 Flat seal ferrule  
P/N 9704  
ETFE  
Quantity: 10/pkg

### FLAT SEAL Series (M6, For 1/8" OD tubing)

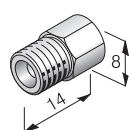


1/8•M6 Flat seal fitting  
P/N 9760  
PP  
Quantity: 10/pkg

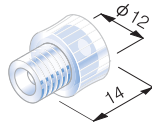


1/8•M6 Flat seal ferrule  
P/N 9707  
ETFE  
Quantity: 10/pkg

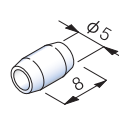
### DOUBLE LOCK Series (M8, For 3.0 mm or 1/8" OD tubing)



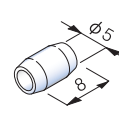
1/8 Double lock fitting  
P/N 9304  
Stainless steel 316  
Quantity: 10/pkg



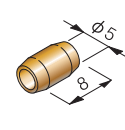
1/8 Double lock fitting  
P/N 9305  
PP  
Quantity: 10/pkg



1/8 Double lock ferrule  
P/N 9402  
ETFE  
Quantity: 10/pkg

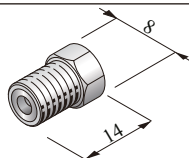


φ3 Double lock ferrule  
P/N 9405  
ETFE  
Quantity: 10/pkg

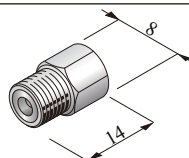


1/8 Double lock ferrule  
P/N 9407  
PEEK  
Quantity: 10/pkg

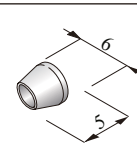
### Stainless Fittings (For 1/8" OD tubing)



1/8 fitting  
P/N 9306  
Stainless steel 316  
No.5/16-20UNF  
Quantity: 10/pkg



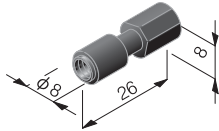
1/8, M8 fitting  
P/N 9311  
Stainless steel 316  
M8  
Quantity: 10/pkg



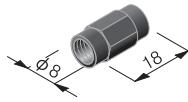
Ferrule for 1/8 fitting  
P/N 9321  
Stainless steel 316  
For 1/8" OD tube  
Quantity: 10/pkg

## ○ Union and Joint, PEEK and other polymers

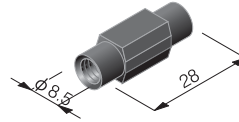
### Union



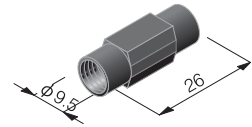
Union  
P/N 9005  
Carbon reinforced PEEK  
No.10-32UNF  
Quantity: 1



M6 Flat seal union  
P/N 9736  
POM  
M6  
Quantity: 1

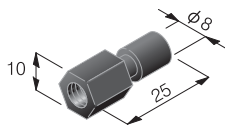


1/4-28 Flat seal union  
P/N 9101  
PEEK  
No.1/4-28UNF  
Quantity: 1

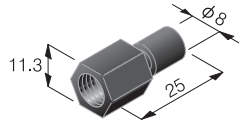


Union  
P/N 9111  
PEEK  
M8  
Quantity: 1

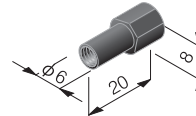
### Reducing union



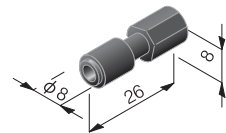
Reducing union  
P/N 9110  
PEEK  
No.1/4-28, 10-32UNF  
Quantity: 1



