Single-phase Portable Pumps

LB/HS/NK/LSC/LSP/FAMILY
SINGLE-PHASE PORTABLE DEWATERING PUMPS

Tsurumi single-phase portable dewatering pumps are compact and lightweight, so they are very easy handle and carry. Available in an extensive lineup of motor outputs ranging from 0.1 to 2.2kW, these pumps are suited for a wide range of applications besides general pumping and drainage, including slurries, residues and household uses.

Though compact in size, these pumps pack a host of proprietary technologies that Tsurumi has tested and proven over many years, including the anti-wicking cable, inside mechanical seal with silicon carbide face and Oil Lifter,* etc. Additionally, key components that are prone to wear are made of durable materials and pumps as a whole are designed for continuous duty. For these reasons, Tsurumi single-phase portable pumps are a popular choice at civil engineering, construction and other work sites that demand high reliability.

* excluding FAMILY-series

Tsurumi has been manufacturing construction dewatering pumps for more than 40 years. This has led to numerous technologies and know-how for improving the durability and maintainability of pumps in the rental and construction markets where rugged work environments demand heavy-duty specifications. All of Tsurumi’s pumps are designed and built to be durable and reliable so as to serve users dependably.
Anti-Wicking Cable Entry
Prevents water incursion due to capillary wicking should the power cable be damaged or the end submerged.

Motor Protector
MTP (0.48kW and below)
Detects excess heat, therefore, protecting the pump against overheating and dry-running.
CTP (0.55kW and above)
Directly cuts the motor circuit if excessive heat builds up or overcurrent occurs in the motor.

Dual Inside Mechanical Seals with Silicon Carbide Face
Inside Mechanical Seal with Silicon Carbide Face (FAMILY)
Isolated in the oil chamber where a clean, non-corrosive and abrasion-free lubricating environment is maintained. Compared with the water-cooled outside mechanical seal, it reduces the risk of failure caused by dry-heating and adhering matter. The silicon carbide provides 5 times higher corrosion, wear and heat resistance than the tungsten carbide.

Oil Lifter [Patented]
* Not available for FAMILY
Provides lubrication and cooling of the seal faces down to 1/3 of normal oil level, thus maintaining a stable shaft sealing effect and prolonging seal life longer.

V-Ring / Oil Seal (excluding HS(Z/R)2.4S, FAMILY)
Used as a “Dust Seal”, they protect the mechanical seal from abrasive particles.

Cable Clip (excluding NK3-22L, LSP, FAMILY)
Prevents unexpected water incursion that can occur if the cable is damaged, by protecting the cable against the tugging and rough handling found at construction sites.

Agitator
For HS and HSZ
Prevents the “air lock” that tends to take place on vortex pumps.
For HSD
Assists the pump in sucking and transferring bentonite slurry, slime, mud, and water with high sand content.

Resin-made Stand (HS / HSZ / HSD)
Rubber Stand (HSR / LSC / LSP)
Prevents scratching of floor surface.

Multi-Directional Hose Coupling (LB / LB-A / HSR / LSC)
Can be configured for inclined or vertical discharge, allowing for smoother installation.
**Feature**

**Selection Table**

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<th>Submersible</th>
<th>Non Submersible</th>
<th>Submersible</th>
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<td>Slurry</td>
<td>Residue</td>
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<tr>
<td>LB</td>
<td>HS</td>
<td>HSD</td>
<td>HSR</td>
</tr>
<tr>
<td>Discharge Bore (mm)</td>
<td>50(80)</td>
<td>50 - 80</td>
<td>50</td>
</tr>
<tr>
<td>Motor Output (kW)</td>
<td>0.48 - 1.5</td>
<td>0.4 - 0.75</td>
<td>0.55</td>
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<tr>
<td>Discharge Design</td>
<td>Top</td>
<td>Flow-Thru</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discharge</td>
<td>Side Flow</td>
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<td>Automatic Operation</td>
<td>LB-A</td>
<td>HSZ (Float)</td>
<td></td>
</tr>
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<td>Page No.</td>
<td>7 - 8</td>
<td>9 - 10</td>
<td>11 - 12</td>
</tr>
</tbody>
</table>

**Motor Cooling & Discharge Design**

**Top Discharge, Flow-Thru Design**
- This design provides maximum motor cooling efficiency allowing continuous operation at low water levels and extended dry-run capability, and also allows the shape of the pump to be cylindrical and slim for installation in a well casing for deep well dewatering.

