Sea water pumps

KAWA HOPE® series

Self priming type  Automatic booster pump unit  Fine bubble generator  Titanium / Plastic / Nylon coating

KAWAMOTO PUMP

Overseas Marketing Section

For any question about pumps, please contact your nearest distributor or our nearest sales office.

Kawamoto Pump MFG. CO., LTD.

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E-mail: kawamotobo@kawamoto-oms.com

TEL: +81-52-251-7173   FAX: +81-52-747-5500

460-8650, JAPAN

Precautions for using products safely and for preventing personal injuries or physical damage are given in the manual.* We bear no responsibility when the above listed precautions are not observed.

Kawamoto products with this mark are products with features.

Kawa HOPE series

Sea water pumps

Titanium

Plastic

Fine bubble generator

Automatic booster pump unit

Ver.1.1

Kawamoto Pump, as a company handling valuable

slogan "Comfort Earth", and make initiatives for

activities to reduce environmental burdens and protect

the environment.

Do not install in places with no drainage or places which have not been waterproofed. Water leaks may cause serious damage.  * We account both the pump and the rest of the equipment when considering and selecting. Especially for circulative use, unexpected damage may arise from condensation of circulating water.

Close attention is needed when rusting, corrosion/ elution are not permissible owing to the application or liquid properties. Take into account both the pump and the rest of the equipment when considering and selecting. Especially for circulative use, unexpected damage may arise from condensation of circulating water.

Do not connect the pump directly to water supply pipes. It is prohibited under the Water Supply Law. Also, water back/flow may contaminate tap water.

Avoid using for living things which disagrees with copper alloy. It may affect the lives of the living things.

Contamination by foreign objects may occur.

Name

5330 B/P

Sea water pump

Atlantis

Concrete mixer

Concrete mixer

Asian man

Titanium

Plastic

Fine bubble generator

Automatic booster pump unit

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Sea water pumps

KAWA HOPE® series

Salty water pool, Fish market, Fisheries experimental station, Marine product processing industry, Aquaculture industry, Fish preserve, Aquarium — Pumps for sea water with superior corrosion resistance.

Equipped with a variety of functions. A full line-up characterized by energy saving and a powerful water supply. Select a product which is appropriate for your application.

Excellent corrosion resistance.

Fastidious material

- Titanium • Stainless steel • Plastic • Nylon coating

Self-priming automatic booster unit for sea water

GSZB2 type

It is the industry’s first sea water self priming automatic booster pump unit with unique how-how based on our actual achievement of sea water use.

Excellent corrosion resistance

(Major portion=Nylon coating)

Other parts contacting liquid are made using SUS316 and resins, and are ideal for pumping sea water thanks to their superior corrosion resistance.

High reliability

A special design has been adopted which uses the optimal materials for resistance to sea water in, for example, the pressure sensor and flow sensor, which are the key parts for automatic operation. (*) Resistance to corrosion and clogging by foreign objects, and provides a stable water supply. The control panel has a long service life, thanks to a contactless system which means there is no contact abrasion of magnet switches. (Exclude individual operation)

Nylon coated self-priming sea water pump

P17

GSZ-C type

Automatic booster unit for sea water

P3

KZB type

Titanium submersible pump

P11

WUZ3-(G) type

Self-priming plastic pump

P15

GSP3 type

Fine bubble generator

P25

BGZ type

Simple small automatic booster sea water pump

P6

Marine KAWA ACE NFZ(2)-K type

150W, 250W, 400W, 750W

The major parts contacting liquid, such as the casing, are highly corrosion-resistant units made from stainless steel and resins. Specially designed parts made using the optimal materials have also been adopted in other parts contacting liquid, making the pump resistant to corrosion and ideal for pumping sea water.

A design which makes excellent use of technology from home pumps means a stable water supply can be achieved, through a system which involves energy-saving, quiet and provides a constant discharge pressure.

Automatic booster unit for sea water

P7

KZB type

Nylon coated self-priming sea water pump

P19

FSZ/GSZ type

Simple self-priming sea water pump

P21

GEZ- M type

Nylon pump

P23

*Please refer to the figure in the page 4.
**GSZB2 type**

Please inquire for inverter controlled model.

### Optional accessories
- Vibration proof bed
- Foundation bolt (Recommend foundation bolt size 4-M12×160)
- Float switch for sea water (For fluid level control) EHF5-1 X10S

### Components
- Control Panel: ECF5-type, ECFB type
- Accumulator: PRO1-1AS-3PE (For sea water)
- Flexible joint: Stainless steel
- Pressure gauge: Stainless steel
- Pressure sensor: For sea water
- Flow sensor: Stainless steel
- Check valve: Stainless steel
- Pressure gage: Stainless steel
- Flexible joint
- Control panel

### Specification table

<table>
<thead>
<tr>
<th>Model</th>
<th>Motor Combination</th>
<th>Mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSZB2-405S1.5</td>
<td>138 193</td>
<td>205</td>
</tr>
<tr>
<td>GSZB2-405E1.5</td>
<td>138 193</td>
<td>205</td>
</tr>
<tr>
<td>GSZB2-406E2.2</td>
<td>220 133</td>
<td>213</td>
</tr>
<tr>
<td>GSZB2-406E2.2</td>
<td>220 133</td>
<td>213</td>
</tr>
</tbody>
</table>

### Outline dimension table

<table>
<thead>
<tr>
<th>Model</th>
<th>Operation method</th>
<th>Motor Combination</th>
<th>Mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSZB2-405E1.5</td>
<td>GSZB2-405E1.5</td>
<td>193 654</td>
<td>258</td>
</tr>
<tr>
<td>GSZB2-406E2.2</td>
<td>GSZB2-406E2.2</td>
<td>555 205</td>
<td>80</td>
</tr>
<tr>
<td>GSZB2-406E2.2</td>
<td>GSZB2-406E2.2</td>
<td>555 205</td>
<td>80</td>
</tr>
<tr>
<td>GSZB2-406E2.2</td>
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<td>80</td>
</tr>
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<td>GSZB2-406E2.2</td>
<td>GSZB2-406E2.2</td>
<td>555 205</td>
<td>80</td>
</tr>
</tbody>
</table>

(Precaution for suction piping work)
Use the pump centerline to decide the total loss for the length from the pump position to the water surface during low tide, etc., and for the suction piping is 4 m or less.