Reducing union  
P/N 9008  
PEEK  
M8, No.10-32UNF  
Quantity: 1

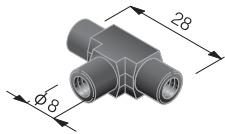


M6·10-32 Flat seal union  
P/N 9737  
POM  
M6, No.10-32UNF  
Quantity: 1

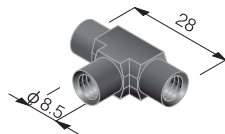


Syringe union  
P/N 9112  
PEEK  
No.10-32UNF, Syringe port  
Quantity: 1

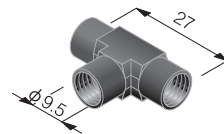
### Tee



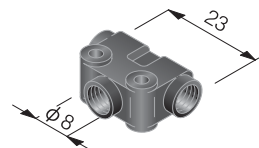
Tee  
P/N 9006  
PEEK  
No.10-32UNF  
Quantity: 1



1/4-28 Flat seal tee  
P/N 9131  
PEEK  
No.1/4-28UNF  
Quantity: 1

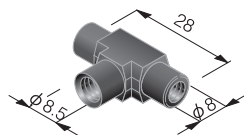


Tee  
P/N 9121  
PEEK  
M8  
Quantity: 1

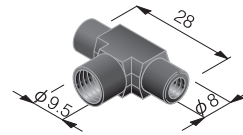


M6 tee  
P/N 9738  
POM  
M6  
Quantity: 1

### Reducing tee

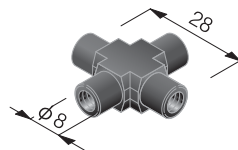


Reducing tee  
P/N 9108  
PEEK  
No.10-32, 1/4-28UNF  
Quantity: 1

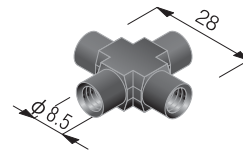


Reducing tee  
P/N 9107  
PEEK  
No.10-32UNF, M8  
Quantity: 1

### Cross



Cross  
P/N 9007  
PEEK  
No.10-32UNF  
Quantity: 1



Cross  
P/N 9109  
PEEK  
No.1/4-28UNF  
Quantity: 1

## ○ PEEK, PTFE, ETFE, PFA Tubing

### PEEK tubing (1/16" OD)



PEEK tube  
P/N 5999  
Red-striped  
OD 1/16"  
ID 0.13 mm  
10 m or 5 m length



PEEK tube  
P/N 6000  
Yellow-striped  
OD 1/16"  
ID 0.17 mm  
10 m or 5 m length



PEEK tube  
P/N 6001  
Blue-striped  
OD 1/16"  
ID 0.25 mm  
10 m or 5 m length



PEEK tube  
P/N 6002  
Orange-striped  
OD 1/16"  
ID 0.50 mm  
10 m or 5 m length

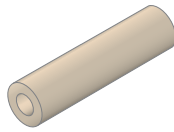


PEEK tube  
P/N 6003  
Green-striped  
OD 1/16"  
ID 0.75 mm  
10 m or 5 m length

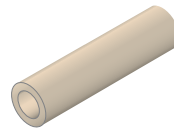


PEEK tube  
P/N 60031  
Gray-striped  
OD 1/16"  
ID 1.0 mm  
10 m or 5 m length

### PEEK tubing (1/8" OD)

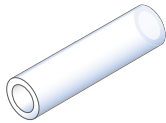


PEEK tube  
P/N 6004  
OD 1/8"  
ID 1/16"  
5 m length



PEEK tube  
P/N 60042  
OD 1/8"  
ID 2.0mm  
5 m length

### PTFE tubing



PTFE tube  
P/N 7005  
OD 3.0 mm  
ID 2.0 mm  
10 m length



PTFE tube  
P/N 7211  
OD 1/16"  
ID 0.25 mm  
10 m length



PTFE tube  
P/N 7210  
OD 1/16"  
ID 0.50 mm  
10 m length



PTFE tube  
P/N 7212  
OD 1/16"  
ID 0.80 mm  
10 m length

### ETFE tubing



ETFE tube  
P/N 7009  
OD 1/16"  
ID 0.20 mm  
10 m length



ETFE tube  
P/N 7010  
OD 1/16"  
ID 0.30 mm  
10 m length



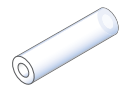
ETFE tube  
P/N 7011  
OD 1/16"  
ID 0.50 mm  
10 m length



