LIQUID PUMP
Piezoelectric Pump
DC Diaphragm Liquid Pump

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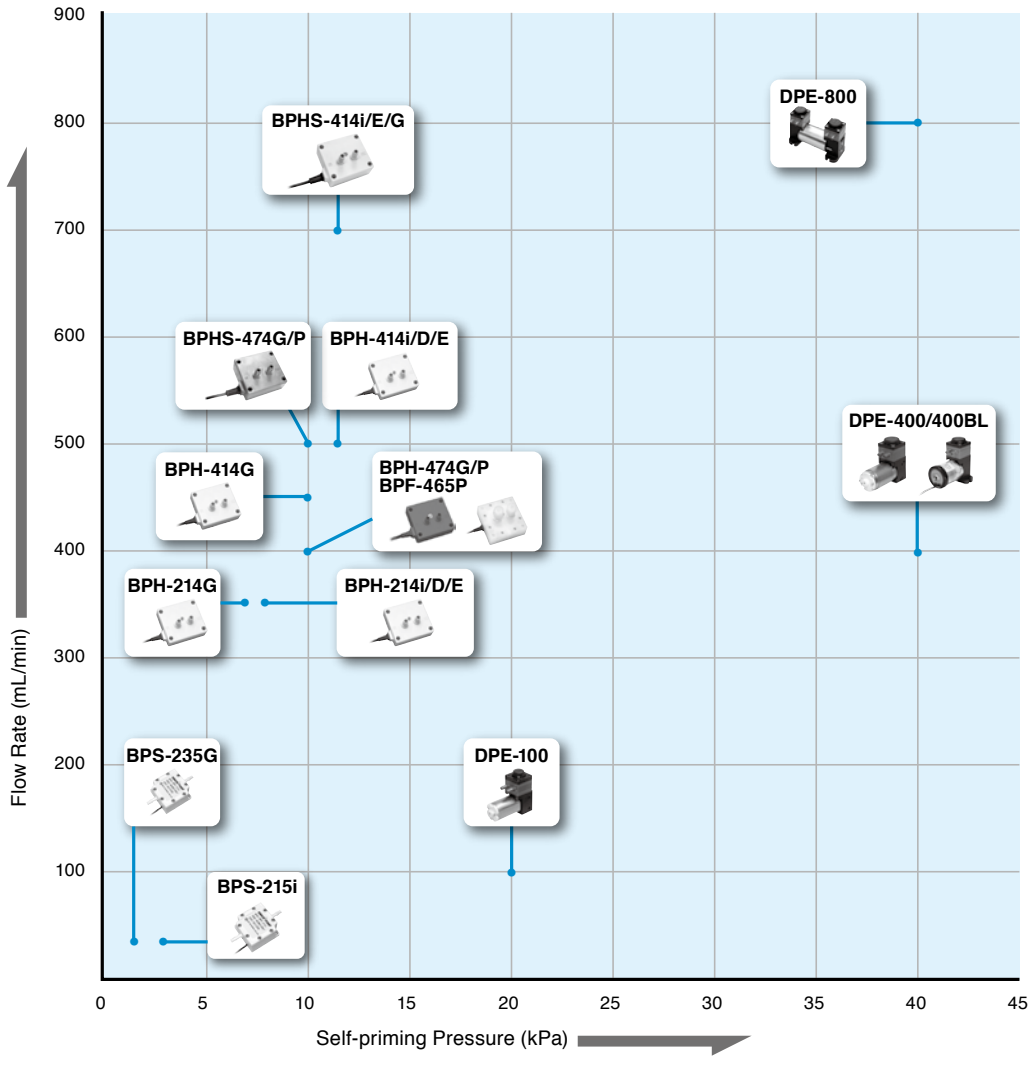
Piezoelectric Pump

