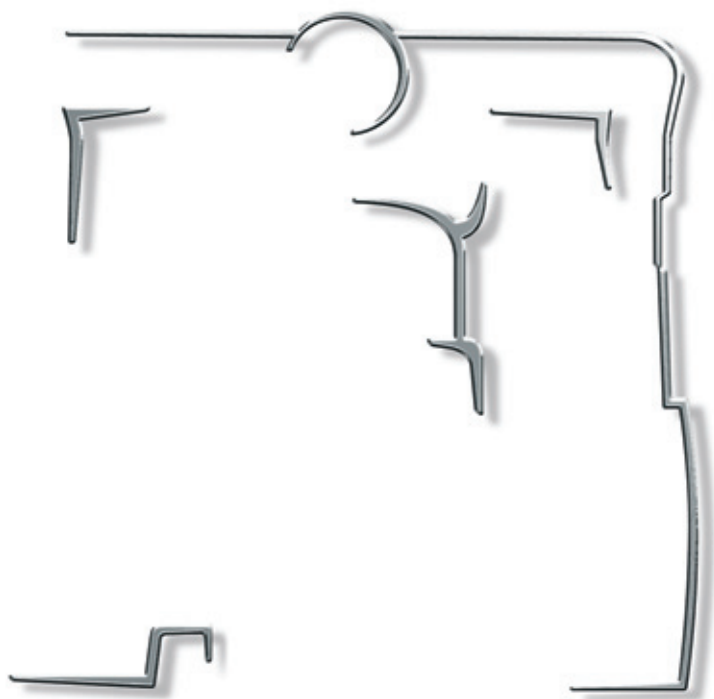


## *Smoothflow* Pump **BPL**

Direct-driven type

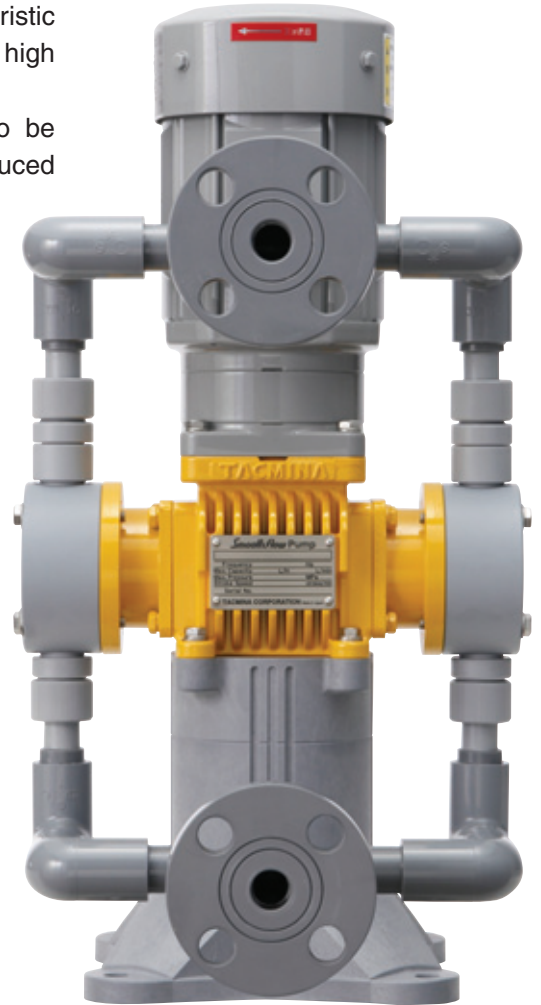
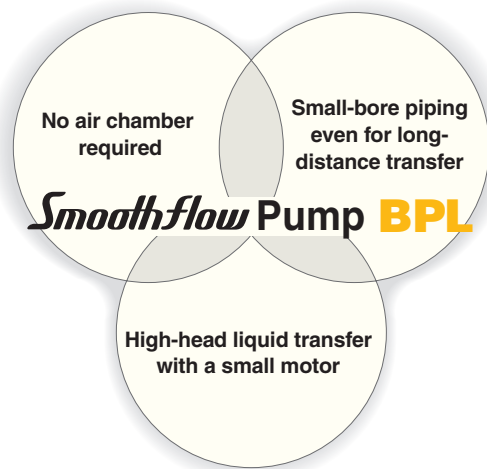
Metered transfer & injection