(Note 2) When using large amount of flow rate such as a flushing valve, please consult KAWAMOTO PUMP.

(Note 2) Starting pressure is set at standard boost-up head as default.

*Foundation bolts are optional accessories.

(Note 1) The note level indicates the maximum value within the specifications at -1 m from the suction.
GSZB2 type Self-priming automatic booster sea water pump

Constant pressure water supply

Self-priming automatic booster sea water pump

Constant discharge pressure

■ Operational explanation

- Individual & Alternative operation
  1. When water is consumed while the pump is stopped, the pressure drops to P1, the pump will start running.
  2. When the flow rate is Q3 or higher, the pump will continue to run.
  3. When the used water rate drops to below Q3, the pump will start running.
  4. Steps 1 to 3 are alternately repeated between the first pump and second pump.

- Alternative / Parallel operation
  1. If the flow rate reaches Q3 or higher while one of the pumps is running, the pressure will drop to P1, and then, the other pump will start running.
  2. When the flow rate drops below Q2 during parallel operation, the pump started first will stop, and only one pump will run.
  3. If the flow rate is less than Q3, alternate operation will take place, else if flow rate is Q3 or more, repeat steps 1 to 2.

■ Control panel standard specification

- Individual operation (ECF5-B type control panel)
- Alternate/Parallel operation (ECF8 type control panel)

■ Thermostat (Individual only)

■ List of digital display of ECF5-B type

<table>
<thead>
<tr>
<th>Status</th>
<th>Display</th>
<th>Display content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power ON</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>During operation</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Voltage</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Current</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Trouble mode (flashing display)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

■ Selection chart (50Hz/60Hz)

■ Specifications (Stop flow rate 4L/min)

<table>
<thead>
<tr>
<th>Model</th>
<th>Power supply (V)</th>
<th>Power supply (A)</th>
<th>Rated voltage (V)</th>
<th>Current (A)</th>
<th>Liquid (m³/min)</th>
<th>Flow rate (m³/min)</th>
<th>Flow rate (m³/min)</th>
<th>Liquid (m³/min)</th>
<th>Flow rate (m³/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFZ2</td>
<td>200</td>
<td>2</td>
<td>240</td>
<td>150</td>
<td>300</td>
<td>2</td>
<td>2</td>
<td>240</td>
<td>150</td>
</tr>
</tbody>
</table>

■ Outline dimension table (Please request a delivery specification when planning installation)

The figure inside the ( ) shows for 400W.

1) When using the pump, be sure to adjust the starting pump head to suit the application.
2) If voltage signal is used, please inquire about fluid level control of receiver tank.

■ Standard specifications

- Water supply will conform to discharge pressure with motive head.
- Operation method: Individual
- Installation: 3: Discharge head (500/500mm), 2: Discharge head (350/350mm)
- Liquid: Clean water: 25°C, sea water: 25°C
- Liquid temperature: 40°C, non-freezing
- Motor: 11KPM Motor (TEFC indoor)
- Power supply: 2m
- Standards: IEC5 (205/205)

- Self-priming automatic booster sea water pump

- Constant discharge pressure
**KZB type Automatic booster unit for sea water**

### Standard specifications

- **Control method**: Constant pressure water supply with pressure and flow sensor.
- **Operation method**: Individual, Alternate, Alternate/Parallel
- **Installation**: Indoor
- **Liquid**: Liquid supplied: Clean water **1**, sea water **2**
  - Liquid temperature: 0~40˚C (no freezing)
- **Pump (Material)**: Impeller: Stainless cast steel (SUS16) / Casing: Cast iron + Nylon coating
- **Motor**: TEFC motor: Pump should be in stalled (motor) Speed: 50Hz: 3,000min⁻¹, 60Hz: 3,600min⁻¹ Efficiency: premium efficiency (IE3)
- **Power supply**: Three phase

### Standard accessories

- Control panel, Pressure sensor, Flow sensor, Check valve, Accumulator, Base, Companion flanges

### Optional accessories

- **Vibration proof bed**
- **Component for fluid level control**
- **Pump cover (Steel plate or Stainless steel)**
- **Foundation bolt**
- **Level relay (For detecting alternate/parallel water reduction)**

### Suction conditions

- Flow: Within 0 to 5 m³/min

### 50Hz Selection chart (Individual) alternate operation

- **Alternate / Parallel operation**

### 50Hz Specification table

<table>
<thead>
<tr>
<th>Model</th>
<th>Motor</th>
<th>Q : Capacity (m³/min)</th>
<th>H : Total head (m)</th>
<th>E : Efficiency</th>
<th>Noise1</th>
<th>Vibration isolator application table</th>
<th>*2</th>
<th>*3</th>
</tr>
</thead>
<tbody>
<tr>
<td>KZB45P1</td>
<td>1.6</td>
<td>0.23</td>
<td>0.18</td>
<td>0.09</td>
<td>0.09</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KZB50P1</td>
<td>1.6</td>
<td>0.23</td>
<td>0.27</td>
<td>0.14</td>
<td>0.14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KZB45P2</td>
<td>2.2</td>
<td>0.27</td>
<td>0.33</td>
<td>0.22</td>
<td>0.22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KZB50P2</td>
<td>2.2</td>
<td>0.27</td>
<td>0.37</td>
<td>0.22</td>
<td>0.22</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 60Hz Specification table

