Piezoelectric Pump

BIMOR PUMP

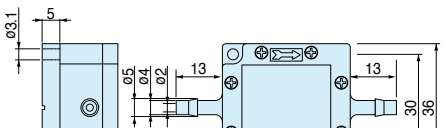
Suitable for pumping liquids

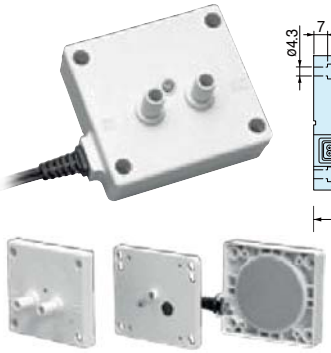
Applications

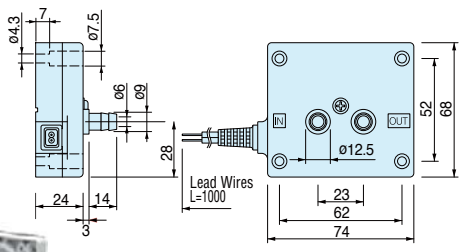
- For supply and drainage
- For cooling circulation
- For medical injection
- For liquid sampling

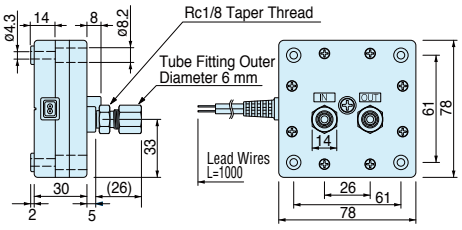
Specifications Dimensions (Unit: mm)

Model	Voltage(AC) —120V 60Hz Current (mA)	Self-priming Pressure(kPa)	FlowRate (mL/min)	Discharge Pressure (kPa)
BPS type				
BPS-215i	3	3	30	15
BPS-235G		1.5		
BPH type				
BPH-214i	15	8	350	18
BPH-214D				
BPH-214E				
BPH-214G		7		17
BPH-414i	30	12	500	35
BPH-414D				
BPH-414E				
BPH-414G		10	450	32
BPH-474G			400	35
BPH-474P				
BPF type				
BPF-465P	30	10	400	35









The performance data is measured at the rated conditions.

1)The reference data is based on water at 25 degrees Celsius with unloaded condition.

2)The ambient operating temperature range is from 5 to 50 degrees Celsius, the ambient liquid temperature range is from 5 to 50 degrees Celsius (non-freezing), and the ambient operating humidity range is from 35 to 85% (non-condensing). When the liquid temperature is low, the valve will be hardened. As a result, the flow rate will be decreased. This could be applied for liquids with high viscosity. The materials that will be under influence of the applied liquids are the housing, liquid contact sheets, valves, and O-rings. Please confirm the suitability under any applied conditions. Any minute quantities of additives and composite materials found in certain liquids may influence the performance of the unit several months later.

3)You may use the product at low voltage, but it will result in lower outlet pressure.

4)Performance may be compromised by restrictive tubing/piping or mounting position of the pump in the application.

5)The above performance data is measured at the rated condition as we described.

Note: The Bimor does not fulfill explosion-proof construction in any applications. Please install isolating transformers or similar protective devices on the wiring for your safety.

Compact, lightweight, durable & quiet

As the Bimorph also acts as a diaphragm it has no motors or shafts or other troublesome mechanisms, and thus minimal vibrations and fewer breakdowns. The Bimor is lighter, quieter and more durable than traditional pumps. 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.
The following "Examples of suitable chemical liquids" should be used for reference only. Please confirm the suitability under any applied conditions by yourself.