**Top Discharge, Side Flow Design**
- This design assures efficient motor cooling even if the pump runs with its motor exposed to air, and also allows the overall diameter of the pump to be reduced for installation in confined spaces.

**Side Discharge, Spiral Design**
- The pump has a spiral pump casing that facilitates smoother passage of foreign objects like mud and soil contained in the pumped liquid. It is a simple and practical design that facilitates inspection and repair work.

**Automatic Operation**
- The automatic model only operates when sufficient water is present. It not only reduces power consumption but also extends the life of wear parts of the pump as it eliminates dry-running that causes early wear-out.

**Electrodes (LB-A)**
- Tsurumi has developed a unique automatic control device utilizing electrodes. The pump stops automatically in about one minute after the water surface falls below the electric probe. Since this mechanism eliminates dry-running, the pump can reduce power consumption by up to 40 percent compared with non-automatic pumps (Tsurumi comparison). It also prevents chattering caused by a turbulent water surface and extends operating life.

**Float Switch (HSZ / FAMILY-A)**
- This automatic operation system is controlled by a float switch. When the water level rises and raises the float switch to a preset level, the switch turns on, and the pump starts. When the water level lowers to the preset level, pump operation stops.

**Residue Drainage**
- HSR Can pump water as shallow as 5mm from the bottom of the pump and drain water to 1mm in depth.
- LSC Can drain water to 1mm in depth. A valve seat and swing check valve prevent sucked water from backflowing.
- LSP Can pump pooled water from shallow recesses using the suction attachment. A new syphon breaker mechanism prevents backflowing and the seal water from draining out.
- FAMILY Attaching the optional residue adapter to the pump casing allows draining to 1mm in depth.

**Electrode Control Device**

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**Electrode Control Device**
The LB/LB-A series are submersible single-phase portable drainage pumps. The discharge direction is selectable between vertical and inclined, which prevents folding or bending of the discharge hose.* Every LB-series is slim design enough to be accommodated in an 8-inch pipe. The LB-A series with an innovative electrode type relay unit automatically starts and stops the pump to eliminate dry-running. This mechanism greatly reduces power consumption and extends operating life.

* excluding LB-1500

**Flow-thru Design**
**Anti-wicking Cable Entry**
**Motor Protector**
**Dual Inside Mechanical Seal**
**Oil Lifter** [Patented]
**V-ring**
**Cable Clip**
**Multi-directional Hose Coupling**

Automatic Operation (LB-A)

1. Pump continues to run while the electric probe remains submerged.
2. When the water surface falls below the electric probe, timer starts to count about one minute.
3. Pump stops in about one minute after the water level falls.
4. When the water level rises to contact the electric probe, pump starts operating again.

It is possible to set a lower starting water level by using an extension probe (optional accessory). The starting water level is adjustable because the extension probe can be cut to the desired length as it is made of coil spring.

Performance Curves

Standard and Automatic Models have the identical performance.

The process is repeated.