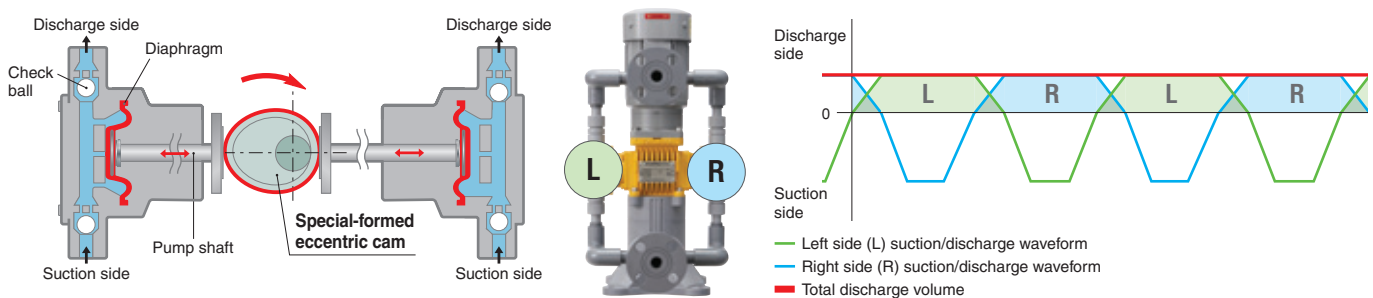
# Heralding a revolution in piping design practice.

The BPL Smoothflow pump eliminates the pulsation that is characteristic of diaphragm pumps, and transfers liquids in precise amounts up to a high pump head, even through small-bore pipework over a long distance. There is no need for auxiliary units, enabling uncluttered lines to be constructed and contributing to significant energy savings with reduced carbon dioxide levels. This is the pump that heralds a revolution in piping design practice.



## Special-formed eccentric cam for continuous constant flow with no pulsation

The Special-formed eccentric cam incorporates a simple drive mechanism with a single-cam construction which ensures that the sum of the volumes discharged from the left and right pump heads remains constant to create a continuous flow. The discharge volume of liquids can be controlled with a high degree of precision.



\* This schematic diagram is for illustrative purposes.

## For Those Who Want Total Control in Liquid Flow

Smoothflow — the ideal method of liquid transfer. This innovative method not only meets your liquid transfer needs, but provides optimal solutions to Man, liquids and the environment as well. TACMINA's Smoothflow technology, based on unique know-how cultivated over 50 years, delivers you ultimate performance and provides complete satisfaction.

