IWAKI PUMPS

# IWAKI Bellows Pump
# KBR series (DC type)
# Instruction Manual

⚠ Read this manual before use of product

Thank you for selecting an Iwaki KBR series bellows pump. This instruction manual deals with "*Safety Instructions*", "*Outline*", "*Installation*", "*Operation*" and "*Maintenance*" sections.

Please read through this instruction manual to ensure the optimum performance, safety and service of your pump.

## Contents


Safety Instructions ····· 1

*Outline*
1. Unpacking & Inspection ····· 3
2. Operating principle ····· 3
3. Identification code ····· 4
4. Specification ····· 4
5. Outer dimensions ····· 6
6. Part names & Structure ····· 7
7. Overview & Label ····· 7

*Installation*
1. Before Installation ····· 8
2. Installation/Piping/Electrical wiring ····· 10

*Operation*
1. Before operation ····· 13
2. Pump head adjustment ····· 13

*Maintenance*
1. Troubleshooting ····· 15
2. Maintenance & Inspection ····· 15
3. Wear parts replacement ····· 16

EC DECLARATION OF CONFORMITY ····· 19

Waste Electrical and Electronic Equipment (WEEE) ····· 19


*This instruction manual should be kept on hand by the end user for quick reference.*

*Contact us or your nearest dealer if you have any questions.*

# Important Instruction

## *For the Safe and Correct Handling of the Pump*

- "Safety Instruction" section deals with important details about handling of the product. Before use, read this section carefully for the prevention of personal injury or property damage.
- Observe the instructions accompanied with "WARNING" or "CAUTION" in this manual. These instructions are very important for protecting pump users from dangerous situations.
- The symbols on this instruction manual have the following meanings:

| | |
|---|---|
| ⚠ **WARNING** | **Nonobservance or misapplication of the contents of "Warning" section could lead to a serious accident which may result in death.** |
| ⚠ **CAUTION** | **Nonobservance or misapplication of the contents of "Caution" section could lead to personal injury or property damage.** |

## *Types of Symbols*

| | |
|---|---|
|  | Indicates a prohibited action or procedure. Inside or near this circle, a concrete and practical image of the activity to be avoided is depicted. |
|  | Indicates an important action or procedure which must be performed or carried out without fail. Failure to follow the instructions herein can lead to malfunction or damage to the pump. |

**⚠ Export Restrictions**

Technical information contained in this instruction manual might be treated as controlled technology in your countries, due to agreements in international regime for export control.
Please be reminded that export license/permission could be required when this manual is provided, due to export control regulations of your country.

# Safety Instructions

## ⚠ WARNING

- **Turn off power before service**
  Risk of electrical shock. Be sure to turn off power to stop the pump and related devices before service is performed.


Power off

- **Stop operation**
  If you notice any abnormal or dangerous conditions, suspend operation immediately and inspect/solve problems.



- **Do not use the pump in any condition other than its intended purpose**
  The use of the pump in any conditions other than those clearly specified may result in failure or injury. Use this product in specified conditions only.


Prohibited

- **Do not modify the pump**
  Alterations to the pump carry a high degree of risk. It is not the manufacturer's responsibility for any failure or injury resulting from alterations to the pump.


Do not rework or alter

- **Wear protective clothing**
  Always wear protective clothing such as an eye protection, chemical resistant gloves, a mask and a face shield during disassembly, assembly or maintenance work.


Wear protectors

## ⚠ CAUTION

- **Qualified personnel only**
  The pump should be handled or operated by qualified personnel with a full understanding of the pump.


Prohibited

- **Use specified power only**
  Do not apply power other than that specified on the nameplate. Otherwise failure or fire may result. Ensure the pump is properly grounded.


Prohibited

- **Keep electric parts and wiring dry**
  Risk of fire or electric shock. Install the pump where it can be kept dry.


Prohibited

- **Ventilation**
  Fumes or vapours can be hazardous with certain solutions. Ensure proper ventilation at the operation site.


Caution

- **Spill precautions**
  Ensure protection and containment of solution in the event of plumbing or pump damage (secondary containment).


Caution

## ⚠ CAUTION

- **Do not use a damaged pump**
  Use of a damaged pump could lead to an electric shock or death.


Prohibited

- **Do not use the pump in a wet location**
  The pump is not waterproof. Use of the pump in wet or extremely humid locations could lead to electric shock or short circuit.


Prohibited

- **Do not damage the power cable**
  Do not pull, knot, or crush the power cable. Damage to the power cable could lead to a fire or electrical shock if cut or broken.