- **Motor**: Three phase KZB type

### Optional accessories

- **Vibration proof bed**
- **Component for fluid level control**
- **Pump cover (Steel plate or Stainless steel)**
- **Foundation bolt**
- **Level relay (For detecting alternate/parallel water reduction)**

### 60Hz Selection chart (Individual) alternate operation

- **Alternate / Parallel operation**

### Installation example

- Sea water receiver tank
- Automatic booster pump
- Intake pump
- Strainer

Note) Separate fluid level control is required to prevent dry running of automatic booster pumps for sea water receiver tanks.

<table>
<thead>
<tr>
<th>Note) When using large amount of flow rate such as a flushing valve, please consult.</th>
<th>Note) Please select inverter controlled model.</th>
<th>Note) Please inquire for inverter controlled model.</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1. Minimum starting pressure to which adjustment from the standard starting pressure is possible</td>
<td>2. Noise indicates the value at a standard specification point</td>
<td>3. Please inquire for salt damage specifications for the vibration proof bed.</td>
<td>Note) Separate fluid level control is required to prevent dry running of automatic booster pumps for sea water receiver tanks.</td>
<td>Note) Please inquire for inverter controlled model.</td>
</tr>
</tbody>
</table>
### 50Hz

<table>
<thead>
<tr>
<th>Bore 40</th>
<th>Bore 50</th>
<th>Model</th>
<th>Motor</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 40</td>
<td>50 50</td>
<td>KZB406SE0.75</td>
<td>0.75</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KZB406SE1.5</td>
<td>1.5</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KZB506SE1.5</td>
<td>1.5</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KZB506SE2.2</td>
<td>2.2</td>
<td>87</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Bore 40</th>
<th>Bore 50</th>
<th>Model</th>
<th>Motor</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 40</td>
<td>50 50</td>
<td>KZB406AE0.75</td>
<td>0.75</td>
<td>123</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KZB406AE1.5</td>
<td>1.5</td>
<td>125</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KZB506AE1.5</td>
<td>1.5</td>
<td>132</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KZB506AE2.2</td>
<td>2.2</td>
<td>151</td>
</tr>
</tbody>
</table>

### 50Hz

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<tr>
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<td>0.75</td>
<td>122</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KZB406AE1.5</td>
<td>1.5</td>
<td>125</td>
</tr>
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<td></td>
<td></td>
<td>KZB506AE1.5</td>
<td>1.5</td>
<td>132</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KZB506AE2.2</td>
<td>2.2</td>
<td>150</td>
</tr>
</tbody>
</table>

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<tr>
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<td></td>
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<td>1.5</td>
<td>132</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KZB506AE2.2</td>
<td>2.2</td>
<td>150</td>
</tr>
</tbody>
</table>

*Note: Bore size 40mm and 50mm are for the KZB406 series models. Bore size 60mm is for the KZB506 series models.*

*The value inside the bracket is the model number.*

*Recommend foundation bolt size M12×160.*

*When attaching directly to the discharge side of a unit, use flexible joints, etc., and without using companion flanges, use joints for a bore of 50 mm, regardless of the unit.
### 50Hz Selection chart

![50Hz Selection chart](image)

### 50Hz Specification table

<table>
<thead>
<tr>
<th>Power Supply</th>
<th>Model</th>
<th>Motor</th>
<th>Phase</th>
<th>Supply</th>
<th>Q</th>
<th>H</th>
<th>Np</th>
<th>Hp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single phase</td>
<td>WUZ2-325-0.15G</td>
<td>0.15</td>
<td>Single phase</td>
<td>0.02</td>
<td>6.5</td>
<td>0.11</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>Single phase</td>
<td>WUZ2-325-0.15G</td>
<td>0.15</td>
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</tr>
<tr>
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<td>WUZ2-325-0.15G</td>
<td>0.15</td>
<td>Single phase</td>
<td>0.02</td>
<td>6.5</td>
<td>0.11</td>
<td>3.2</td>
<td></td>
</tr>
</tbody>
</table>

### 60Hz Selection chart

![60Hz Selection chart](image)

### 60Hz Specification table

<table>
<thead>
<tr>
<th>Power Supply</th>
<th>Model</th>
<th>Motor</th>
<th>Phase</th>
<th>Supply</th>
<th>Q</th>
<th>H</th>
<th>Np</th>
<th>Hp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single phase</td>
<td>WUZ2-326-0.15G</td>
<td>0.15</td>
<td>Single phase</td>
<td>0.02</td>
<td>7</td>
<td>0.11</td>
<td>3.2</td>
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</tr>
<tr>
<td>Single phase</td>
<td>WUZ2-326-0.15G</td>
<td>0.15</td>
<td>Single phase</td>
<td>0.02</td>
<td>7</td>
<td>0.11</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>Single phase</td>
<td>WUZ2-326-0.15G</td>
<td>0.15</td>
<td>Single phase</td>
<td>0.02</td>
<td>7</td>
<td>0.11</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>Single phase</td>
<td>WUZ2-326-0.15G</td>
<td>0.15</td>
<td>Single phase</td>
<td>0.02</td>
<td>7</td>
<td>0.11</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>Single phase</td>
<td>WUZ2-326-0.15G</td>
<td>0.15</td>
<td>Single phase</td>
<td>0.02</td>
<td>7</td>
<td>0.11</td>
<td>3.2</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Automatic alternative/parallel operation is available with combination of Automatic type and Automatic alternative type.

