KOSHIN

English
Français
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Nederlands

Submersible pump for pumping sandy water

PBX series

OPERATION MANUAL

- Thank you for purchasing a KOSHIN submersible pump.
- This instruction manual contains cautionary points for using the pump safely. Be sure to read the instructions before using the pump, and make sure that you understand how to use it. (Incorrect operation can lead to accidents and injury).
- The instruction manual should be stored carefully in a place where it can be viewed at any time.

SAFETY CAUTIONS

Before using the pump, read these safety cautions carefully and use the pump correctly.
The cautionary points presented here are designed to ensure that you use the product correctly and to prevent danger or damage to yourself and others.
The levels of danger and damage that will be incurred by ignoring the cautions and using the pump incorrectly are explained under the classifications of "DANGER," "WARNING," and "CAUTION."
All three represent important safety information, and you should observe them without fail.

⚠ DANGER	This is used for cases where there is a high risk of death or serious injury occurring.
⚠ WARNING	This is used for cases where it is possible that death or serious injury could occur.
⚠ CAUTION	This is used for cases where it is possible that injury could occur.

⚠ DANGER Do not use this pump with combustible, flammable, or volatile liquids.

⚠ WARNING

- Make sure to ground the pump properly. There is a risk of electric shock.
- Repairs and disassembly should be undertaken only by someone who understands the structure of the pump.
  * Contact your dealer for information about the structure.
- Do not touch the power plug with wet hands.
- Do not use the pump in an area accessible to people or animals.
- Set up a separation barrier to ensure that children, or people not of sound mind or body cannot come in contact with the pump.
- Have any power supply equipment and piping installation carried out by a professional service provider.
- Disconnect the power plug when cleaning or inspecting the pump.
- Do not put your hand or finger inside the unit.

⚠ CAUTION

- This product is for use with sandy water.
  If the pump is used with any liquid other than sandy water or fresh water, it will not be covered by the warranty.
  * Fresh water refers to water-supply water, well-water with no heavy filth (such as silt, clay, heavy mud).
  * Sandy water refers to dirty water that does not contain heavy filth.
- Do not drop the pump or put it anywhere close to fire.
- Check regularly to make sure that the power cord and plug are not damaged, the power socket is not distorted, and there is no dust on or around the power plug.
  Do not use the pump if there are any abnormalities.
- Do not move the pump while it is operating. After use, always make sure to disconnect the power plug before lifting the pump out of the water.
- If the product does not operate, or if there is any abnormality, immediately disconnect the power plug and request an inspection and repair from your dealer.

RESTRICTIONS

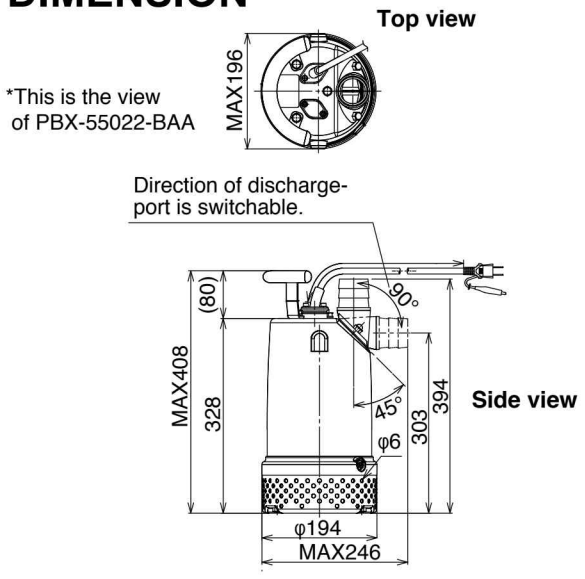
1) Make sure that the liquid in which the pump is used meets the following conditions.
   Temperature: 5–40°C (41–104F°)
   Viscosity: <5cP
   pH: 6.5–8.0
   (Do not use the pump in liquid that is combustible, flammable, or volatile, or with liquid containing oil, pharmaceuticals, salt, strong alkali, or strong acid.)
2) Make sure that power supply meets the following conditions.
   Voltage: ±10% Frequency: ±1%
   If both the voltage and frequency fluctuate, the power supply must be within half of these tolerances.