Dimensions

- **Model**: LB, LB-480, LB-800, LB-800A, LB-1500, LB-1500, LB-800A
- **Discharge Bore**: 50, 50(80), 50(80), 50
- **Motor Output**: 0.48, 0.75, 1.5
- **Phase**: Single
- **Starting Method**: Capacitor Run, Capacitor Start
- **Solids Passage**: 6
- **Dry Weight**: 10.4, 13.1, 13.7
- **Cable Length**: 5

<table>
<thead>
<tr>
<th>Model</th>
<th>Discharge Bore</th>
<th>Motor Output</th>
<th>Phase</th>
<th>Starting Method</th>
<th>Solids Passage</th>
<th>Dry Weight</th>
<th>Cable Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB-480</td>
<td>50</td>
<td>0.48</td>
<td></td>
<td>Capacitor Run</td>
<td>6</td>
<td>10.4</td>
<td>5</td>
</tr>
<tr>
<td>LB-800</td>
<td>50(80)</td>
<td>0.75</td>
<td></td>
<td>Capacitor Run</td>
<td>6</td>
<td>13.1</td>
<td>5</td>
</tr>
<tr>
<td>LB-1500</td>
<td>50(80)</td>
<td>1.5</td>
<td></td>
<td>Capacitor Start</td>
<td>6</td>
<td>33</td>
<td>10</td>
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<tr>
<td>LB-480A</td>
<td>50</td>
<td>0.48</td>
<td></td>
<td>Capacitor Run</td>
<td>6</td>
<td>11</td>
<td>5</td>
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<tr>
<td>LB-800A</td>
<td>50(80)</td>
<td>0.75</td>
<td></td>
<td>Capacitor Run</td>
<td>6</td>
<td>13.7</td>
<td>5</td>
</tr>
</tbody>
</table>

* Male threaded coupling for pipe connection available on special request
* 80mm discharge bore available on special request
* Weight excluding cable

S.S. 3000/min

S.S. 3000/min

S.S. 3000/min

LB-480 A1 B H W1

07 08
The HS/HSZ/HSD/HSR series are submersible single-phase portable pumps. The shaft-mounted agitator prevents “Air Lock” that tends to take place on vortex or semi-vortex pumps*. The rubber/resin-made stand protects the floor surface from scratching. The HSZ-series with a single float switch reduces power consumption and extends operating life.

The HSD pump is equipped with a high-chromium cast iron agitator that assists smooth suction of the settled matters. The HSR pump can start pumping if there is water with its level of 5mm or more and can continue pumping the water level goes down to 1mm. Additionally, the discharge direction is selectable between vertical and inclined, which prevents folding or bending of the discharge hose.

* excluding HSR

**Performance Curves**

Standard and Automatic Models have the identical performance.

**Dimensions**

**Automatic Operation (HSZ)**

1. Pump starts operating when the water level rises to a preset level.
2. Pump keeps running while the float switch remains on.
3. When the water level lowers to the preset level, pump stops operating.

* Male threaded coupling for pipe connection available on special request

* Weights excluding cable

* Patent Number: 03084138

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<table>
<thead>
<tr>
<th>Model</th>
<th>Discharge Bore (mm)</th>
<th>Motor Output (kW)</th>
<th>Phase</th>
<th>Starting Method</th>
<th>Solids Passage (mm)</th>
<th>Dry Weight (kg)</th>
<th>Cable Length (m)</th>
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</thead>
<tbody>
<tr>
<td>HS</td>
<td>HS2.4S 50</td>
<td>0.4</td>
<td>Single</td>
<td>Capacitor Run</td>
<td>7</td>
<td>11.3</td>
<td>5</td>
</tr>
<tr>
<td>HS</td>
<td>HS2.75S 50</td>
<td>0.75</td>
<td>Single</td>
<td>Capacitor Run</td>
<td>7</td>
<td>16.4</td>
<td>5</td>
</tr>
<tr>
<td>HS</td>
<td>HS3.75S 80</td>
<td>0.75</td>
<td>Single</td>
<td>Capacitor Run</td>
<td>7</td>
<td>16.8</td>
<td>5</td>
</tr>
<tr>
<td>HSZ</td>
<td>HS2.4S 50</td>
<td>0.4</td>
<td>Single</td>
<td>Capacitor Run</td>
<td>7</td>
<td>11.3</td>
<td>5</td>
</tr>
<tr>
<td>HSZ</td>
<td>HS2.75S 50</td>
<td>0.75</td>
<td>Single</td>
<td>Capacitor Run</td>
<td>7</td>
<td>16.4</td>
<td>5</td>
</tr>
<tr>
<td>HSZ</td>
<td>HS3.75S 80</td>
<td>0.75</td>
<td>Single</td>
<td>Capacitor Run</td>
<td>7</td>
<td>16.8</td>
<td>5</td>
</tr>
<tr>
<td>HSD</td>
<td>HS2.4S 50</td>
<td>0.4</td>
<td>Single</td>
<td>Capacitor Run</td>
<td>9</td>
<td>14</td>
<td>5</td>
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<tr>
<td>HSD</td>
<td>HS2.55S 50</td>
<td>0.55</td>
<td>Single</td>
<td>Capacitor Run</td>
<td>3</td>
<td>10.8</td>
<td>5</td>
</tr>
</tbody>
</table>

