Principle

The BIMOR pump’s driving force, the bimorph, comprises two parallel piezoelectric wafers.

- The Bimorph deforms like a bowl when applied with AC voltage, positive and reverse deformation is achieved by alternating frequency from + to -.
- Discharge volume can be adjusted by controlling the number of amplitude of power supply.

(50 Hz = 50 times / sec. 60 Hz = 60 times / sec.)

Elastic metal plate (Shim)*

*Elastic metal plate (Shim): Where ceramic is utilized.

Flow adjustment methods

The flow rate of the piezoelectric pump can be adjusted by the following three methods.

1. Narrowing the discharge port or piping
   By narrowing the discharge port, the discharge pressure rises and the flow rate linearly decreases. Even if the discharge port is in a closed condition, the oscillator amplitude will only decrease and not burn out like a motor driven pump.

2. Lowering the drive voltage
   The flow rate and discharge pressure linearly decrease with the voltage drop. Please do not exceed the rated voltage since the thickness of the piezoelectric element is designed close to the withstand voltage.

3. Varying the drive frequency
   The flow rate varies with the frequency, but the discharge pressure is constant. It is effective for changing the flow rate without being affected by discharge pressure. The maximum flow rate varies depending on model, but it occurs at about 100 to 120 Hz.

Applications

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

Specifications and designs are subject to change at any time without notice.
## BIMOR PUMP

### Specifications

240V models are newly redesigned. The flow rate is increased by about 160%.

### Material Description

EPDM — Ethylene Propylene Rubber
PEP — Fluoroethylene Propylene
FKM — Perfluoroelastomer
FKM — Fluorine Rubber
BR — Butyl Rubber
PFA — Fluoroarosin (Perfluoralkyoxly)
POM — Polyacetal
PP — Polypropylene
PPS — Polyphenylene Sulfide
PTFE — Tetrafluoroarosin (Polytetrafluoroethylene)
VMO — Dimethyl Silicone Rubber

### Condition of Use

- Ambient temperature: 5 to 50°C
- Ambient humidity: 30 to 95% RH
- Fluid temperature: 5 to 50°C

### The meaning of each letter in the model name

- **BP**
  - P: Pump type
  - B: Bimorph type
- **H**
  - 4: Diaphragm type
- **1**
  - 4: Housing type
- **D**
  - 4: Pump type
- **R**
  - 4: Diaphragm type
- **S**
  - 1: Small type
- **H**
  - 1: High flow type

### The flow rate is increased by about 160%.

- BPS-215i
  - Voltage (AC): 240V
  - Flow Rate: 350mL/min
  - Pressure: 30kPa
  - Weight: 40g

### Made to order models

These models are made-to-order models. Please send a request for quotation to your nearest distributor.

### 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.

### Suitable/un suitable chemical liquids

**Examples of suitable chemical liquids**
- Ethanol, Dilute hydrochloric acid, Sodium carbonate, Benzaldehyde, Formalin
- Ammonia water, Ethanol, Dilute hydrochloric acid, Caustic potash, Caustic soda, Methanol
- Ethanol, Xylene, Silicone oil, Kerosene, Toluen, Benzene
- Ethylene Propylene
- Fluoroethylene Propylene
- Perfluoroelastomer
- Fluorine Rubber
- Polyphenylene Sulfide
- Tetrafluoroarosin (Polytetrafluoroethylene)

**Examples of unsuitable chemical liquids**
- Xylene, Mineral oil, Carbon tetrachloride, Trichloroethylene, Toluene, Benzene
- Polyacetal
- Polypropylene
- Polyphenylene Sulfide
- Tetrafluoroarosin (Polytetrafluoroethylene)
- Dimethyl Silicone Rubber

### How to install

Please install the pump to a flat side. Depending on the direction of installation, sufficient performance may not be obtained.

- **BPS type**
  - When installing, make sure the outlet is at the top and the inlet is at the bottom.
  - BPH, BPHS, BPF type
  - Install the pump so that the IN / OUT display is in the correct orientation.

### Attention

- If installed on the bottom of a device, the performance may deteriorate.

### Check valves

- O-ring
- Elastic mold

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**Image**

- [Cross section]
- BPS-215i
- BPS-414i
- BPH-414i
- BPH-214i
- BPF-465P

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**Table**

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage (AC)</th>
<th>Flow Rate</th>
<th>Pressure</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
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**Diagram**

- BPS type
- BPH type
- BPF type

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