SPECIFICATIONS

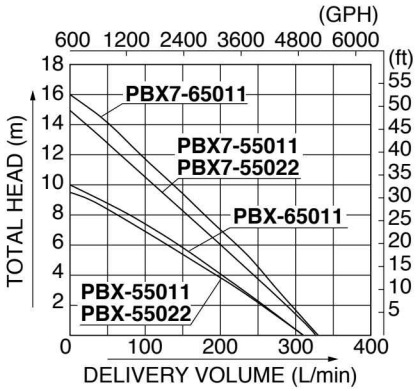
MODEL			PBX-55022			PBX-55011		PBX-65011
TYPE			BAA	BAB/BAE	BAC/BAD	BAB	BAC	BAB
PUMP	Connection Dia	mm	50					
		inch	2					
	Max.Head	m	9.5					10
		ft	31					33
	Max.Delivery	L/min	310					
		GPH	4,870					
MOTER	Voltage [V]		AC 220			AC 110		
	Frequency [Hz]		50					60
	Rated Current [A]		4.2			8.1		8.7
	Output [W]		400					
	Consumption [W]		680			690		750
	Revolution [rpm]		2,800					3,200
Power Cord			VCT 3C×1.25mm² ×6m	H07RN-F 3G×1.0mm² ×10m	H07RN-F 3G×1.5mm² ×10m		H07RN-F 3G×1.5mm² ×20m	STOW 3/16AWG ×10m
Maximum usage depth			5	7				5
Net Weight [kg] *without cable			13.4					
Standard Accessories			Hoseband, Rope	HoseCoupling, Hoseband, Rope				Hoseband

MODEL			PBX7-55022			PBX7-55011		PBX7-65011
TYPE			BAA	BAB/BAC/BAD/BAE		BAB	BAC	BAB
PUMP	Connection Dia	mm	50					
		inch	2					
	Max.Head	m	15					16
		ft	50					54
	Max.Delivery	L/min	330					
		GPH	5,240					
MOTER	Voltage [V]		AC 220			AC 110		
	Frequency [Hz]		50					60
	Rated Current [A]		6.0			12.0		
	Output [W]		750					
	Consumption [W]		1,250					
	Revolution [rpm]		2,800					3,200
Power Cord			VCT 3C×2.0mm² ×10m	H07RN-F 3G×1.5mm² ×10m			H07RN-F 3G×1.5mm² ×20m	VCT 3C×2.0mm² ×15m
Maximum usage depth			5	7				5
Net Weight [kg] *without cable			13.6			13.7		
Standard Accessories			Hoseband,Rope	HoseCoupling,Hoseband, Rope				Hoseband

DIMENSION



PERFORMANCE CURVE



*Starting current is three times higher than rated current.

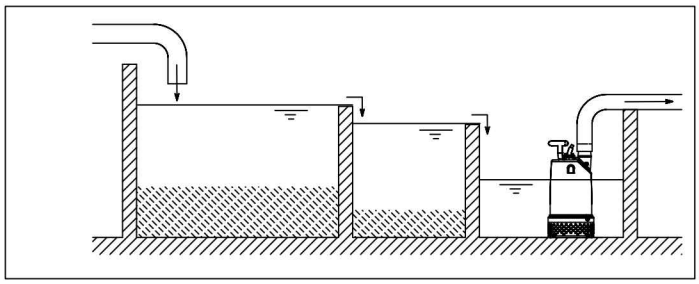
BEFORE USE

1. Check that the model type, frequency, and voltage of the pump are correct. (Refer to the model number plate)

2. Connect the ground wire to ground before connecting the power plug.
   To prevent ground leakage incidents, install a ground leakage circuit breaker.

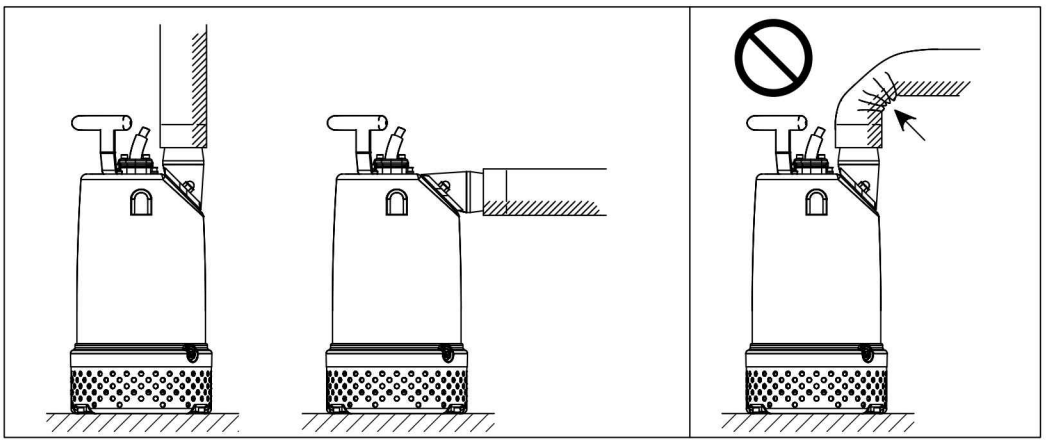
3. Hold the handle when carrying the pump.
   Also, when installing the pump, tie a rope or similar line to the handle.

