

## Medium Pressure Delivery Pump (made of ceramic)

VSP-2050 /2200



VSP-2050+VSP-5D

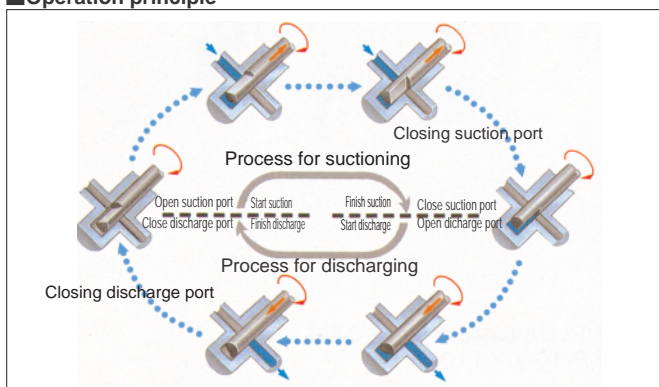
### Pumping method without check valve

- This series allows pumping of almost all organic solvent since the wetted parts are made of ceramic ( $Al_2O_3$ ,  $ZrO_2$ ) and fluoroethylene resin.
- This is a pumping system without check valve. There is no trouble such as air mixing, which occurs in the conventional liquid chromatograph pump.
- A wide range of flow rates can be covered only by 1 pump.
- Rotation speed of pump can be set and displayed digitally, and this allows high reproducible pumping.
- The flow direction can be reversed from remote places using EXT COM. Pre-programmed or rapid pumping is also done in the same.

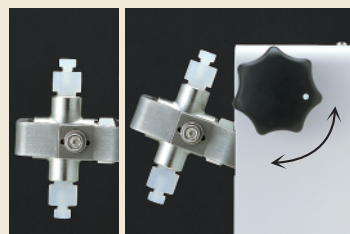
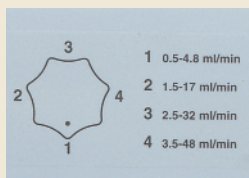
Model	VSP-2050	VSP-2200
Product code No.	278200	278210
Type	Ceramic pump for pipetting	
Performance	Flow rate range/accuracy	0.5-48 mL/min / ± 1%
	Discharge pressure	0-686 kPa (0-7 kg/cm <sup>2</sup> )
	Rotation speed	0-280rpm
Function	Rotation setting/display	Volume setting, Change in the length of stroke (4 levels)/Digital display
	Direction of solution sending	Forward/Reverse switchable
	Safety function	Over circuit/Overload protection for motor
	Available function	{SPEED SELECT} switch (rapid pumping)
	External input	Contact input from the outside
Motor	DC brushless motor, output 30W	
Specifications	Material of wetted part	Ceramic ( $Al_2O_3$ , $ZrO_2$ ), Teflon® (PTFE), Daiflon® (PCTFE)
	Plunger outside diameter	$\Phi_{OUT}$ 5 mm $\Phi_{OUT}$ 10 mm
	Applicable tube	Teflon® tube $\Phi_{IN}$ 2 mm × $\Phi_{OUT}$ 3 mm Teflon® tube $\Phi_{IN}$ 3 mm × $\Phi_{OUT}$ 5 mm
	Connection joint	F-30 (1/4-28UNF inch) F-50 (M10 × P1 mm)
Operating ambient temp. range	5-35°C	
External dimension (mm)/Weight	140(166)W × 284(305)D × 224H/6.7 kg	140(166)W × 292(313)D × 224H/6.7 kg
Power input/voltage	4A, 400VA, AC100V, 50/60Hz	

※The above performance is yielded at RT 25°C, under rated supply voltage, at 50 Hz, using clean water, at fluid temperature of 21°C, at 0 backpressure, using the specified Teflon® tube.  
 ※2 applicable tubes (1 m) and 2 connection joints are supplied.  
 ※It is recommended to be used in combination with the optional damper unit for suppressing pulsating current and protecting column when using liquid chromatograph.  
 ※Dimensions shown in parentheses include projections.

### Operation principle



### POINT Change in the length of stroke

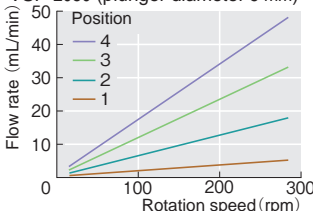


4 levels of stroke length can be selected. (Position 1/2/3/4)

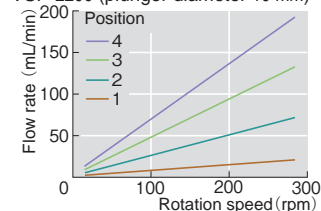
### Data

#### Flow characteristic

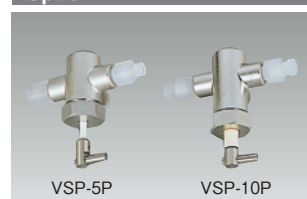
VSP-2050 (plunger diameter 5 mm)



VSP-2200 (plunger diameter 10 mm)



### Option



#### Pump head

Model	VSP-5P	VSP-10P
Product code No.	165150	165160



#### Pump head with washing port

Model	VSP-5WP	VSP-10WP
Product code No.	170640	181160



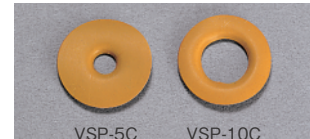
#### Damper unit

Model	VSP-5D	VSP-10D
Product code No.	241230	241240

※IN/OUT set screw, fit and Teflon® tube for the OUT side are included.

#### Joint (2 pieces required for one unit)

Model	VSP-5J	VSP-10J
Product code No.	181210	181220



#### Lip seal

The standard hours for replacement are about 2000 hours in case of using under the conditions of RT, fresh water, pressure of 294 kPa (3kg/cm<sup>2</sup>).

Model	VSP-5C	VSP-10C
Product code No.	165170	165180
Quantity	1 set (3 sheets)	

#### Head Seal

Model	VSP-5HS	VSP-10HS
Product code No.	170620	170630