BIMOR series

DC Diaphragm Liquid Pump

DPE series

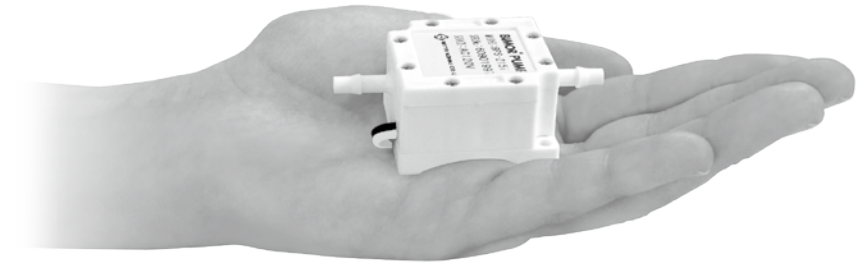
Liquid Pump series (120 V/240 V AC/DC)



i : Butyl Rubber
G : Fluorine Rubber
D : Dimethyl rubber
E : Ethylene Propylene Rubber
P : Perfluor

BIMOR PUMP

Suitable for pumping liquids



Applications

- **For water supply and drainage**
- **For cooling water circulation**
- **For chemical injection**
- **For liquid sampling**

Compact, lightweight, durable & quiet

As the Bimorph has no motors or shafts or other troublesome mechanisms.
We have achieved maintenance free continuous operation for 60 months.

Low power consumption & electromagnetic noise

The Bimor is driven by low energy consuming piezoelectric elements.
Consequently it costs very little to run and emits virtually no electromagnetic noise.

Simple flow rate adjustment

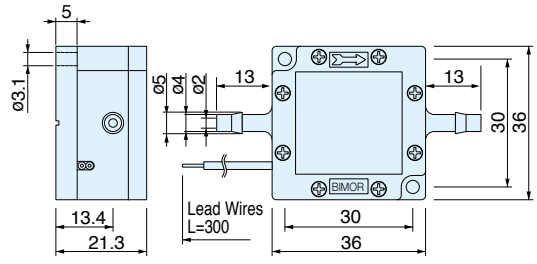
As the flow rate of the Bimor is proportional to the voltage and frequency, adjusting the flow rate is as simple as adjusting either one.
You may use the product at the rated voltage or lower.

Application versatility

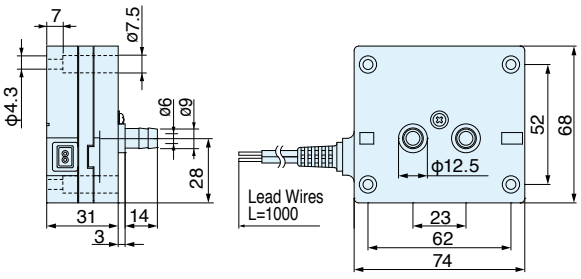
The parts can be made of several different materials, so you can select the material appropriate to your needs, be it a liquid application. The Bimor is currently employed in a variety of different fields including medicine, scientific research, and the PC and chemical industries.

External Dimensions (Unit: mm)