Ideal Method of Liquid Transfer

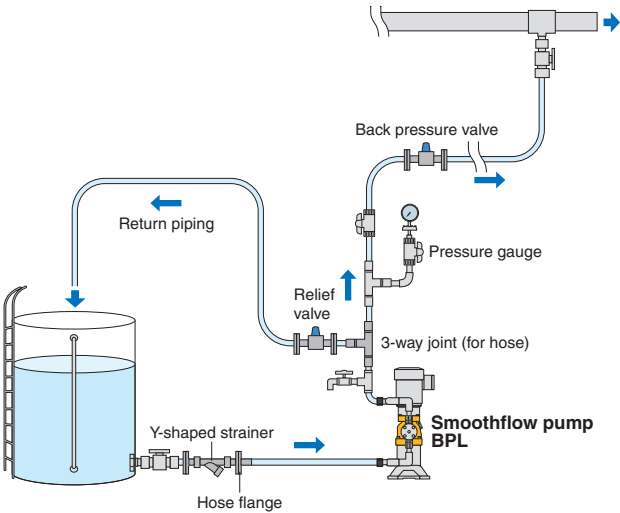
**Smoothflow**

- Constant & Stable Flow
- Eco-Friendly
- Economical
- Gentle on Liquids

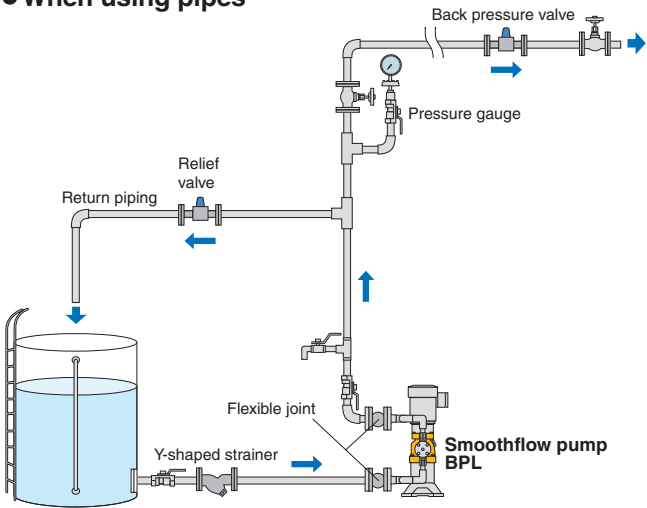


■ Examples of Recommended Piping

● When using hoses



● When using pipes



■ Auxiliary Devices & Options



**Inverter**

This helps to save energy and also enables the flow rate to be remotely controlled. It can be installed outdoors or mounted on a cart. Purpose-made control boxes can also be provided.

**Flow meter**

This enables the flow rate to be calibrated and monitored. Meters can be selected according to the flow rate and corrosivity of the transferred liquid.

**Back pressure valve \***

This valve prevents overfeeding\*1 and siphoning\*2 phenomena. Provide the back pressure valve near the injection point on the discharge-side piping.

**Relief valve**

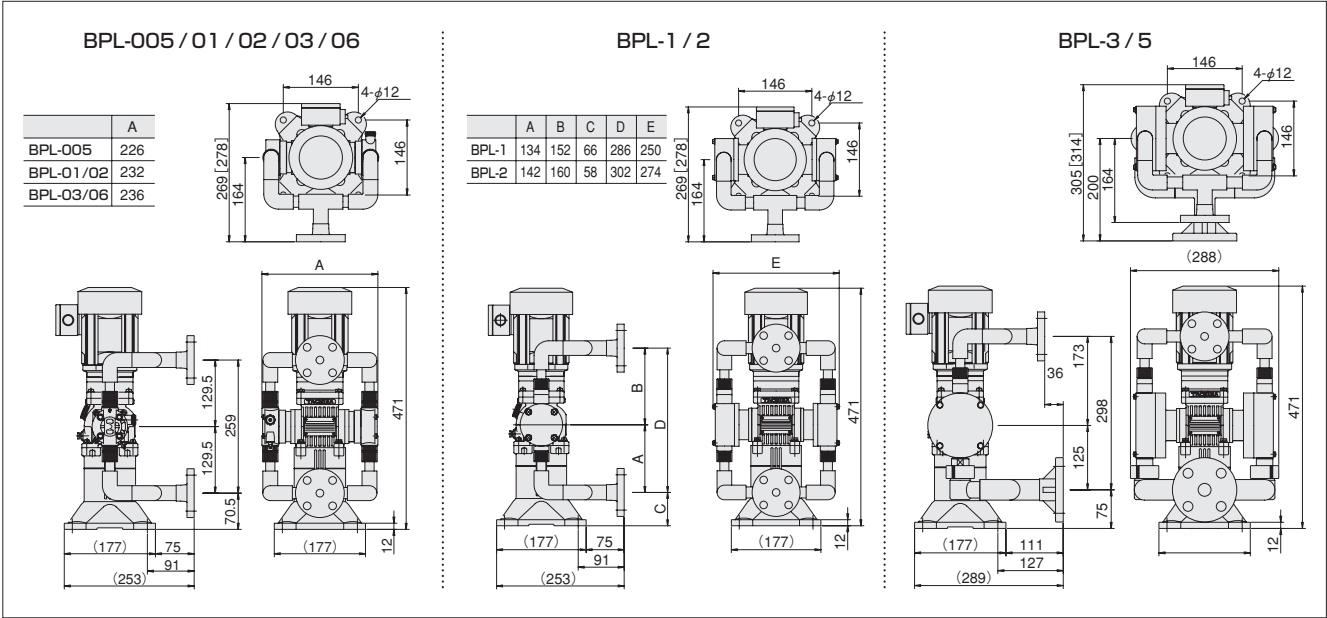
This relief valve automatically releases excess pressure that builds up in the discharge-side piping of the pump to prevent unexpected accidents.