4. The pump should be installed in the position where water accumulates most easily.
   When installing on soft ground, such as gravel or sand, position wooden boards or blocks, etc. below the strainer to prevent the pump from sinking.



The figure on the left shows an example of an installation method for reducing the chance of intaking sediment.

5. To change the hose angle, remove the delivery flange nuts and, taking care not to drop the packing, rotate the hose through 90 degrees and reattach it.



⚠ CAUTION

Be aware of the water-hammer effect.
If the delivery hose is stepped on or the delivery side valve closed suddenly while the pump is in operation, a great pressure will build up instantaneously inside the pump case.
Be careful, as this can cause damage to the pump.

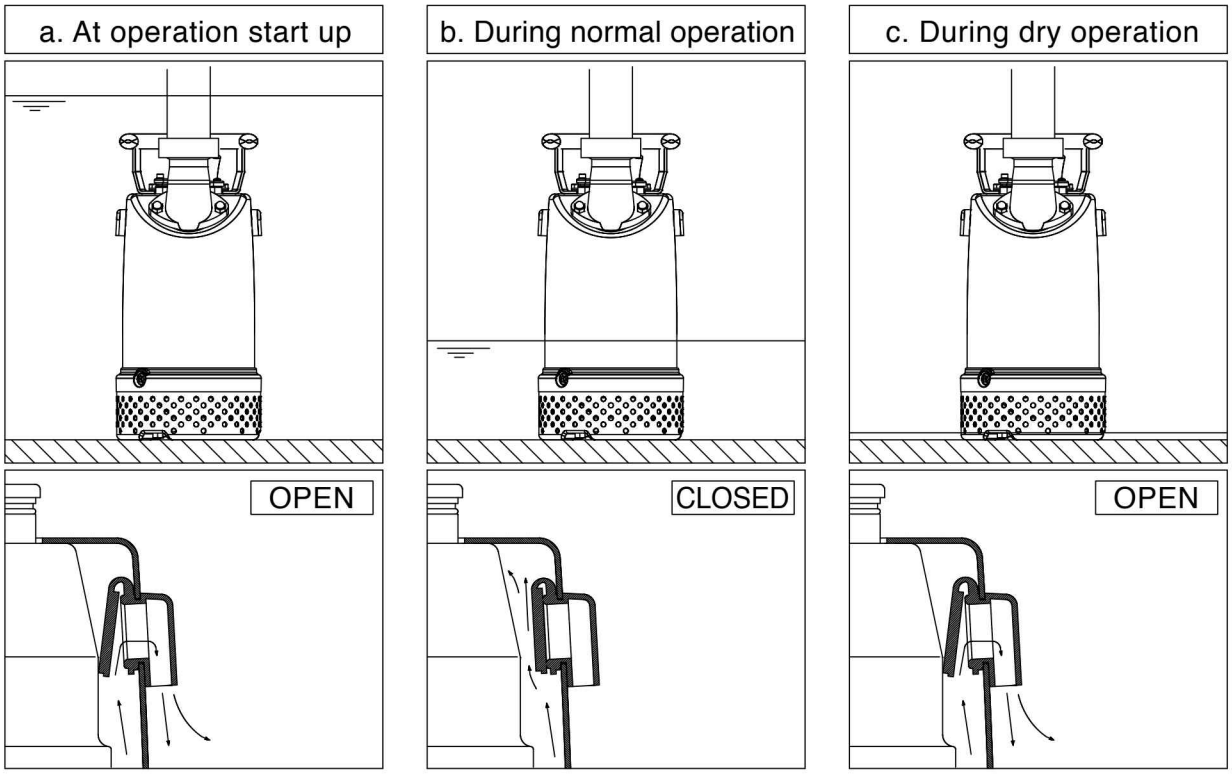
6. Thermal protector
   A thermal protector is installed inside the pump to protect the motor.
   If the pump is operated at excessive load for some reason, the thermal protector automatically stops the pump to protect the motor. (Once the motor temperature has cooled, it restarts automatically.)