*Model names of *1 to *3 in the nameplate are as follows: (Automatic type has an L at the end of the model number, and Automatic alternative type has LN at the end of the model number)

*1: WUZ2-325-0.15G/G-325/326-0.15G
*2: WUZ2-326-0.15G/G-326/327-0.15G
*3: WUZ2-327-0.15G/G-327/328-0.15G

*Model names of *1 to *3 in the nameplate are as follows: (Automatic type has an L at the end of the model number, and Automatic alternative type has LN at the end of the model number)

*1: WUZ2-326-0.15G/G-326/327-0.15G
*2: WUZ2-327-0.15G/G-327/328-0.15G
*3: WUZ2-328-0.15G/G-328/329-0.15G

*Model names of *1 to *3 in the nameplate are as follows: (Automatic type has an L at the end of the model number, and Automatic alternative type has LN at the end of the model number)

*1: WUZ2-326-0.15G/G-326/327-0.15G
*2: WUZ2-327-0.15G/G-327/328-0.15G
*3: WUZ2-328-0.15G/G-328/329-0.15G
**WUZ₃/₃-(G) type Titanium submersible pump**

Please request a delivery specification when planning for an installation. ( ) is less than 0.25 kW model.

### WUZ ¾ type / Non-automatic

- **Model**: WUZ ¾-0.15SG
- **Power**: 0.15 kW
- **Phase**: Three phase

### WUZ ¾-L type / Automatic

- **Model**: WUZ ¾-L1-0.15SG
- **Power**: 0.15 kW
- **Phase**: Three phase

### WUZ ¾-LN type / Automatic alternative

- **Model**: WUZ ¾-LN1-0.15SG
- **Power**: 0.15 kW
- **Phase**: Three phase

---

**Non-automatic**

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>Model</th>
<th>Motor</th>
<th>Pump</th>
<th>Water level</th>
<th>Combination dimensions for 1-Shift or more</th>
<th>Mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WU2-2-0.15SG</td>
<td>kW</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>210</td>
<td>WU2-2-0.15SG</td>
<td>0.15</td>
<td>255</td>
<td>125 254</td>
<td>-</td>
<td>9.5</td>
</tr>
<tr>
<td>220</td>
<td>WU2-2-0.15SG</td>
<td>0.15</td>
<td>255</td>
<td>125 254</td>
<td>-</td>
<td>9.0</td>
</tr>
</tbody>
</table>

**Automatic / Automatic alternative**

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>Model</th>
<th>Motor</th>
<th>Pump</th>
<th>Water level</th>
<th>Combination dimensions for 1-Shift or more</th>
<th>Mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WUZ2-320.15SG</td>
<td>kW</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>130</td>
<td>WUZ2-320.15SG</td>
<td>0.15</td>
<td>330</td>
<td>125 325</td>
<td>-</td>
<td>5.9</td>
</tr>
</tbody>
</table>

---

**Hose Coupling**

- **Size (mm)**: 30, 40, 50
- **L1**: 72, 72, 88
- **L2**: 46, 46, 60

**Submersible cable size (VCT)**

- **Size (mm)**: 0.15, 0.15, 0.25
- **Wire**: 3, 4, 4
- **Phase**: 100, 200, 300
- **Current**: 9.2, 9.9, 9.9

---

(1) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

(2) The figure inside the ( ) shows for 0.4kW.

(3) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

(4) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

(5) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

(6) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

(7) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

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(11) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

(12) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

(13) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

(14) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

(15) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

(16) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

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(25) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

(26) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

(27) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

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(29) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

(30) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

(31) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

(32) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.

(33) The values for U2 to U5 for automatic type are the default settings. Starting and Stop water level are adjustable.
### Specification Table

#### 50Hz

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Power</th>
<th>Q (m³/min)</th>
<th>H (m)</th>
<th>Standard specifications</th>
<th>Vibration isolator application table</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSP4-40</td>
<td>0.4S</td>
<td>Single phase</td>
<td>0.1</td>
<td>5.5</td>
<td>GSP4-40-C type</td>
<td>GSP4-40-C type</td>
</tr>
<tr>
<td>GSP4-50</td>
<td>0.75</td>
<td>Three phase</td>
<td>0.1</td>
<td>13.2</td>
<td>GSP4-50-C type</td>
<td>GSP4-50-C type</td>
</tr>
<tr>
<td>GSP4-80</td>
<td>2.2</td>
<td>Two phase</td>
<td>0.2</td>
<td>16.5</td>
<td>GSP4-80-C type</td>
<td>GSP4-80-C type</td>
</tr>
</tbody>
</table>

#### 60Hz

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Power</th>
<th>Q (m³/min)</th>
<th>H (m)</th>
<th>Standard specifications</th>
<th>Vibration isolator application table</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSP3-40</td>
<td>0.4S</td>
<td>Single phase</td>
<td>0.1</td>
<td>5.5</td>
<td>GSP3-40-C type</td>
<td>GSP3-40-C type</td>
</tr>
<tr>
<td>GSP3-50</td>
<td>0.75</td>
<td>Three phase</td>
<td>0.1</td>
<td>13.2</td>
<td>GSP3-50-C type</td>
<td>GSP3-50-C type</td>
</tr>
<tr>
<td>GSP3-80</td>
<td>2.2</td>
<td>Two phase</td>
<td>0.2</td>
<td>16.5</td>
<td>GSP3-80-C type</td>
<td>GSP3-80-C type</td>
</tr>
</tbody>
</table>

### Outline dimensional drawing

Please request a delivery specification when planning for an installation.