**Trolley type**

The trolley type unit with casters can be easily moved for installation at different sites and easily integrated into other equipment.

\*1 Phenomenon where the momentum (inertia) of the push process in a flow having pulsation causes discharge to continue even in the stroke in which the pump is not discharging  
\*2 Phenomenon where chemicals are sucked out naturally and continue to flow even with pump operation stopped as the tip of the pump's discharge-piping is located lower than the level of the liquid in the suction-tank  
\* Note that the back pressure valve will no longer be able to operate correctly if dirt builds up inside the valve.

■ External Dimensions



\* Dimensions for the VTCE/VTCF flange types are given. Contact us for details of the dimensions for other models.



## VS Conventional Diaphragm Pumps

# Every part is designed to improve efficiency and to reduce the overall cost.



### Safe

#### No more dangers posed by air chambers

Air chambers have been eliminated to banish any risk of chemical being splattered or spilled.



### Cost-saving

#### Reduced expenses involved in long distance pipework

Small-bore pipework, even over a long distance, can now be used since there is no pulsation.

#### Reduced running costs

Maintenance costs are lower since there is no longer any need to recharge air chambers or adjust the pressure.



### ECO

#### Low CO<sub>2</sub> emission

The CO<sub>2</sub> emission with Smoothflow pumps is 50% lower than that from conventional diaphragm pumps.



### Easy & Accurate

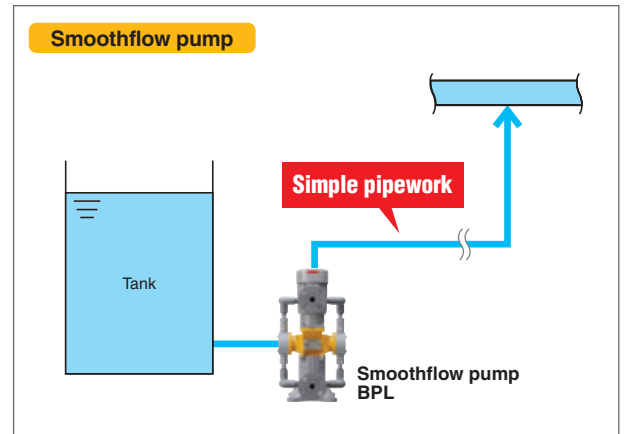
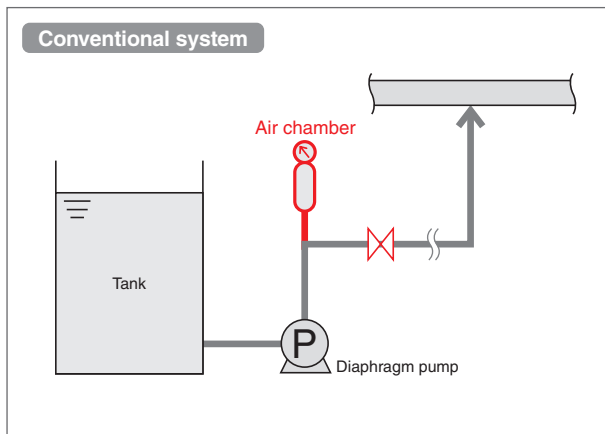
#### Easy metering of flow rates

The discharge volume of liquid can be easily checked with a flow meter since the flow rate is constant.