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The process is repeated.
The NK-series is a submersible single-phase portable drainage pump having a larger output motor. Though it is a single-phase unit, the pump has the durability equivalent to three-phase drainage pumps, since the wear parts are made of abrasion-resistant materials. The slim design allows the pump to be placed in a confined space.

**NK –Larger Output Pumps—**

**Performance Curves**

**Dimensions**

<table>
<thead>
<tr>
<th>Model</th>
<th>Discharge Bore</th>
<th>Motor Output kW</th>
<th>Phase</th>
<th>Starting Method</th>
<th>Solids Passage mm</th>
<th>Dry Weight kg</th>
<th>Cable Length m</th>
</tr>
</thead>
<tbody>
<tr>
<td>NK3-15</td>
<td>50</td>
<td>1.5</td>
<td>Single</td>
<td>Capacitor Start</td>
<td>8.5</td>
<td>29</td>
<td>10</td>
</tr>
<tr>
<td>NK4-22</td>
<td>50</td>
<td>2.2</td>
<td>Single</td>
<td>Capacitor Start + Capacitor Run</td>
<td>8.5</td>
<td>29</td>
<td>10</td>
</tr>
<tr>
<td>NK3-22L</td>
<td>80</td>
<td>2.2</td>
<td>Single</td>
<td>Capacitor Start + Capacitor Run</td>
<td>8.5</td>
<td>40</td>
<td>10</td>
</tr>
</tbody>
</table>

* Male threaded coupling for pipe connection available on special request

* Weights excluding cable
The LSC pump is a submersible single-phase portable residue drainage pump. The specially designed bottom plate enables the pump to drain down to 1mm water level. It has a swing check valve that prevents reverse-flow of the sucked water when the pump stops its operation. The rubber stand protects the floor surface from scratching. The discharge direction is selectable between vertical and inclined, which prevents folding or bending of the discharge hose.

![LSC Pump Image]

### LSC –Residue Drainage Pump–

- Flow-thru Design
- Anti-wicking Cable Entry
- Motor Protector
- Dual Inside Mechanical Seal
- Oil Lifter [Patented]
- V-ring
- Cable Clip
- Rubber Stand
- Reverse-flow Prevention Mechanism
- Multi-directional Hose Coupling

### Performance Curves

<table>
<thead>
<tr>
<th>Model</th>
<th>Discharge Bore</th>
<th>Motor Output</th>
<th>Phase</th>
<th>Starting Method</th>
<th>Dry Weight</th>
<th>Cable Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSC1.4S</td>
<td>25 x 25</td>
<td>0.48</td>
<td>Single</td>
<td>Capacitor Run</td>
<td>12</td>
<td>5</td>
</tr>
</tbody>
</table>

* Male threaded coupling for pipe connection available on special request
* Weights excluding cable

### Dimensions

![LSC Pump Dimensions Image]

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The LSP pump is a single-phase portable self-priming residue drainage pump incorporating a submersible motor. The suction attachment, supplied as standard, makes the pump drain water down to floor level. The pump is equipped with a siphon breaker mechanism that prevents reverse-flow when the pump stops its operation. It is lightweight and easy to carry, as the major components are made of aluminum alloy and synthetic rubber. Since it incorporates a submersible motor, there is absolutely no problem even if it is submerged in water.