Caution

- **Grounding**
  Risk of electric shock! Always properly ground the pump. Conform to local electric codes.


Earthing

- **Install a GFCI (earth leakage breaker)**
  An electrical failure of the pump may adversely affect other devices on the same line. Purchase and install a GFCI (earth leakage breaker) separately.


Electrical shock

## ⚠ CAUTION

- **Do not drain chemical liquids directly on the ground or the floor**
  Dispose of chemicals in accordance with local rules and regulations.



- **Do not install or store the pump:**
  - Where ambient temperature can exceed 5-40ºC.
  - Under a flammable/corrosive atmosphere.
  - In a dusty/humid environment.
  - Under a mechanical vibration.


Prohibited

- **Disposal of a used pump**
  Dispose of any used or damaged pump in accordance with local rules and regulations. See page 19 to comply with the European Directive 2012/19/EU on waste electrical and electronic equipment.



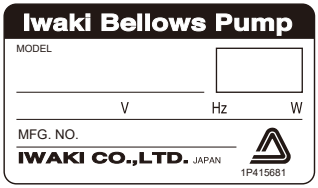
- **Electromagnetic precautions**
  This product is not protected against electromagnetic fields. Take appropriate measures as necessary.



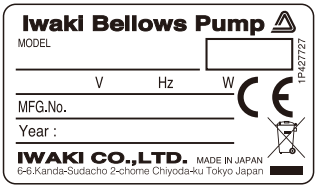
## 1. Unpacking & Inspection

***Open the package and check that the product conforms to your order. If any problem or inconsistency is found, immediately contact your distributor.***

1. Check the nameplate to see if the information such as model codes and discharge capacity are as ordered.




Spec label w/o CE marking (AC/DC)



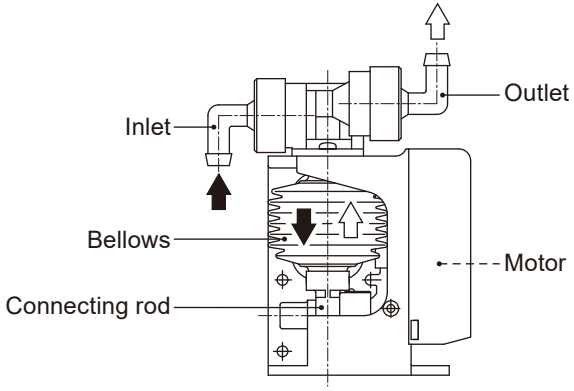

Spec label w/ CE marking (AC/DC)

*The CE marking on our product(s) is for us to market the product(s) into the European market, however, the CE marking does not ensure any safety or conformity of the product(s) outside the European market.
When the pump is incorporated into the equipment marketed in the European market, such equipment must meet all the requirements of applicable directives.
In such a case, any person who places the equipment on the market must carry a CE mark on the equipment as a manufacturer.

2. Check for transit damage and loose bolts.

## 2. Operating principle

***The KBR series is a built-in type chemical feeding pump. Motor rotation is transmitted to the connecting rod and then converted to reciprocation of the bellows where pumping action takes place.***




➡ : The bellows expands to take in liquid through the inlet.

⇨ : The bellows contracts to send out liquid through the outlet.

## 3. Identification code

***The model code represents the following information.***

**KBR - 3 Z A D2 - S01 F**
a b c d e f

a. Bellows size (O.D.) 2: 26mm 3: 50mm

b. Stroke rate Z: 10spm

c. Cam type A: Stationary
B: Variable
C: Stationary
D: Variable

d. Power voltage D2: 24VDC

e. Hole IC/Custom # S: No hole IC
H: With a hole IC

f. Poppet valve/O ring/Valve gasket materials
F: FKM No code: Other materials

## 4. Specification

■ "A" / "B" cam type

| Model | Max flow [mL/min] | Fixed stroke rate [spm] | Max press. [MPa] | Max suction lift [cm] | Motor | Inlet/ Outlet O.D. [mm] |
|---|---|---|---|---|---|---|
| KBR-2Z | 25 | 10 | 0.01 | 50 | MG8 | 8 |
| KBR-3Z | 90 | | | | | |

■ "C" / "D" cam type

| Model | Max flow [mL/min] | Fixed stroke rate [spm] | Max press. [MPa] | Max suction lift [cm] | Motor | Inlet/ Outlet O.D. [mm] |
|---|---|---|---|---|---|---|
| KBR-2Z | 29 | 10 | 0.01 | 50 | MG8 | 8 |
| KBR-3Z | 103 | | | | | |