#### GSP4-40-C type

- *: the figure of 0.4kW
- *2: the figure of 0.75kW

#### GSP4-80-C type

- *: the figure of 2.2kW
- *2: the figure of 5.5kW
- *3: shows the figure of 1.5kW

### Special specification

5C14 suction side flange with valve seat

### Optional accessories

- Control Panel (S type)
- Foundation bolt
- Discharging companion flange set (Stainless cast steel (316))
- Discharging companion flange set (PVC)

### Standard specifications

- Liquid quality: Clean water, Sea water
- Liquid temperature: 0~60°C (no freezing)
- Materials:
  - Impeller: Resin
  - Shaft: SUS316
  - Casing: Resin (METTON +)
  - Base: Cast iron (Polyester powder coating)
  - Type: TEFC outdoor
  - Power supply: Single phase (0.4kW)
  - Speed: 50Hz: 5,000m³/min 60Hz: 6,000m³/min
  - Start-up method: Direct start
  - Efficiency: 95% or more models are Premium efficiency type (IE3)
  - Installation: Standard specifications

### Standard accessories

- Valve socket: 2 pcs (for suction)
- Thermostat: Automatic restoration type (except bore 40mm models)

### Outline of application

- Discharging companion flange set (Stainless cast steel (316))
- Discharging companion flange set (PVC)

### Construction

- Material:
  - Bearing: Closed ball bearing
  - Shaft sealing: Semi-open
  - Mechanical seal: Bond size 40mm: Ceramic Others: SIC + Carbon

### Outline of liquid

- Liquid quality: Clean water
- Suction side:
  - Clean water
  - Sand content 1,000mg/L or less
- Discharging side:
  - Clean water
  - Sea water
- Chloride ion concentration: Approx. 19,000mg/L
- Chloride ion concentration: 200mg/L or less
- pH: 7.8~8.2
- pH: 5.8~8.6

### Outline of installation

- Discharging companion flange set (Stainless cast steel (316))
- Discharging companion flange set (PVC)
- Foundation bolt
- Automatic restoration type (except bore 40mm models)

### Outline of control panel

- Control Panel (ECP type)
- ECP type
- Automatic restoration type (Except bore 40mm models)
- Double phase 3 phase

### Outline of valve seat

- Valve seat: 2 pcs (for suction)

### Outline of thermostat

- Automatic restoration type (except bore 40mm models)

### Outline of thermostat

- Automatic restoration type (except bore 40mm models)

### Outline of vibration isolator

- Vibration isolator: Semi-open
- Mechanical seal: Bond size 40mm: Ceramic Others: SIC + Carbon

### Outline of motor

- Motor: 2 poles
- Power supply: Single phase (0.4kW)
- Speed: 50Hz: 5,000m³/min 60Hz: 6,000m³/min
- Start-up method: Direct start
- Efficiency: 95% or more models are Premium efficiency type (IE3)
- Installation: Standard specifications

### Outline of liquid quality

- Liquid quality: Clean water, Sea water
- Suction side:
  - Clean water
  - Sand content 1,000mg/L or less
- Discharging side:
  - Clean water
  - Sea water
- Chloride ion concentration: Approx. 19,000mg/L
- Chloride ion concentration: 200mg/L or less
- pH: 7.8~8.2
- pH: 5.8~8.6

### Outline of frequency

- Frequency: 50Hz 60Hz
- Mass: 50 (79*5) 92 (59*6) 205 (106*6) 58.0kg TL 1615kg

### Outline of dimensions

- Dimensions (mm): 601 (79*5) 247 (270*2) 520 (79*5) 162 (42*2) 42 (42*2) 270 (270*2) 330 (330*2) 38 (42*2) 100 (100*2) 140 (140*2) 461 (461*2) 56 (461*2) 265 (265*2) 95 (265*2) 19 (95*2) 13 (13*2) 12 (12*2) 11 (11*2) 10 (10*2) 9 (9*2) 8 (8*2) 7 (7*2) 6 (6*2) 5 (5*2) 4 (4*2) 3 (3*2) 2 (2*2) 1 (1*2) 0 (0*2)
GSZ2-C type  Nylon coated self-priming sea water pump

**Standard specifications**
- Liquid: Liquid quality, liquid temperature
- Materials: Stainless steel, cast iron
- Type: TEC outdoor
- Power supply: Three phase
- Speed: 50Hz: 3000/min, 60Hz: 3600/min
- Efficiency: Premium efficiency (IE3)

**Installation**
- Combinations: Flange
- Others: Thermostat (with holder)

**Optional accessories**
- Control panel (ECP type simple outdoor wall mount type)
- Foundation bolt

**Selection chart**

**Specification table**

<table>
<thead>
<tr>
<th>Speed (V/min)</th>
<th>50Hz</th>
<th>60Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q (Capacity)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H (Total head)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Outline dimensional drawing**

Please request a delivery specification when planning for an installation.