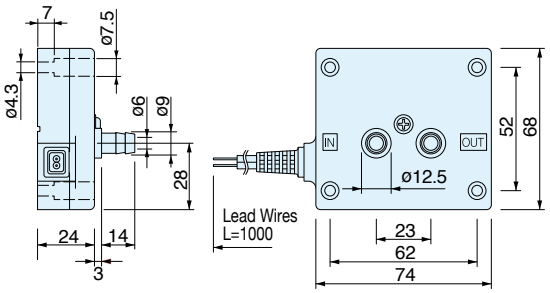
BPS type



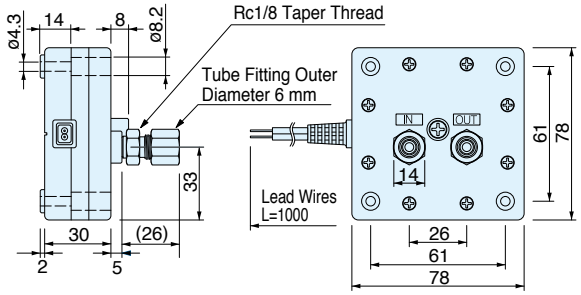
BPHS type



BPH type



BPF type



Specifications

Voltage(AC) ⎓120 V 60 Hz					Voltage(AC) ⎓240 V 60 Hz					Material of Wetted Parts			Weight (g)
Model	Current (mA)	Self-priming Pressure (kPa)*1	Flow Rate (mL/min)*1	Discharge Pressure (kPa)	Model	Current (mA)	Self-priming Pressure (kPa)*1	Flow Rate (mL/min)*1	Discharge Pressure (kPa)	Housing	Liquid Contact Sheet	Valve / O-ring	
BPS-215i	3	3	30	15	—	—	—	—	—	PP	PP	IIR	40
BPH-214E	15	8	350	18	BPH-214E	7.5	8	350	18	PP	PP	EPDM	140
BPH-214G	15	7	350	17	BPH-214G	7.5	7	350	17	PP	PTFE	FKM	140
BPH-414E	30	12	500	35	—	—	—	—	—	PP	PP	EPDM	140
—	—	—	—	—	BPH-474G	15	10	400	35	PPS	PTFE	FKM	170
—	—	—	—	—	BPH-474P	15	10	400	35	PPS	PTFE	FFKM/FEP	170

*1: The values in the specification shows the performance obtained using 25°C of water at 60 Hz. When the pump is used at 50 Hz, the flow rate will decrease approximately 20%.
When the liquid temperature is low, the check valve will harden. As a result, the flow rate and the self-priming pressure will decrease. Especially the flow rate of the pump with fluorine rubber will decrease by half at 5°C, so select with sufficient margin.
Since the flow rate will decrease with highly viscous liquids, please check the flow rate with an actual pump before use.

*2: Please see page 112 for other made-to-order models.

Condition of Use

Ambient temperature	5 to 50°C *1
Ambient humidity	35 to 85% *2
Fluid temperature	5 to 50°C

*1: No Freezing
*2: No condensation

BPS Type

BPH Type

The meaning of each letter in the model name

BP H – 4 1 4 D

Pump type
S : Small type
H : Dismantlable type
F : Chemical-resistant type
HS : High flow type

Diaphragm type
2: Single
4: Double

Housing material
1: Polypropylene (PP)
2: Polyacetal (POM)
6: Fluororesin (Perfluoroalkoxy) (PFA)
7: Polyphenylene Sulfide (PPS)

Pump type
4: Dismantlable type
5: Chemical-resistant type and small type

Rubber material (Valve, O-ring)
i : Butyl Rubber (IIR)
D : Dimethyl Silicon Rubber (VMQ)
E : Ethylene Propylene Rubber (EPDM)
G : Fluorine Rubber (FKM)
P : Perfluoroelastomer (FFKM)