#### No fear of injection fluctuation

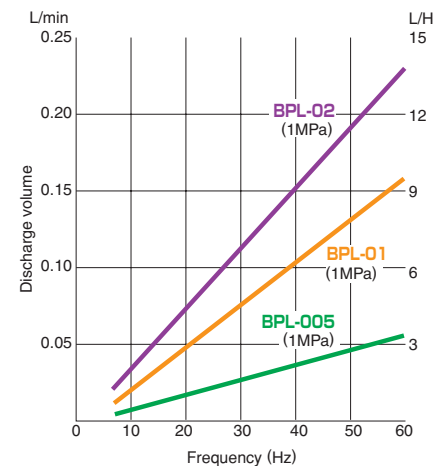
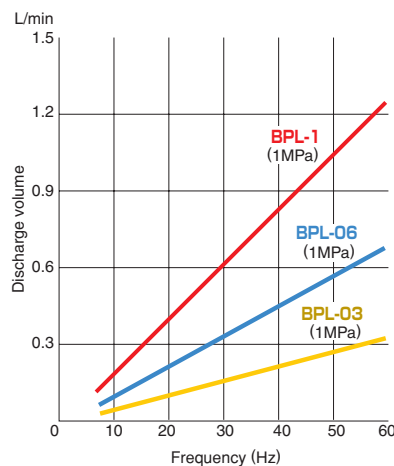
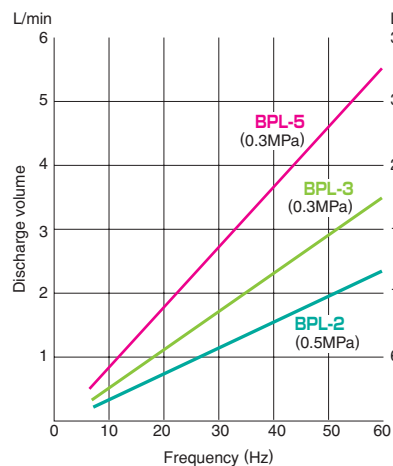
Uniform injection is achieved because the liquid flow is continuous without pulsation.

## Example : Injection of sodium hypochlorite



## Performance Curves

Conditions: clean water, room temperature, VTCE/VTCT type





# VS Rotary Pumps ———

## Eco-friendly & worry-free operation

### Safe

#### No leakage of chemical outside the pump

No liquid can leak from the pump because there are no mechanical seals.

#### No damage even when idling

There are no sliding parts, so the pump will not be damaged even when idling while the tank is empty.

### Cost-saving

#### Minimum maintenance required

These pumps have few consumable parts, and they are also easy to disassemble and replace.

### ECO

#### Low CO<sub>2</sub> emission

Liquids can be transferred to a high pump-head by a small motor so that CO<sub>2</sub> emissions are minimized.

### Accurate & Gentle

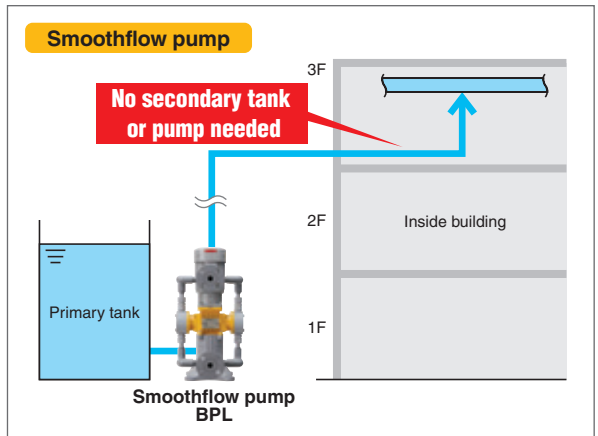
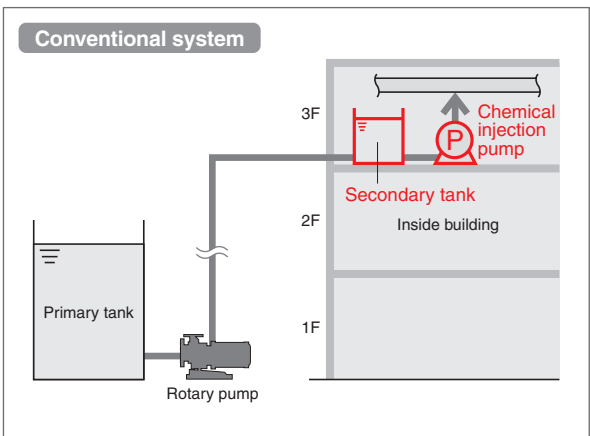
#### Precise liquid transfer even at a very low flow rate

The outstanding sealing characteristics of the valve seats prevent backflow and enable even a very small volume of liquid to be injected with a high degree of precision.