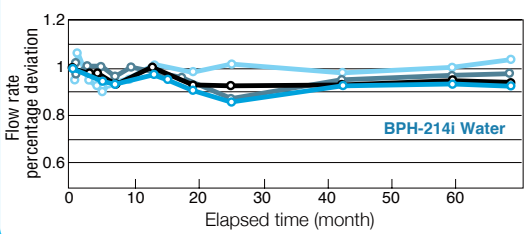
	Voltage(AC) — 230V 50Hz				Liquid Surface Materials			Mass	Examples of suitable chemical liquids	Examples of unsuitable chemical liquids
	Model	Current (mA)	Self-priming Pressure(kPa)	FlowRate (mL/min)	Discharge Pressure (kPa)	Housing	Liquid Contact Sheet	Valve/O-ring	(g)		
BPS type	BPS-215i	4	0.4	10	10	PP	PP	IIR	40	Ethanol, Dilute hydrochloric acid, Sodium carbonate, Benzaldehyde, Formalin	Xylene, Mineral oil, Carbon tetrachloride, Trichloroethylene, Toluene, Benzene
	BPS-235G					POM	PTFE	FKM		Ethanol, Xylene, Silicone oil, Kerosene, Toluene, Benzene	Ammonia water, Hydrochloric acid, Hydrogen peroxide, Sodium hypochlorite, Nitric acid, Sulfuric acid
BPH type	BPH-214i	15	7	220	18	PP	PP	IIR	140	Ethanol, Dilute hydrochloric acid, Sodium carbonate, Benzaldehyde, Formalin	Xylene, Mineral oil, Carbon tetrachloride, Trichloroethylene, Toluene, Benzene
	BPH-214D							VMQ		Ammonia water, Ethanol, Dilute hydrogen peroxide, Sodium hypochlorite, Methanol	Caustic soda, Carbon tetrachloride, Silicone oil, Trichloroethylene, Toluene, Benzene
	BPH-214E							EPDM		Ammonia water, Ethanol, Hydrochloric acid, Caustic potash, Caustic soda, Methanol	Xylene, Mineral oil, Carbon tetrachloride Trichloroethylene, Toluene, Benzene
	BPH-214G				17		PTFE	FKM		Ethanol, Dilute hydrogen peroxide, Mineral oil, Sodium hypochlorite	Acetone, Ammonia water, Glacial acetic acid, Hydrofluoric acid, Formalin
							PP	IIR	140	Ethanol, Hydrochloric acid, Sodium carbonate, Benzaldehyde, Formalin	Xylene, Mineral oil, Carbon tetrachloride, Trichloroethylene, Toluene, Benzene
								VMQ		Ammonia water, Ethanol, Dilute hydrogen peroxide, Sodium hypochlorite, Methanol	Caustic soda, Carbon tetrachloride, Silicone oil, Trichloroethylene, Toluene, Benzene
								EPDM		Ammonia water, Ethanol, Hydrochloric acid, Caustic potash, Caustic soda, Methanol	Xylene, Mineral oil, Carbon tetrachloride Trichloroethylene, Toluene, Benzene
								FKM		Ethanol, Hydrogen peroxide, Mineral oil, Sodium hypochlorite	Acetone, Ammonia water, Glacial acetic acid, Hydrofluoric acid, Formalin
	BPH-274G	15	7	250	35	PPS	PTFE	FKM	170	Ethanol, Xylene, Carbon tetrachloride, Silicone oil, Trichloroethylene	Acetone, Ammonia water, Chlorosulfonic acid, Glacial acetic acid, Hydrofluoric acid, Formalin
								FFKM FEP		Ethanol, Chloroform, Glacial acetic acid, Benzene, Methyl ethyl ketone	Chlorosulfonic acid, Fluorine oil, CFC 112, CFC 113
	BPH-274P										
BPF type						PFA	PTFE	FFKM FEP	350	Ethanol, Aqua regia, Ozone, Carbon tetrachloride, Concentrated nitric acid, Concentrated sulfuric acid, Fuming sulfuric acid	Fluorine oil, CFC 112, CFC 113
	BPF-265P	15	7	250	35				350		

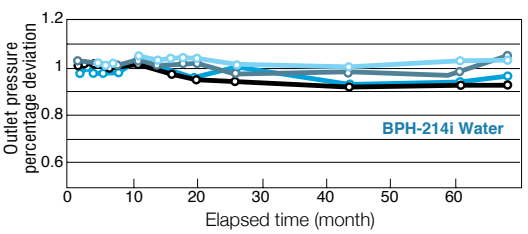
Material Description

EPDM --- Ethylene Propylene Rubber
FEP------ Fluoroethylene Propylene
FFKM---- Fluorine Rubber (Perfluoro)
FKM------ Fluorine Rubber
IIR ------- Butyl Rubber
POM ----- Polyacetal
PFA ------ Fluororesin (Perfluoroalkoxy)
PP ------- Polypropylene
PPS ------ Polyphenylene Sulphide
PTFE ---- Tetrafluororesin (Polytetrafluoroethylene)
VMQ ---- Dimethyl Silicon Rubber