   If this situation continues, carry out the following inspections.
   * Always remove the power plug from the power supply whenever you conduct an inspection.
   - Has any foreign matter (such as lint, solids or filth) gotten stuck and locked the impeller ?
   - Has the power supply voltage become lower? (If using an extension cord or generator)
   - Is the pump being used for liquid with a high specific gravity or high viscosity?

7. Operation of the air valve
   This pump is fitted with an air valve. The air valve prevents air lock from occurring on operation start up, and a continuous airflow through the air valve will cool the motor, preventing overheating with the pump is running dry (without water).

⚠ CAUTION

If debris, etc., becomes stuck in the air valve, it may not operate correctly. Check that there is no foreign matter in the air valve before installing and operating the pump.



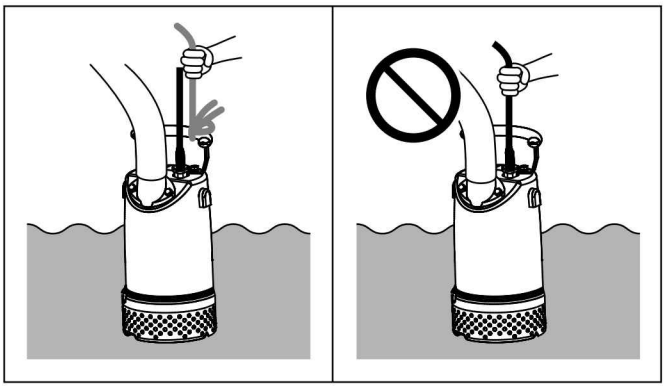
8. When using a generator, it must have a capacity 3–5 times of the electric power consumption of the pump.(Read the operating manual of the generator carefully and use it correctly).

HOW TO USE THE PUMP

1. Submerse the pump in the water.

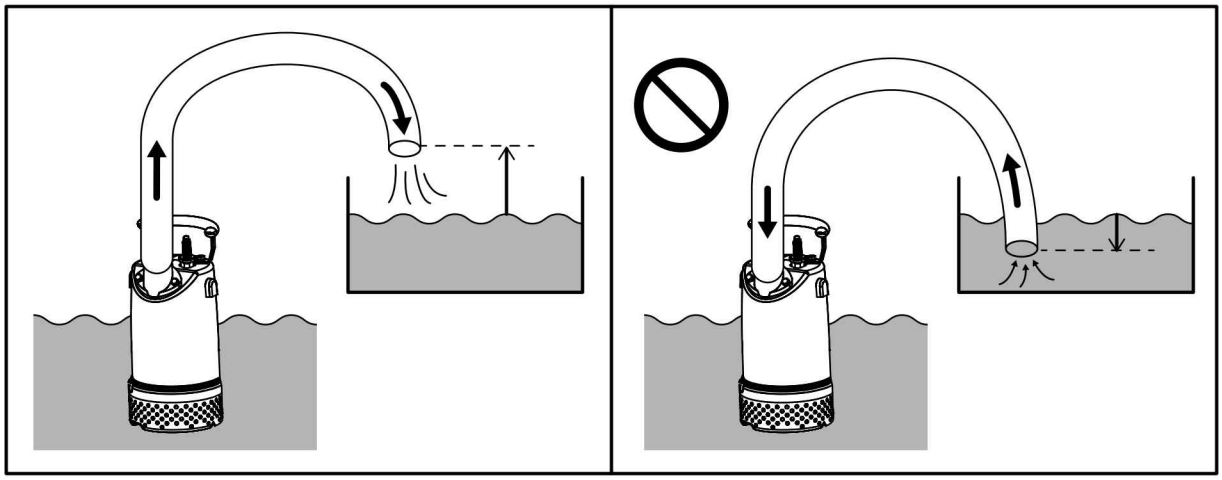
   If you lower the pump by holding the power cord or hose, the cord will be broken and the hose will come out.

   Tie a rope to the pump handle, and lower the pump slowly into the water.



2. Do not allow the end of the delivery hose to become submerged.

   If the end of the hose is higher than the surface of the water when the pump is stopped, the water will flow back due to the siphon effect.



