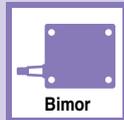


LIQUID PIEZOELECTRIC PUMP

BPS type
BPH type
BPF type
P83-86



LIQUID MINIATURE DIAPHRAGM PUMP

DPE-100
P88

DPE-400
P89

DPE-400BL
P90

DPE-800
P91



BIMOR PUMP



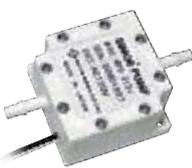
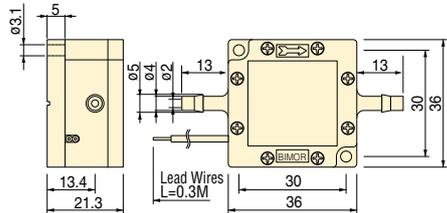
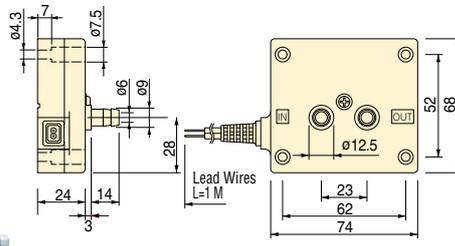
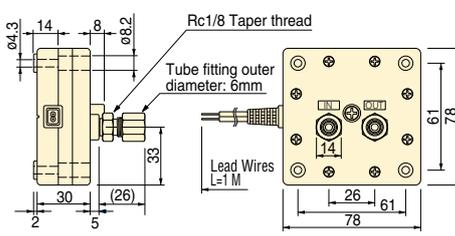
Suitable for pumping both liquids and gases!



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.

Specifications	Dimensions	Voltage(AC) — 120V 60Hz				
		Model	Current (mA)	Self-priming Pressure(kPa)	FlowRate (mL/min)	Discharge Pressure (kPa)
BPS type 		BPS-215i	3	3	30	15
		BPS-235G	3	1.5	30	15
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				
		BPH-474G	10	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 or gases 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.

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

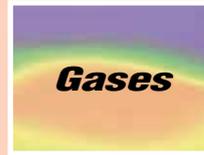
The parts can be made of several different materials, so you can select the material appropriate to your needs, be it a liquid or gas application. The Bimor is currently employed in a variety of different fields including medicine, scientific research, and the PC and chemical industries.

The following "Examples of suitable chemical liquids and gases" should be used for reference only. Please confirm the suitability under any applied conditions by yourself.

Applications



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



- For pressure expansion
- For sampling (inhale)

Model	Voltage(AC) — 230V 50Hz				Liquid Surface Materials			Mass (g)	Examples of suitable chemical liquids and gases	Examples of unsuitable chemical liquids and gases
	Current (mA)	Self-priming Pressure(kPa)	FlowRate (mL/min)	Discharge Pressure (kPa)	Housing	Liquid Contact Sheet	Valve/O-ring			
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			
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			
BPH-214E							EPDM			
BPH-214G							FKM			
							IIR	140	Ethanol, Dilute hydrochloric acid, Sodium carbonate, Benzaldehyde, Formalin	Xylene, Mineral oil, Carbon tetrachloride, Trichloroethylene, Toluene, Benzene
						PP	VMQ			
							EPDM			
							FKM			
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
BPH-274P							FFKM FEP			
							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	PFA	PTFE				

BPS type

BPH type

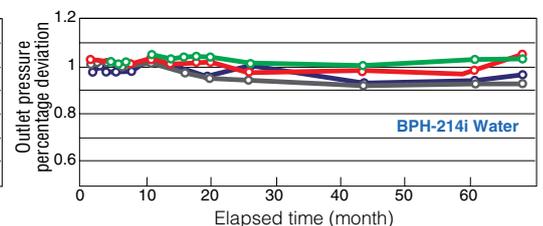
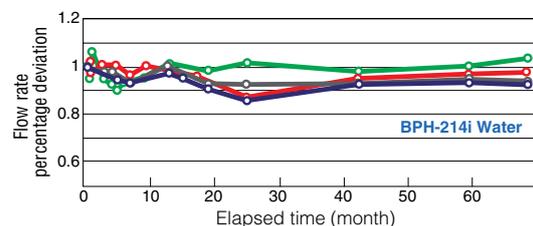
BPF type

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



BIMOR PUMP

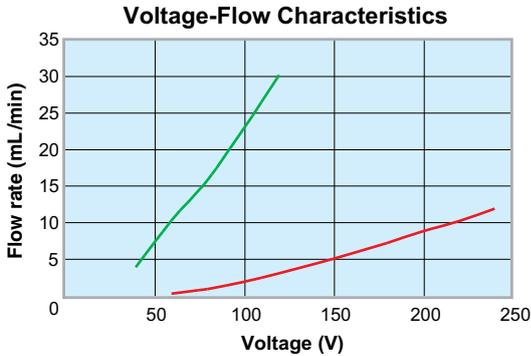
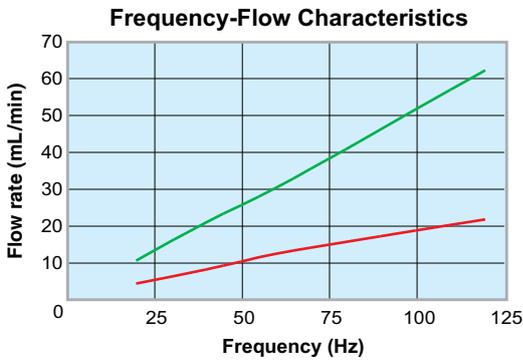
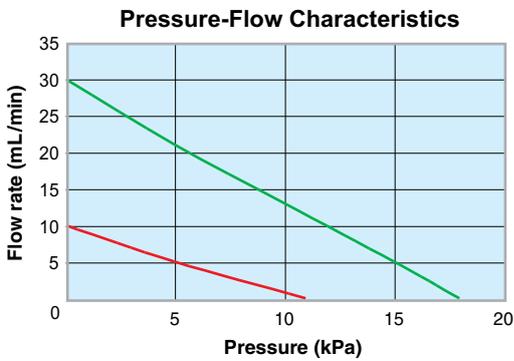