Durability

Longevity test : Sample A Sample B Sample C Sample D





Piezoelectric Pump

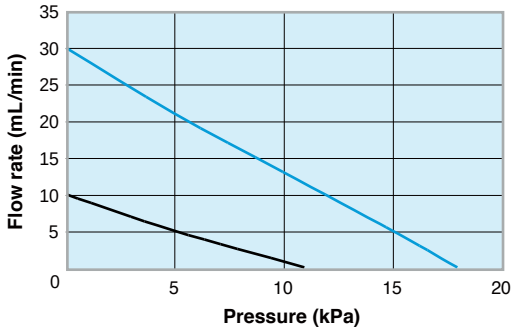
BIMOR PUMP

Flow Rate Characteristic

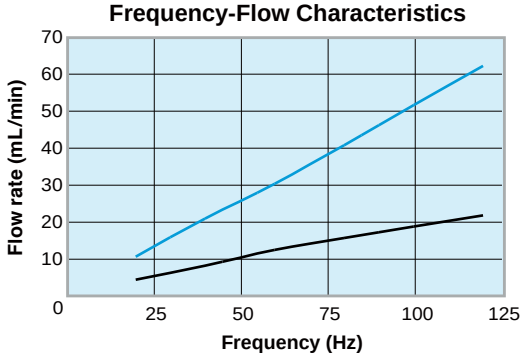
BPS series

120V 60Hz type　　230V 50Hz type

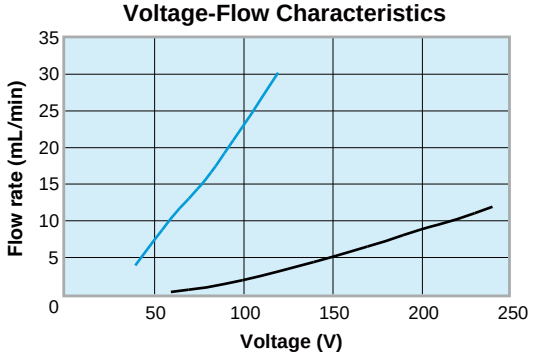
Pressure-Flow Characteristics



Frequency-Flow Characteristics



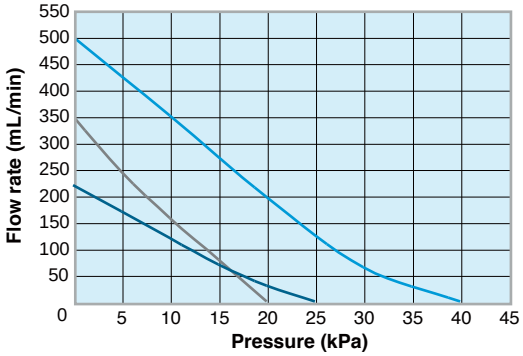
Voltage-Flow Characteristics



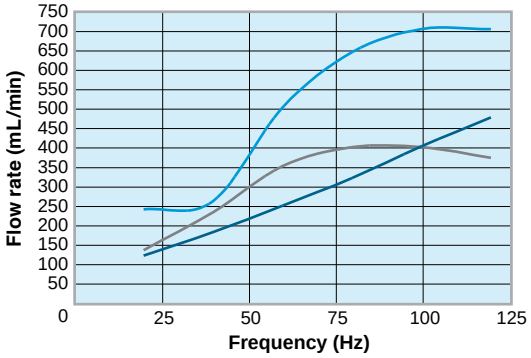
BPH series

(BPH-414i) 120V 60Hz type　　(BPH-214i) 120V 60Hz type　　(BPH-214i) 230V 50Hz type

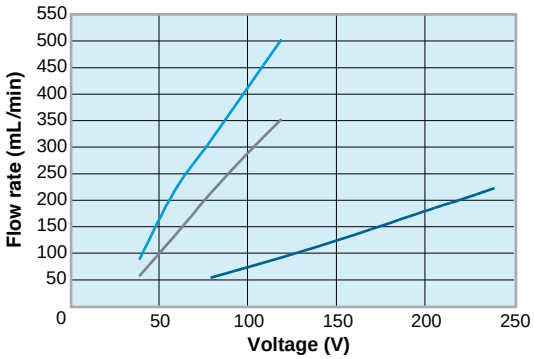
Pressure-Flow Characteristics



Frequency-Flow Characteristics



Voltage-Flow Characteristics

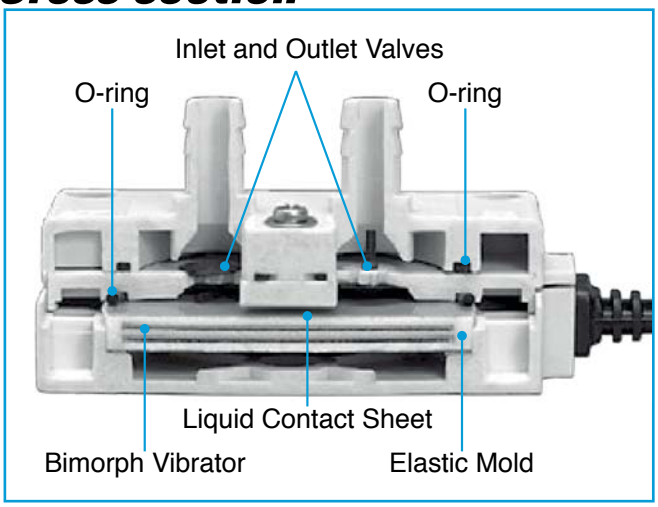


The Next Step in Pump Miniaturization

Revolutionary piezoelectric bimorph technology

The Bimor'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.