![LSP Pump Image]

### LSP –Free-positioning Residue Drainage Pump–

- Flow-thru Design
- Anti-wicking Cable Entry
- Motor Protector
- Dual Inside Mechanical Seal
- Oil Lifter [Patented]
- V-ring
- Rubber Stand
- Free-positioning Suction Attachment
- Reverse-flow Prevention Mechanism

### Performance Curves

<table>
<thead>
<tr>
<th>Model</th>
<th>Suction x Discharge Bore</th>
<th>Motor Output</th>
<th>Phase</th>
<th>Starting Method</th>
<th>Max. Head 50/60Hz</th>
<th>Max. Capacity 50/60Hz</th>
<th>Max. Vacuum kPa(mmHg)</th>
<th>Dry Weight</th>
<th>Cable Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSP1.4S</td>
<td>25 x 25</td>
<td>0.48</td>
<td>Single</td>
<td>Capacitor Run</td>
<td>6.9 / 7.8</td>
<td>50 / 55</td>
<td>73.3 (-550)</td>
<td>16.5</td>
<td>5</td>
</tr>
</tbody>
</table>

* Weights excluding cable

### Dimensions

![LSP Pump Dimensions Image]

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TSURUMI PUMP
The FAMILY/FAMILY-A series are submersible single-phase portable drainage pumps. In addition to the 25mm hose coupling, it also comes with an easy-to-attach 15mm hose coupling as a standard accessory. The FAMILY-A pump with a cylindrical float switch reduces power consumption and extends operating life. Moreover, it can be used as a residue pump and drain water to 1mm in depth by attaching the optional residue adapter to the pump casing.

**Dimensions**

**FAMILY**

<table>
<thead>
<tr>
<th>Model</th>
<th>Discharge Bore (mm)</th>
<th>Motor Output (kW)</th>
<th>Phase</th>
<th>Starting Method</th>
<th>Dry Weight (kg)</th>
<th>Cable Length (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAMILY-12</td>
<td>15, 25</td>
<td>0.1</td>
<td>Single</td>
<td>Capacitor Run</td>
<td>3.4</td>
<td>3</td>
</tr>
<tr>
<td>FAMILY-12A - Automatic</td>
<td>15, 25</td>
<td>0.1</td>
<td>Single</td>
<td>Capacitor Run</td>
<td>3.6</td>
<td>3</td>
</tr>
</tbody>
</table>

*Weights excluding cable*

**Performance Curves**

Standard and Automatic Models have the identical performance.

**Automatic Operation (FAMILY-A)**

1. Pump starts operating when the water level rises to a preset level.
2. Pump keeps running while the float switch remains on.
3. When the water level lowers to the preset level, pump stops operating.

**Residue Adapter (FAMILY)**

As standard specification, residual water by 12mm can be drained. With residue adapter, residual water by 1mm can be drained.
## Specifications