**Outline dimension table**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Motor Model</th>
<th>Power supply</th>
<th>Base</th>
<th>Combinations</th>
</tr>
</thead>
<tbody>
<tr>
<td>50Hz</td>
<td>GSZ2-405C1.5</td>
<td>40</td>
<td>40</td>
<td>GSZ2-405C1.5</td>
</tr>
<tr>
<td>60Hz</td>
<td>GSZ2-405C1.5</td>
<td>50</td>
<td>50</td>
<td>GSZ2-405C1.5</td>
</tr>
</tbody>
</table>

*Foundation bolts are optional accessories. Please purchase separately.*
### Standard specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>FSZ</th>
<th>GSZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid quality</td>
<td>Clean water<em>1, Sea water</em>2</td>
<td>0~40°C (no freezing)</td>
</tr>
<tr>
<td>Materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shaft</td>
<td>Cast iron</td>
<td>Cast iron</td>
</tr>
<tr>
<td>Bearing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>Single phase</td>
<td>Three phase</td>
</tr>
<tr>
<td>Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td>Indoor</td>
<td></td>
</tr>
<tr>
<td>Impeller</td>
<td>Closed type</td>
<td>Closed ball bearing</td>
</tr>
<tr>
<td>Shaft sealing</td>
<td>Sand packing</td>
<td></td>
</tr>
<tr>
<td>Bearing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td></td>
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<td>Bearing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Standard accessories

- Motor: TECF indoor
- Shaft bearing: Aluminum alloy
- Base: Cast iron
- Coupling: with cover
- Strainer: Resin material
- Companion flanges: 1 set (with packing and bolts)

### Special specification

- Motor modification (TEFC outdoor: except single phase models)
- Change material (Impeller: made of Bronze*)
- Equipped with an engine

*Model using this product with living things that are susceptible to copper.

---

### 50Hz Selection chart

<table>
<thead>
<tr>
<th>Model</th>
<th>FSZ</th>
<th>GSZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td>Indoor</td>
<td></td>
</tr>
<tr>
<td>Impeller</td>
<td>Closed type</td>
<td>Closed ball bearing</td>
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<tr>
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<td>Sand packing</td>
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<tr>
<td>Bearing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speed</td>
<td></td>
<td></td>
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<tr>
<td>Efficiency</td>
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<tr>
<td>Installation</td>
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</tr>
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<tr>
<td>Bearing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

### 60Hz Selection chart

<table>
<thead>
<tr>
<th>Model</th>
<th>FSZ</th>
<th>GSZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td></td>
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<tr>
<td>Bearing</td>
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<td>Construction</td>
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</tr>
<tr>
<td>Power supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speed</td>
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<td></td>
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<td>Bearing</td>
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<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

### 50Hz Specification table

<table>
<thead>
<tr>
<th>Model</th>
<th>FSZ</th>
<th>GSZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bore</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q : Capacity (m³/min)</td>
<td>H : Total head (m)</td>
<td></td>
</tr>
</tbody>
</table>

---

### 60Hz Specification table

<table>
<thead>
<tr>
<th>Model</th>
<th>FSZ</th>
<th>GSZ</th>
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</thead>
<tbody>
<tr>
<td>Bore</td>
<td></td>
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<tr>
<td>Model</td>
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<td></td>
</tr>
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<td></td>
</tr>
<tr>
<td>Q : Capacity (m³/min)</td>
<td>H : Total head (m)</td>
<td></td>
</tr>
</tbody>
</table>
GEZ-2M type<br>Nylon coating 2 pole

### 50Hz Selection chart

<table>
<thead>
<tr>
<th>Model</th>
<th>Bore d1 (mm)</th>
<th>Bore d2 (mm)</th>
<th>Q (m³/min)</th>
<th>H (m)</th>
<th>N (r/min)</th>
<th>Vibration isolator application table</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEZ40-2M3/4</td>
<td>40</td>
<td>32</td>
<td>0.4</td>
<td>0.05</td>
<td>0.12</td>
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<tr>
<td>GEZ40-2M5/75</td>
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<td>32</td>
<td>0.76</td>
<td>0.05</td>
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<tr>
<td>GEZ40-2M7/15</td>
<td>40</td>
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<tr>
<td>GEZ40-2M9/12</td>
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<tr>
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<td>GEZ40-2M18/42</td>
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### 60Hz Selection chart

<table>
<thead>
<tr>
<th>Model</th>
<th>Bore d1 (mm)</th>
<th>Bore d2 (mm)</th>
<th>Q (m³/min)</th>
<th>H (m)</th>
<th>N (r/min)</th>
<th>Vibration isolator application table</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEZ40-3M3/4</td>
<td>40</td>
<td>32</td>
<td>0.4</td>
<td>0.05</td>
<td>0.12</td>
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<td>0.76</td>
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<tr>
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<td>32</td>
<td>1.5</td>
<td>0.1</td>
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<tr>
<td>GEZ40-3M16/42</td>
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<td>32</td>
<td>2.2</td>
<td>0.1</td>
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<tr>
<td>GEZ40-3M18/42</td>
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<td>32</td>
<td>3.7</td>
<td>0.1</td>
<td>0.27</td>
<td></td>
</tr>
</tbody>
</table>

### Standard specifications
- **Liquid quality**: Clean water, Sea water 0~40°C (no freezing)
- **Material**: Stainless steel cast iron (316)
- **Impeller**: Nylon coating
- **Motor**: TEFC indoor
- **Power supply**: Three phase
- **Speed**: 50Hz: 3,000/min 60Hz: 3,600/min
- **Efficiency**: 50Hz: no less than 75% of the performance type (IE1)

### Standard accessories
- **Motor**: TEFC indoor
- **Base**: Cast iron
- **Coupling**: with cover
- **Priming plug**

### Optional accessories
- **Priming plug funnel**
- **Stop valve**
- **Bushing for attachment**
- **Companion flanges**
- **Foundation bolt**