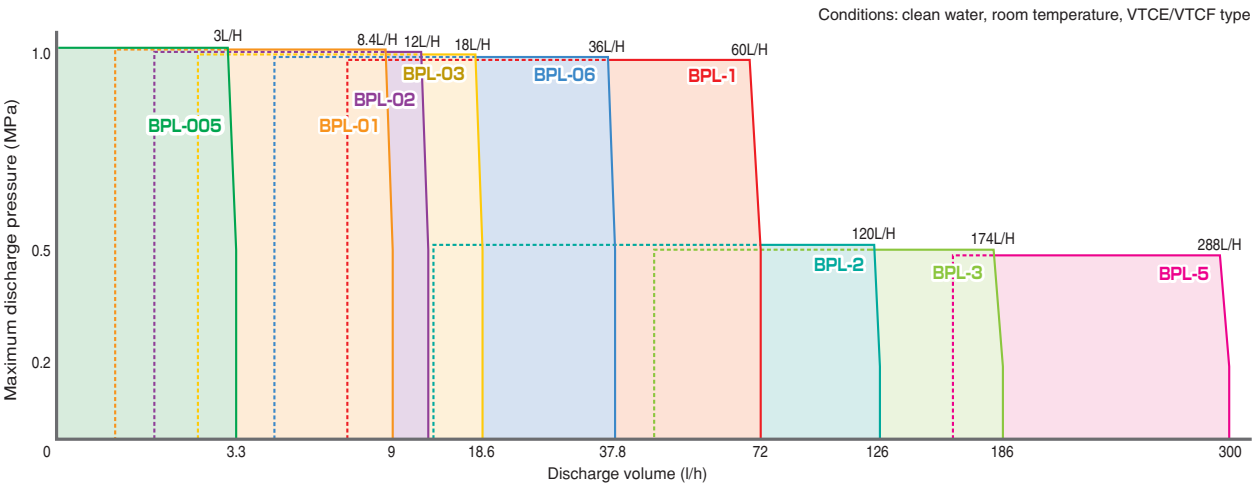
#### No deterioration of the transferred liquid

There are no sliding parts, so there is no deterioration of the transferred liquid induced by shearing, wear, pressurization or temperature change.

## Example : Chemical transfer to a high pump-head over a long distance



## Model Selection Table by Discharge Volume and Pressure



\* The discharge volumes given are applicable at a pressure level of 0.2 MPa.



## Model Code



BPL-1-VTCE-HWS

**BPL** — **005** — **VTCE** — **H** **W** **X** — **CE**

### 1 Series name

### 4 Connection type\*2

H : Hose\*3  
F : JIS flange  
A : ANSI flange\*4  
D : DIN flange\*4  
U : Union  
M : Screw (Rp female screw)\*3

### 2 Model (discharge-volume standard)

005 / 01 / 02 / 03 / 06 /  
1 / 2 / 3 / 5

### 5 Joint specification\*5

W : Standard  
V : High-viscosity type

### 6 General specification\*6

S : Standard  
X : Special

### 7 Applicable standard

Blank : None  
CE : CE marking-compatible\*6

### 3 Liquid-end material\*1

	Pump head	Diaphragm	Check ball	O-ring
VTCE	PVC	PTFE	Ceramic	EPDM
VTCE	PVC	PTFE	Ceramic	Fluoro rubber
VT6E	PVC	PTFE	SUS316	EPDM
VT6F	PVC	PTFE	SUS316	Fluoro rubber
STST	SUS304	PTFE	SUS304	PTFE

\*1 "005" cannot be selected as the model in 2 for VT6E/VT6F. "V" is selected in 5.

\*2 Up to "005 to 2" can be selected as the model in 2 for the union type; "STST" is selected in 3. Up to "005 to 2" can be selected as the model in 2 for the screw type; "VTCE/VTCE" is selected in 3.

\*3 For those who would like to use a non-standard hose size (standard size specifications listed below), select M rather than H, and designate your desired hose size from the specification list below.

\*4 Only 380V, 400V and 440V motor can be selected for ANSI/DIN connection type.

\*5 "VT6E/VT6F" should be selected in 3 for the high-viscosity type.

\*6 Select "X" in 6, if "CE" is selected in 7.

Only 380V and 400V motor (50Hz) can be selected for CE marking-compatible model.