3. Connect the power plug.

CAUTIONS AFTER USE

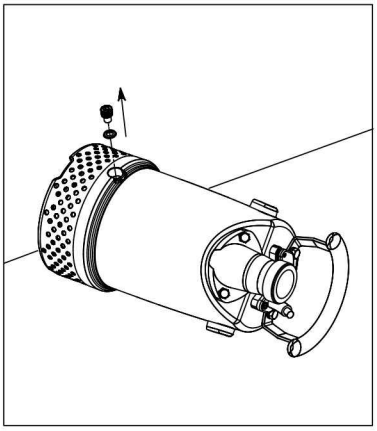
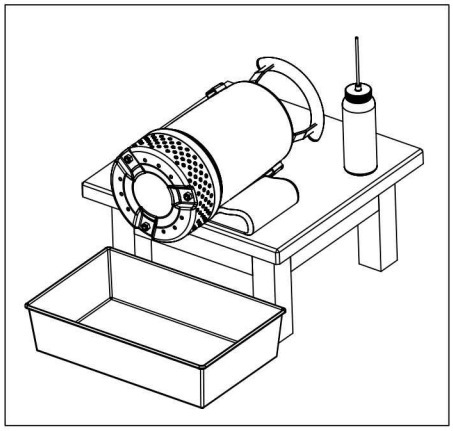
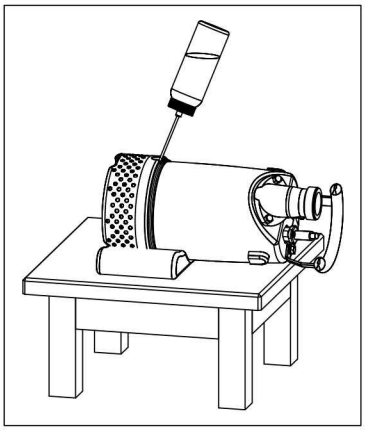
1. After use, always make sure to disconnect the power plug and lift the pump out of the water.
   The insulation will degrade and it will cause an electric shock or an electric leakage.
2. If the pump is used in water containing a large quantity of sand or heavy filth, and it is left standing after being stopped, the sand, etc. will remain inside the pump.
   Before storing the pump, wash the inside thoroughly and dry it completely.

REPAIR AND INSPECTION

1. Check insulation resistance
   Check the resistance of the insulation regularly.
   Use a tester to measure the resistance between the ground wire and the power cord.
   - 20 MΩ or more: Normal
   - 1-20 MΩ: Sufficient to operate the pump but the power cord and motor should be inspected as soon as possible.

• 1 MΩ or less: Abnormal. Conduct inspection and repair.

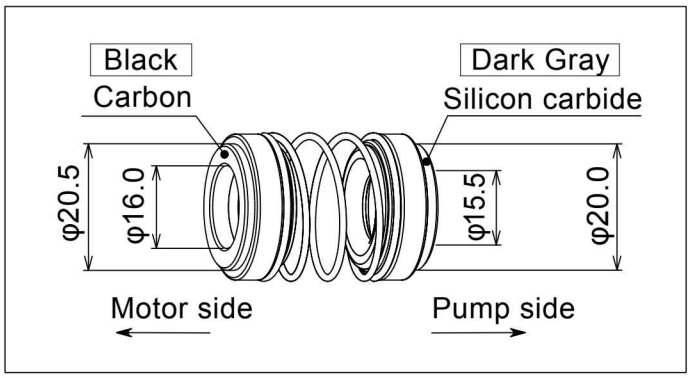
2. Replacing the paraffin
   The shaft seal whitch is the pump's most important water tight component is sealed with liquid paraffin.
   Inspect the liquid paraffin every 1,000 hours (or every 3 months).
   If the liquid paraffin gets impure when removed, or if water is mixed into it, the seal assembly (mechanical seals, etc.) needs to be replaced.
   (The amount of liquid paraffin in the seal is 280 cc.)

3. Replacing the mechanical seals

This submersible pump uses a double mechanical seal.