- **Liquid**
  - *1: pH 5.8~8.6  chloride ion concentration 200mg/L or less
  - *2: pH 7.8~8.2  chloride ion concentration Approx. 19,000 mg/L Sand content 1000mg/L or less

- **Liquid quality**
- **Liquid temperature**
- **Impeller**
- **Shaft**
- **Casing**
- **Type**
- **Power supply**
- **Speed**
- **Efficiency**
- **Installation**
- **Flange**

- **Bore**
  - d1: Suction Bore
  - d2: Discharge Bore

### Liquid quality, Liquid temperature
- **Cast iron with cover**: For bore size 65mm or more models
- **Stop valve**: Provided, except following 65mm models: 50Hz: 2.2kW or less 60Hz: 3.7kW or less
- **Bushing for attachment**: 1 set (with packing and bolts)
- **Foundation bolt**:
**GEZ-4M** type **Nylon coated** 4 poles

### **50Hz Selection chart**

- Speed (rpm) vs. Capacity (m³/min)
- **Performance**
  - Maximum back pressure
  - Suction total head
  - Vibration isolator application table

### **50Hz Specification table**

<table>
<thead>
<tr>
<th>Model</th>
<th>Performance</th>
<th>Motor</th>
<th>Power supply</th>
<th>Speed</th>
<th>Efficiency</th>
<th>Liquid quality</th>
<th>Liquid temperature</th>
<th>Impeller</th>
<th>Shaft</th>
<th>Casing</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEZ-4M-0.4</td>
<td>0.4</td>
<td>0.05</td>
<td>4 pole</td>
<td>237</td>
<td>75</td>
<td>0.8</td>
<td>10</td>
<td>0.05</td>
<td>0.04</td>
<td>0.06</td>
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<tr>
<td>GEZ-4M-0.75</td>
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<td>0.5</td>
<td>4 pole</td>
<td>314</td>
<td>110</td>
<td>0.83</td>
<td>15</td>
<td>0.5</td>
<td>0.45</td>
<td>0.55</td>
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<td>GEZ-4M-1.1</td>
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<td>1</td>
<td>4 pole</td>
<td>400</td>
<td>150</td>
<td>0.85</td>
<td>20</td>
<td>1</td>
<td>0.9</td>
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<tr>
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<td>1.5</td>
<td>1.5</td>
<td>4 pole</td>
<td>500</td>
<td>200</td>
<td>0.85</td>
<td>30</td>
<td>1.5</td>
<td>1.35</td>
<td>1.6</td>
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<tr>
<td>GEZ-4M-2.2</td>
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<td>2.2</td>
<td>4 pole</td>
<td>630</td>
<td>300</td>
<td>0.85</td>
<td>45</td>
<td>2.2</td>
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<td>2.2</td>
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<td>3.7</td>
<td>4 pole</td>
<td>750</td>
<td>450</td>
<td>0.85</td>
<td>60</td>
<td>3.7</td>
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</tr>
<tr>
<td>GEZ-4M-5.5</td>
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<td>5.5</td>
<td>4 pole</td>
<td>900</td>
<td>600</td>
<td>0.85</td>
<td>75</td>
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<td>4.1</td>
<td>4.4</td>
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<td>7.5</td>
<td>4 pole</td>
<td>1125</td>
<td>900</td>
<td>0.85</td>
<td>90</td>
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<td>5.8</td>
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<td>17</td>
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<td>28</td>
<td>4 pole</td>
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<td>3000</td>
<td>0.85</td>
<td>300</td>
<td>28</td>
<td>17.5</td>
<td>17.8</td>
</tr>
</tbody>
</table>

### **Optional accessories**
- **Motor**
- **Base**
- **Coupling**
- **Priming plug**

### **Standard accessories**
- **Motor**
- **TEFC indoor**
- **Mechanical seal**
- **Casing**

### **Standard specifications**
- **Liquid:** Clean water*1, Sea water*2
- **Liquid temperature:** 0~40˚C (no freezing)
- **Materials:** Stainless cast iron (SS314, portion contacting liquid)
- **Shaft:** Cast iron + Nylon coating

### **Application table**
- 10% or more malus as per E-Class efficiency type (IE3)

---

*1: pH5.8~8.6, chloride ion concentration ≤200mg/L or less  
*2: pH7.8~8.2, chloride ion concentration ≤Approx. 19,000 mg/L, Sand content ≤1000 mg/L or less
Please request a delivery specification when planning for an installation.

**Features**

- Exclusively designed for sea water pumps.
- Automatic operation with pressure switch is possible.
- Equipped with a function to protect pumps from water temperature rises as a result of operation when empty, etc. with nylon coated and resin pumps.
- Earth leakage circuit breaker is built-in.
- Outdoor use, wall mount type.

**Standard specifications**

- **Liquid**
  - **Water** (pH 7.8-8.2, chloride ion concentration: Approx. 20,000 mg/L)
- **Surface air cushion capacity**
  - **BGZ-25**
    - Model: 6180, 6181, 6182
    - Installation depth: Max. 1500 mm
    - Air intake capacity: 2000 mm³
- **Submersible pump**
  - **BGZ-25**
    - Model: 6180, 6181, 6182
    - Installation depth: Max. 750 mm
    - Air intake capacity: 1000 mm³

**Installation example**

- Oxygen supply to fish preservers
- Surface blower (GME DRAIN BLOWER)
- BGZ-25 type

**Outline dimensional table / Name**

Please request a delivery specification when planning for an installation.