## Specifications

			Model	BPL-005	BPL-01	BPL-02	BPL-03	BPL-06	BPL-1	BPL-2	BPL-3	BPL-5	
Discharge volume ★1	L/H			3.3	9	12.6	18.6	37.8	72	126	186	300	
	L/min			0.055	0.15	0.21	0.31	0.63	1.2	2.1	3.1	5	
Max. discharge pressure ★2	MPa			1.0						0.5			
	bar			10						5			
Discharge volume control system			Motor-speed control by inverter										
Discharge volume control range	1:n			1:10							1:4	1:2	
	Hz			6 to 60							15 to 60	30 to 60	
Stroke speed	strokes/min			105			119	105		119			
Stroke length	mm			2	3			6			4	6	
Connection	Standard type	Hose ★3	Discharge side	6x11PVC braided (standard)/6x8PE/1/4x3/8PE				12x18PVC braided (standard)			—		
			Suction side	12x18PVC braided (standard)				—					
		Flange	Discharge side	JIS10K15A/ANSI150Lb 1/2B/DIN2501 PN10 DN15									
			Suction side	JIS10K15A/ANSI150Lb 1/2B/DIN2501 PN10 DN15									JIS10K25A/ANSI150Lb 1B/DIN2501 PN10 DN25
		Union		R3/8							—		
	Screw		Rp1/2							—			
	High-viscosity type	Hose	Discharge side		12x18PVC braided				19x26PVC braided		—		
			Suction side		12x18PVC braided				19x26PVC braided		—		
		Flange ★4	Discharge side		JIS10K15A/ANSI150Lb 1/2B/DIN2501 PN10 DN15				JIS10K25A/ANSI150Lb 1B/DIN2501 PN10 DN25				
			Suction side		JIS10K15A/ANSI150Lb 1/2B/DIN2501 PN10 DN15				JIS10K25A/ANSI150Lb 1B/DIN2501 PN10 DN25				
Max. allowable viscosity	Standard			50 mPa・s or less									
	High-viscosity type			50 to 2000mPa・s				50 to 1000mPa・s					
Allowable temperature	Ambient temperature			0 to 40℃									
	Transferring liquid		—	PVC type: 0 to 40℃/SUS type: 0 to 60℃ (no freezing allowed)									
Motor	Motor specifications		—	Geared motor; totally enclosed, external fan, outdoor type									
	Power supply (V) / frequency (Hz) / no. of poles (P)		—	3-phase/200V(50 Hz), 200V(60 Hz), 220V(60 Hz), 380V(50 Hz), 400V(50/60 Hz), 440V(60 Hz)/4P ★4									
	Output (kW)		—	0.2									
	Reduction ratio			1/17		1/15		1/17		1/15			
	Rated current / Max. startup current (A)	200V/50Hz	—					1.24/4.6					
		200V/60Hz						1.09/4.2					
		220V/60Hz						1.09/4.8					
		380V/50Hz ★4						0.61/2.2					
		400V/50Hz ★4						0.62/2.3					
		400V/60Hz ★4						0.55/2.1					
		440V/60Hz ★4						0.55/2.4					
	Insulation class			E [F]									
Cable conduit connection diameter			PF1/2 [M2.4x1.5, M16x1.5]										
Pump paint color			Body : Munsell (approximate) 10YR7.5/14/ Motor: Munsell (approximate) N5.5										
Weight	VTCE/VTCF flange type (kg)			11 [12]				12 [13]	13 [14]	15 [16]			
	STST flange type (kg)			15 [16]				16 [17]	18 [19]	25 [26]			

\* The specifications and capacity listed are for the VTCE/VTCE type. (However, union connection cannot be selected for the VTCE/VTCE type.)

\* The numbers or letters inside of [ ] stands for specifications of CE model.

\*1 The discharge volume applies to a pressure of 0.2 MPa.

\*2 In the case of models BPL-3 and BPL-5, the maximum discharge pressure is 0.3 MPa when a setting of 1:10 (6 to 60 Hz) is used for the discharge volume control range.

\*3 STST type discharge side: BPL-005 to -02, 10 mm dia. x 12 mm dia.; BPL-03 to -2, 12 mm dia. x 15 mm dia.; suction side: 12 mm dia. x 15 mm dia.

\*4 Only 380V, 400V and 440V motor can be selected for ANSI/DIN connection type. Only 380V and 400V motor (50Hz) can be selected for CE marking-compatible model.

Product designs and specifications are subject to change without notice for product improvement.

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ISO 14001 Registration  
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