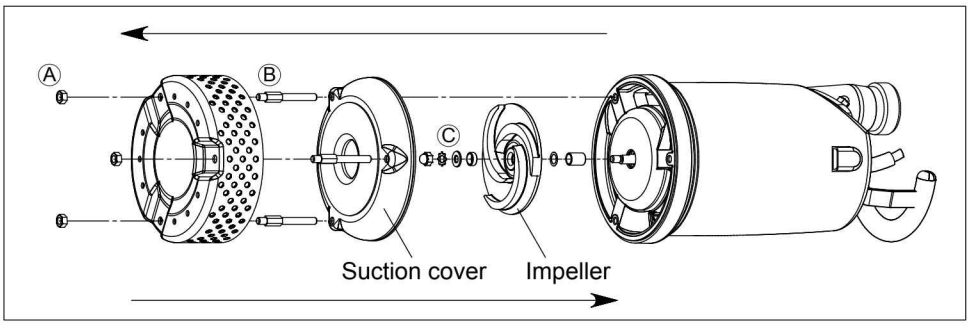
During assembly, install a carbon mechanical seal on the motor side, and a silicon carbide mechanical seal on the pump side.



4. Impeller inspection

If foreign matter is stuck in the strainer or the impeller, the delivery volume will decrease and it will also have a negative impact on the life time of the pump. Conduct an inspection by carrying out the following procedure.

* Always remove the power plug whenever you conduct an inspection.



Tightening torque(N·m / lb·ft)		
Ⓐ	15 N·m	11.06 lb·ft
Ⓑ	15 N·m	11.06 lb·ft
Ⓒ	5 N·m	3.68 lb·ft

Wash the strainer and impeller with clean water.

Wash away any dirt around the motor shaft with water.

Reassemble the components by performing the disassembly procedure in reverse order.

Always replace any damaged or worn components.

5. Power cord replacement

If the power cord requires replacement due to wear or damage, contact your dealer to request replacement.

6. (for PBX7-55022)

After stopping the operation, high electric voltage should remain in the capacitor under head cover.

Maintenance or repairing works must be restricted by skilled staff.

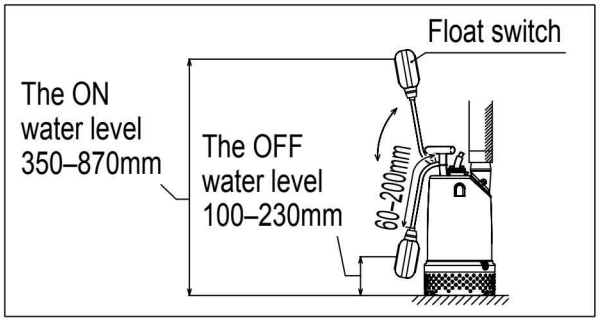
Improper works may cause serious injury by strong electric shock. Please be careful for handling.

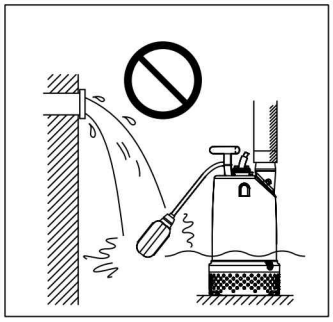
OPTIONAL COMPONENTS

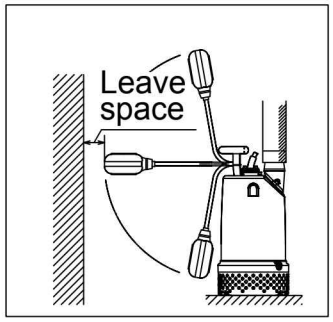
FLOAT SWITCH

Enables automatic control of pump start and stop.

The pump starts automatically when the water level rises and the float comes up to the ON water level and stops automatically when the water level falls and the float comes down to the OFF water level.







FAULTS AND HANDLING

Symptom	Cause		Remedy
Pump will not turn	No power supply		Connect to power supply
	Power supply is switched on	Power cord cut or not contacting properly	Inspection and repair at dealer
		Voltage drop	Check extension cord
		Impeller locked due to entry by foreign matter	Clean strainer and casing
		Water penetration into motor	Inspection and repair at dealer
Pump stops during operation	Safety device is operating (thermal protector)		Inspect piping and pump to reduce the load
	Impeller locked due to entry by foreign matter		Clean strainer and casing
	Rise in water temperature		Lower water temperature
	Incorrect frequency/voltage		Check that the value on the model number plate and the power supply are the same.
Decrease in pump performance	Loss due to clogging or bending of hose		Wash the inside of the hose and remove bends
	Hose bore too small, hose too long		Use a hose with a wider bore, shorten hose
	The pump is sucking in air		Increase water level
	Worn impeller		Replace impeller
	Clogging inside pump		Wash inside pump
	Pump head too high		Lower the pump head
Air valve will not close	Foreign matter clogging air valve		Clean air valve
	The pump is sucking in air		Increase water level