**Example of use of BGZ**

- Pulse injection
- Fine bubble generator

**ECP type control panel**

(Optional accessories)

**Features**

- Exclusively designed for sea water pumps.
- Automatic operation with pressure switch is possible.
- Equipped with a function to protect pumps from water temperature rises as a result of operation when empty, etc. with nylon coated and resin pumps.
- Earth leakage circuit breaker is built-in.
- Outdoor use, wall mount type.

**Standard specifications**

- **Motor output**
  - Single phase 220 V
  - Three phase 380-440 V
- **Power supply**
  - 0.4-0.75 kW
- **Start-up method**
  - Direct start
- **Installation**
  - Indoor / Outdoor

**Outline dimension / Component layout tables**

**Example of a connection to the control panel**

**Single phase**

- Power source: 220V
- Control panel: ECP-S
- Switch: TSQ-50DEA32
- Relay: TB3
- Lamp: EH130V (30VA)

**Example of a connection to the control panel**

**Three phase**

- Power source: 380-440V
- Control panel: ECP-A
- Switch: TSQ-50DEA32
- Relay: TB3
- Lamp: EH130V (30VA)

**Remarks**

1. When connecting the two signals thermostat and pressure switch, please disconnect the short-circuit wire.
2. When connecting the two signals thermostat and pressure switch, please disconnect the short-circuit wire.

**Example of use of BGZ**

- Fine bubble generator
- 6180, 6181, 6182
- Mass: 0.3 kg
- Turbo: 2.5 kW
- Air intake valve
  - For adjusting fine bubble generation

**Note**

- Please install the equipment’s main unit at a depth of no more than 750 mm if it is a BGZ-25 type, and no more than 3,000 mm if it is a BGZ32 type.
- In case of using thermostat and/or pressure switch, please disconnect the short-circuit wire.
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Important Safety Precautions

- The products are only for use in Japan. It cannot be used overseas, where power supply voltages and frequencies may differ.
- Matters falling under the following may not be covered by the warranty: uses out of the specified scope of application, failure to comply with precautions, improper repairs and alterations, matters arising from natural disasters, matters arising from the installation environment (improper power source, foreign objects, sand etc.), non-compliance with laws and regulations or standards pertaining thereto, accidental or intentional damage or injury, replacement of consumable parts, defects due to resale, etc.
- This product has improved durability against sea water. However, partial rusting due to structural reasons and rusting due to scratches in the nylon coating, etc. may occur. Please note that this product cannot be used for applications where rust is not permissible.
- Do not use the product for applications out of the product specifications. Doing so may cause electric shock, fire, water leakage, etc.
- Apply repair coating at an institute which supports your operating environment. Depending on the operating environment, rust may form on screw parts, processed parts with anti-rust coating, anti-rust coated parts etc. due to high humidity, condensation, getting wet etc., which may lead to unexpected damage.
- Close attention is needed when rusting, corrosion/elution are not permissible owing to the application or liquid properties. Take into account both the pump and the rest of the equipment when considering and selecting. Especially for circulative use, unexpected damage may arise from condensation of circulating water.
- Select a product which is appropriate for your application. Inappropriate use of products may cause accidents.
- Have spare equipment ready when using pumps for equipment for living things (fish farms, fish tanks, aquariums, etc.) or critical equipment. Pump failure may cause lack of oxygen and water quality deterioration, and may affect the lives of the living things.
- If used to transport food-related items, give due consideration to the materials used.
- Contamination by foreign objects may occur.
- Avoid using for living things which disagrees with copper alloy. It may affect the lives of the living things.
- Do not connect the pump directly to water supply pipes. It is prohibited under the Water Supply Law. Also, water backflow may contaminate tap water.
- Conduct construction in accordance with the applicable laws and regulations (the Technical Standards of Electric Installation, interior wiring regulation, Building Standards Act, Water Supply Law, etc.). Not only does it violate the laws and regulations, but it also may cause injuries due to electric shock, fire, falling and tipping over.
- Do not use in places where people are assumed to get in contact with the product (baths, pools, lakes, etc.). Electric leak may occur and cause electric shock.
- Observe the service life of the pump, install it in a well ventilated place free from corrosive or explosive gases, salt, moisture, water vapor, condensation etc., and avoid exposing it to wind, rain and direct sunlight. In a harsh environment, electric leakage, electric shock or fire may result from deterioration of insulation in the motor or control panel, etc.
- Do not install in places with no drainage or places which have not been waterproofed. Water leaks may cause serious damage. * We bear no responsibility for any damage arising from lack of drainage or waterproofing.
- Depending on the equipment, attach a filter etc. appropriate for your application on the discharge side before use, perform thorough flushing to check that there is no contamination. Cutting oil, rubber mold releasing agent, foreign objects etc. from the manufacturing line and cutting oil, foreign objects etc. from the pipeline may contaminate the liquid which is to be handled.
- Install buzzers, etc., as an alarm to alert failure to be noticed. Failing to do so may result in serious accidents without noticing a failure.
- Do not operate pumps with a specification of 50Hz at 60Hz. It may cause damage due to overpressure or burn damage of motors etc. due to overload. Do not operate pumps with a specification of 60Hz at 50Hz. Pump performance may be reduced.
- Do not place combustibles near or cover the surroundings of the pump, cable, control panel and inside the pump cover with combustibles. This may cause fires due to heating.
- Only repair technicians may disassemble, repair, modify the product or replace cables. Defects may cause failure, damage, electrification or fire.
- It is recommended that both periodic and daily inspections be performed in order to ensure that the pump will operate reliably for as long as possible. Failure to perform inspections may lead to pump failure, accidents etc. For periodic inspections, please consult your distributor or our nearest sales office.

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