## ■ Power consumption

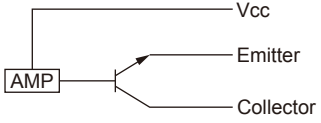
| Power voltage | MG8 motor |
|---|---|
| 24VDC | 6W |

NOTE:

a. The above data is based on the operation with clean water at 20°C and zero discharge pressure, and 100% stroke length setting.
b. The maximum flow rate changes with liquid temperature and liquid properties.
c. The maximum suction lift is attainable with dry valves.
d. Non freezing
e. Do not deliver slurry.
f. Maximum viscosity: 1mPa•s (at SG 1.0)
g. Allowable liquid temperature range: 0-40°C.
h. Allowable discharge pressure range: 0-0.01MPa.
i. Allowable ambient temperature range: 5-40°C.
j. Allowable ambient humidity range: 35-90%RH.
k. Maximum weight: 0.5kg
l. Maximum noise level: 28dB at 1m (A scale)

## ■ Hole IC spec (pumps with a hole IC)

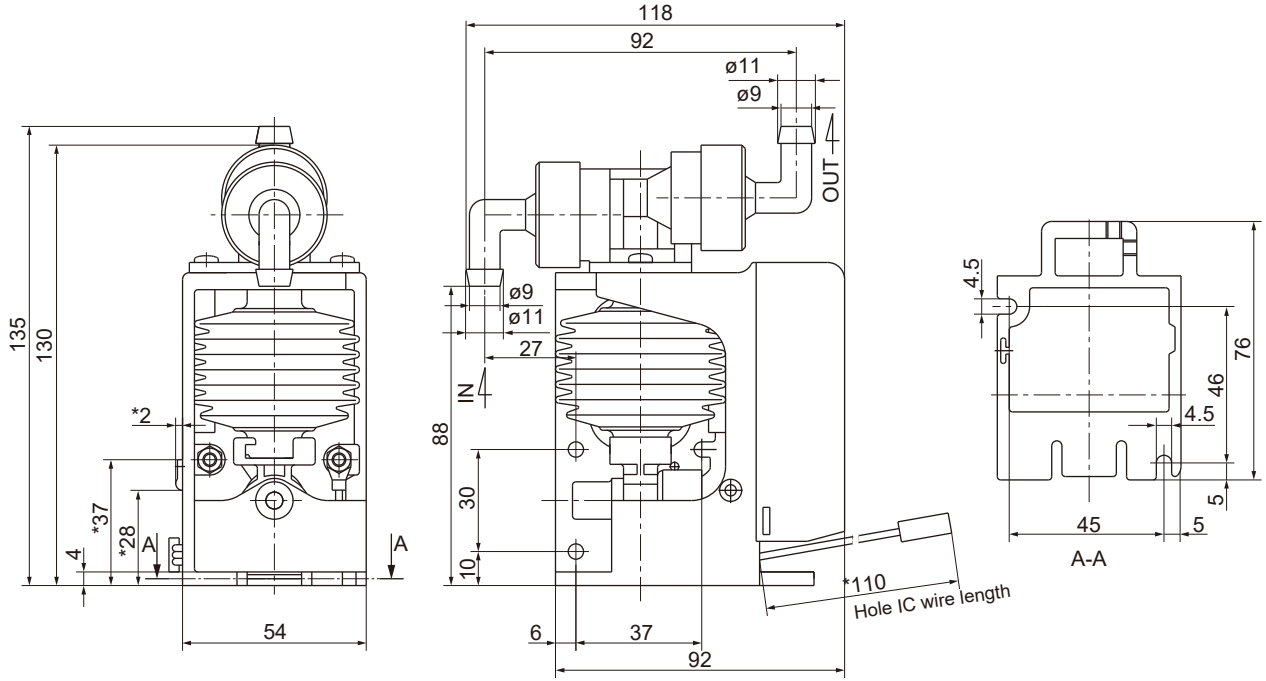
Power voltage: Vcc = 4.5-16V
Open collector output: VoH = Max 16V
Io = Max 20mA
VoL = Max 0.4V (Vcc=16V, Io=12mA)