<table>
<thead>
<tr>
<th>PUMP</th>
<th>LB</th>
<th>LB-A</th>
<th>HS</th>
<th>HSZ</th>
<th>HSD</th>
<th>HSR</th>
<th>NK</th>
<th>LSC</th>
<th>LSP</th>
<th>FAMILY</th>
<th>FAMILY-A</th>
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</thead>
<tbody>
<tr>
<td>LB-480</td>
<td>LB-800</td>
<td>LB-1500</td>
<td>LB-480A</td>
<td>HS2.45</td>
<td>HS2.75S</td>
<td>HSD2.55S</td>
<td>HS2.75S</td>
<td>HS2.75S</td>
<td>HS2.75S</td>
<td>HS2.75S</td>
<td>HS2.75S</td>
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<tr>
<td>LB-800A</td>
<td>LB-800A</td>
<td>LB-480A</td>
<td>HS2.45</td>
<td>HS2.75S</td>
<td>HSD2.55S</td>
<td>HS2.75S</td>
<td>HS2.75S</td>
<td>HS2.75S</td>
<td>HS2.75S</td>
<td>HS2.75S</td>
<td>HS2.75S</td>
</tr>
<tr>
<td>LB-1500</td>
<td>LB-480A</td>
<td>LB-800A</td>
<td>HS2.45</td>
<td>HS2.75S</td>
<td>HSD2.55S</td>
<td>HS2.75S</td>
<td>HS2.75S</td>
<td>HS2.75S</td>
<td>HS2.75S</td>
<td>HS2.75S</td>
<td>HS2.75S</td>
</tr>
</tbody>
</table>

### Discharge Bore (mm)
- LB: 50, 50 (lb00)
- LB-A: 50, 50 (lb00)
- HS: 50, 50
- HSZ: 50, 50
- HSD: 50
- HSR: 80
- NK: 80
- LSC: 80
- LSP: 25
- FAMILY: 15, 25

### Discharge Connection
- Hose Coupling

### Solids Passage (mm)
- 6
- 7
- 9
- 3
- 8.5
- —

### Impeller
- Semi-vortex
- Semi-open
- Semi-vortex
- Semi-vortex
- Semi-open
- Semi-vortex

### Urethane Rubber
- High-chromium Cast Iron
- Urethane Rubber
- Urethane Rubber
- Nitrile Butadiene Rubber
- Glass-fiber Reinforced Resin

### Nitrile Butadiene Rubber
- Semi-vortex
- Semi-open
- Semi-vortex
- Semi-open
- Semi-vortex

### Synthetic Rubber
- Gray Cast Iron
- Ductile Cast Iron
- Gray Cast Iron
- Ductile Cast Iron
- Synthetic Rubber

### Shaft Seal
- Dual Inside Mechanical Seals (with Oil Lifter)
- Inside Mechanical Seal

### Agitator
- Silicon Carbide
- Silicon Carbide
- High-chromium Cast Iron

### Type
- Continuous-duty Rated, Dry-type Induction Motor
- Continuous-duty Rated, Dry-type Induction Motor

### Output (kW)
- 0.48
- 0.75
- 1.5
- 0.48
- 0.75
- 0.75
- 0.4
- 0.75
- 0.48
- 0.75
- 0.75
- 0.55
- 0.4
- 1.5
- 2.2
- 0.48
- 0.1

### Phase
- Single-phase
- Single-phase

### Pole
- 2
- 2

### Insulation
- E
- B
- E
- B
- E

### Starting Method
- Capacitor Run
- Capacitor Run + Capacitor Run
- Capacitor Run
- Capacitor Run

### Motor Protector (built-in)
- MTP
- CTP
- MTP
- CTP
- MTP
- CTP

### Lubricant
- Turbine Oil (ISO VG32)
- Turbine Oil (ISO VG32)
- Liquid Paraffin (ISO VG15)

### Shaft
- 403 Stainless Steel
- 403 Stainless Steel
- 420 Stainless Steel

### Cable
- PVC
- Chloroprene Rubber
- PVC

### Automatic Control Device
- Cylindrical Float Switch

### Dry Weight (*kg)
- 10.4
- 13.1
- 33
- 11
- 13.7
- 11.3
- 16.4
- 16.3
- 11.3
- 16.4
- 16.3
- 14
- 10.8
- 29
- 40
- 12
- 16.5
- 3.4
- 3.6

*Weights excluding cable