ETFE tube  
P/N 7012  
OD 1/16"  
ID 0.80 mm  
10 m length



ETFE tube  
P/N 7013  
OD 1/16"  
ID 1.0 mm  
10 m length

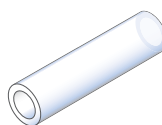


ETFE tube  
P/N 7016  
OD 2.0 mm  
ID 1.0 mm  
10 m length

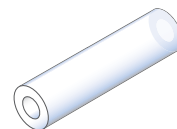
### PFA tubing



PFA tube  
P/N 7103  
OD 2.0 mm  
ID 1.0 mm  
10 m length



PFA tube  
P/N 7104  
OD 3.0 mm  
ID 2.0 mm  
10 m length

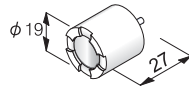


PFA tube  
P/N 7105  
OD 1/8"  
ID 1/16"  
10 m length

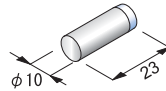
# 6. Other Parts

## ○ Filters

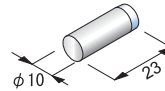
### Solvent filters



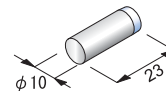
Suction filter  
P/N 8802  
10 µm porous  
For ID 2.0 mm tube  
Stainless steel, PTFE, ETFE  
Quantity: 1



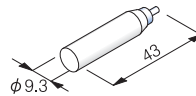
Suction filter  
P/N 8805  
40 µm porous  
For OD 1/16" tube  
Stainless steel, PCTFE  
Quantity: 1



Suction filter  
P/N 8806  
10 µm porous  
For OD 1/16" tube  
Stainless steel, PCTFE  
Quantity: 1



Suction filter  
P/N 8807  
10 µm porous  
For OD 1/8" tube  
Stainless steel, PCTFE  
Quantity: 1



Suction filter  
P/N 8800  
20 µm porous  
For ID 2.0 mm tube  
PE  
Quantity: 1

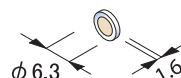
### In-line solvent filters



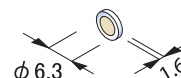
PEEK in-line filter  
P/N 8502  
5 µm porous  
No.10-32UNF  
PEEK  
Quantity: 1



PEEK in-line filter  
P/N 8501  
10 µm porous  
No.10-32UNF  
PEEK  
Quantity: 1



PEEK frits  
for 8502 in-line filter  
P/N 8512  
5 µm porous  
PEEK  
Quantity: 1



PEEK frits  
for 8501 in-line filter  
P/N 8511  
10 µm porous  
PEEK  
Quantity: 1



## ○ Bottles

### Solvent bottles

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Solvent bottle  
P/N 9841  
1000 mL volume  
bottle cap #9851  
Quantity: 1



Solvent bottle  
P/N 9842  
500 mL volume  
bottle cap #9851  
Quantity: 1

### Solvent bottle cap

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Bottle cap  
P/N 9851  
GL45 (Schott)  
Tube IDs: 3.2 mm, 3.0 mm, 2.0 mm, 1/16"  
Quantity: 1

## ○ Tube Cutters

### Tube cutters

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Tube cutter for polymer tube  
P/N 9830  
Quantity: 1

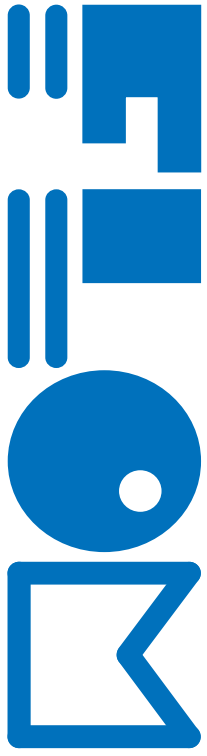


Tube cutter for SS tube  
P/N 9831  
Quantity: 1



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