Material Description

EPDM
Ethylene Propylene Rubber

FEP
Fluoroethylene Propylene

FFKM
Perfluoroelastomer

FKM
Fluorine Rubber

IIR
Butyl Rubber

PP
Polypropylene

PPS
Polyphenylene Sulfide

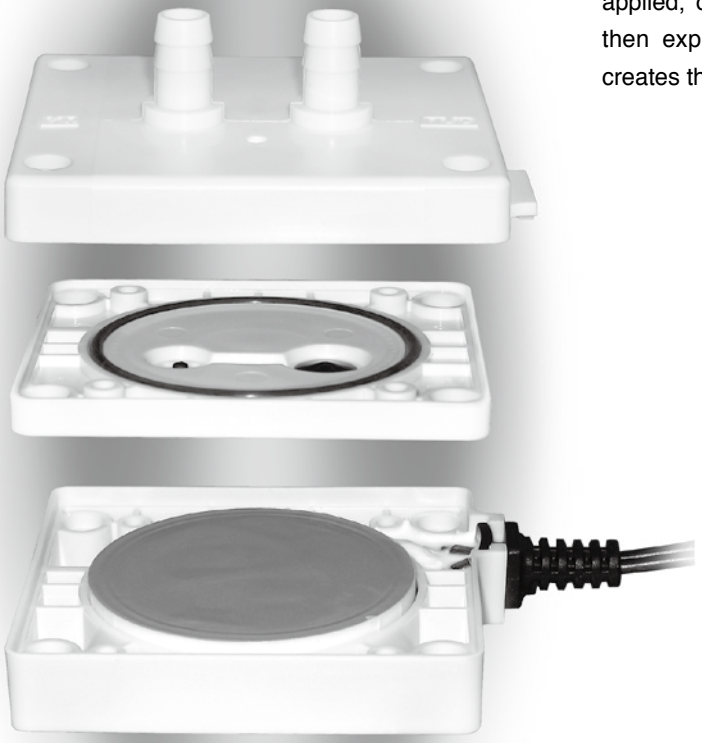
PTFE
Tetrafluororesin
(Polytetrafluoroethylene)

Suitable/unsuitable chemical liquids

Model	Examples of suitable chemical liquids	Examples of unsuitable chemical liquids
BPS-215i	Ethanol,Dilute hydrochloric acid, Sodium carbonate,Benzaldehyde,Formalin	Xylene,Mineral oil,Carbon tetrachloride, Trichloroethylene,Toluene,Benzene
BPH-214E BPH-414E	Ammonia water, Ethanol, Dilute hydrochloric acid, Caustic potash, Caustic soda, Methanol	
BPH-214G	Ethanol, Hydrogen peroxide, Mineral oil, Sodium hypochlorite	Acetone, Ammonia water, Glacial acetic acid, Hydrofluoric acid, Formalin
BPH-474G	Ethanol, Xylene, Carbon tetrachloride, Silicone oil, Trichloroethylene	Acetone, Ammonia water, Chlorosulfonic acid, Glacial acetic acid, Hydrofluoric acid, Formalin
BPH-474P	Ethanol, Chloroform, Glacial acetic acid, Benzene, Methyl ethyl ketone	Chlorosulfonic acid, Fluorine oil, CFC 112, CFC 113

*This chart is for reference only. Please confirm under the operating conditions before use.

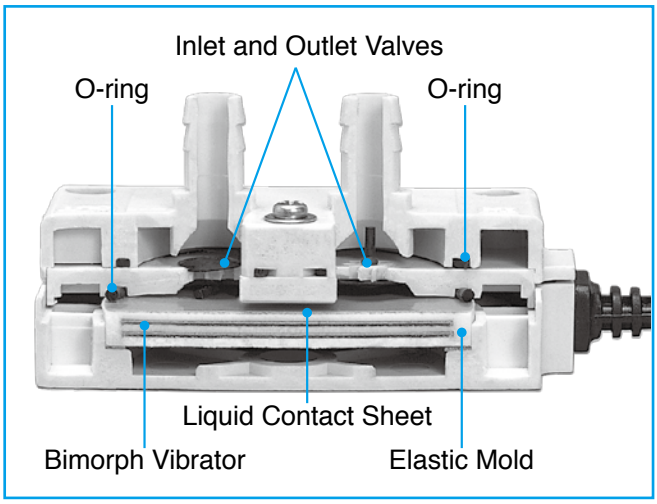
The Next Step in Pump Miniaturization



Revolutionary piezoelectric bimorph technology

The BIMOR pump's driving force, the bimorph, comprises two parallel piezoelectric wafers. Their nature is to expand or contract depending on the direction of the voltage. Therefore when an alternating current is applied, one wafer expands then contracts while the other contracts then expands, causing the bimorph to bend. Repeating the cycle creates the pumping action.

Cross section



Principle / Structure

"The Bimor pump" uses the displacement operation of the piezoelectric bimorph vibrator as the direct source of the pumping action.