PIEZOELECTRIC PUMP

Flow Rate Characteristic

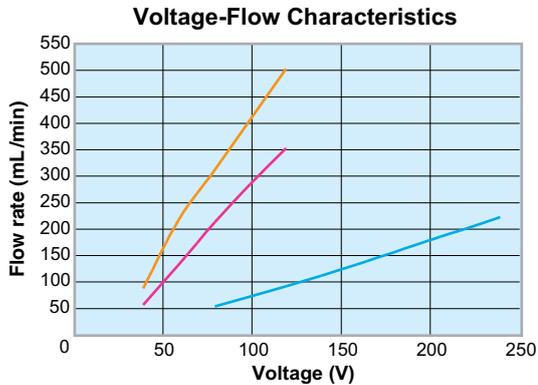
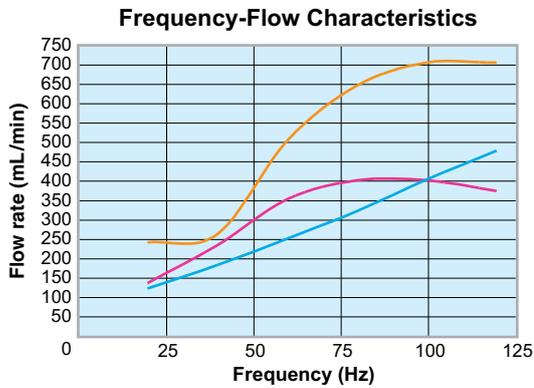
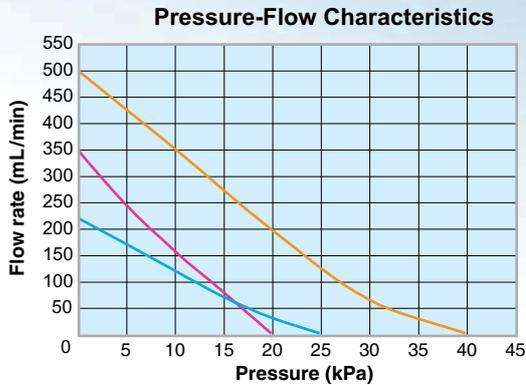
BPS series

120V 60Hz type 230V 50Hz type



BPH series

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

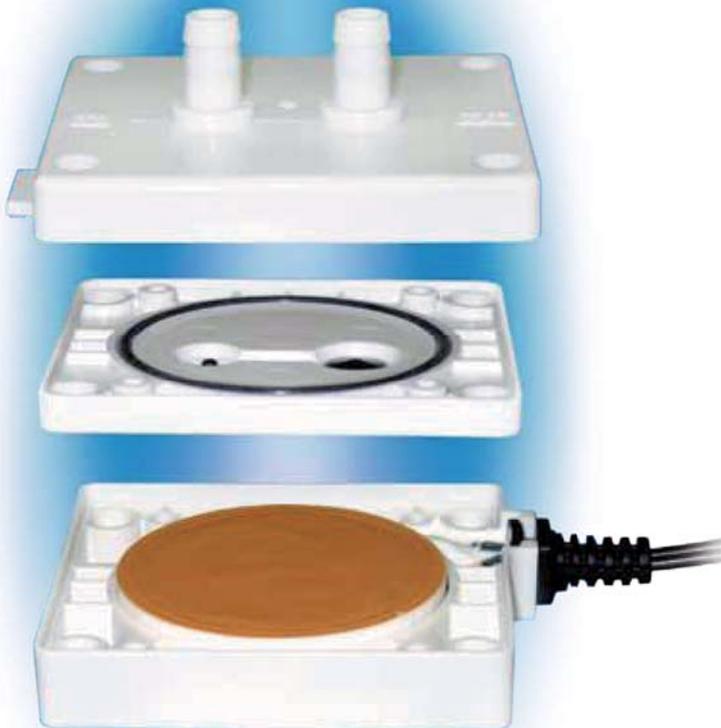


PIEZOELECTRIC PUMP

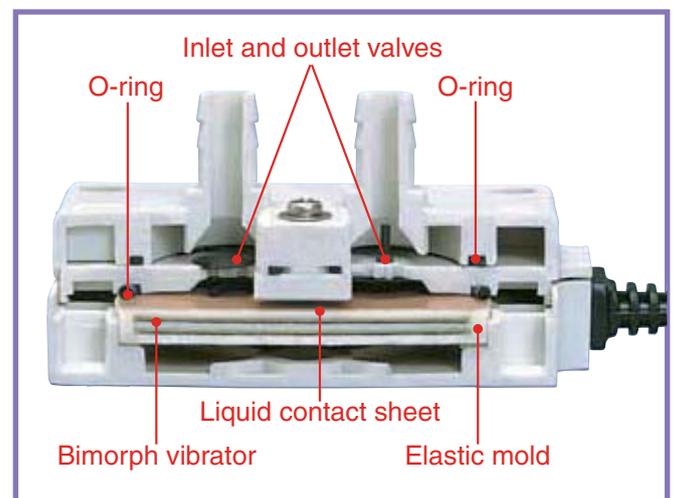
The Next Step in Pump Miniaturization

<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" uses the displacement operation of the piezoelectric bimorph vibrator as the direct source of the pumping action.