Hole IC circuit

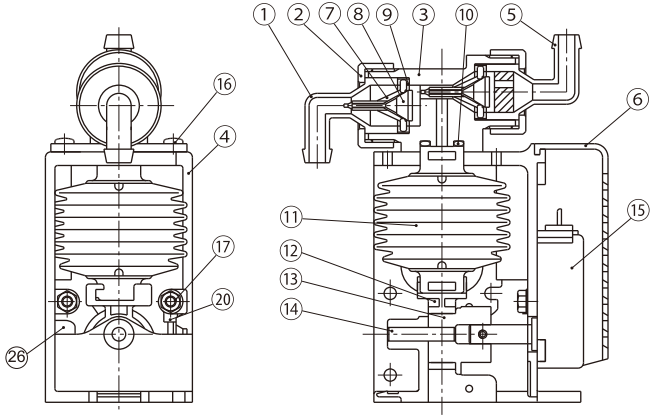
**⚠CAUTION**
**Property damage or personal injury may result. Observe the specification of the hole IC.**

## 5. Outer dimensions




*Figures accompanied by * are for the pumps with a hole IC.
*Dimensions may vary depending on the Hole IC/Custom # code. See the spec sheet or drawing for detail.

## 6. Part names & Structure

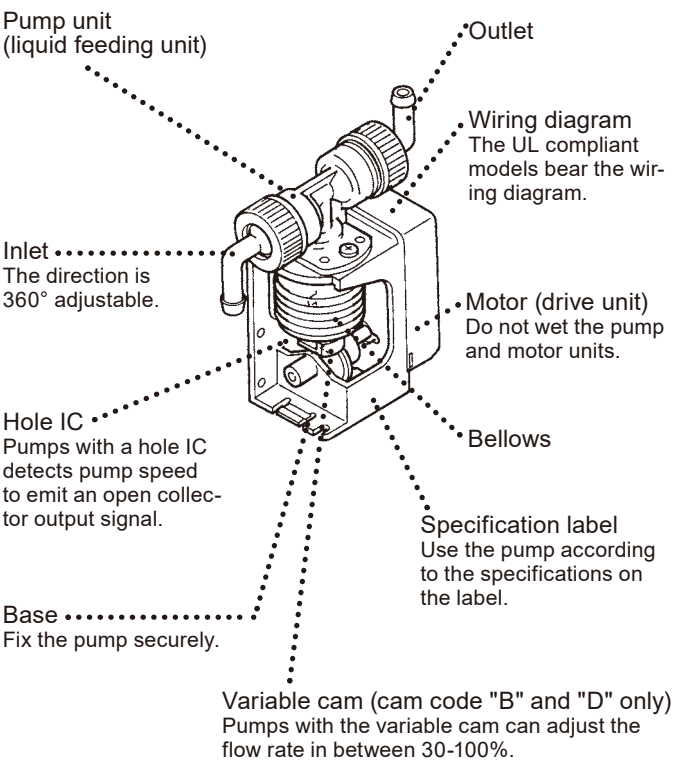



| No. | Part names | Q'ty | Materials | Remarks |
|---|---|---|---|---|
| 1 | Inlet | 1 | GFRPP | |
| 2 | Cap A | 2 | | |
| 3 | Pump head | 1 | | |
| 4 | Frame | 1 | PPE | |
| 5 | Outlet | 1 | GFRPP | |
| 6 | Motor cover | 1 | ABS | |
| *7 | Poppet valve A | 2 | PP | |
| *8 | Poppet valve B | 2 | EPDM/FKM | |
| *9 | Valve gasket | 2 | | |
| 10 | O ring | 1 | EPDM/FKM | P-11 |

| No. | Part names | Q'ty | Materials | Remarks |
|---|---|---|---|---|
| 11 | Bellows | 1 | PP | |
| 12 | Connecting rod | 1 | POM | |
| 13 | Drive cam A | 1 | | |
| 14 | Cam shaft | 1 | SUS303 | |
| 15 | Motor | 1 | - | |
| 16 | Tapping screw | 2 | Stainless steel | M4 |
| 17 | Nut | 2 | | |
| 20 | Earth | 1 | | |
| *26 | Hole IC | 1 | | |

*The parts # 7, 8 and 9 compose the valve set (check valve).
*The different parts from the above may be used depending on the Hole IC/Custom # code. See the spec sheet or drawing for detail.

## 7. Overview & Label



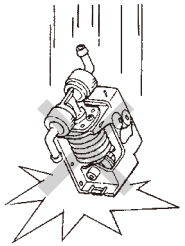
## 1. Before Installation

***The pump should be installed by qualified personnel with a full understanding of the pump.***

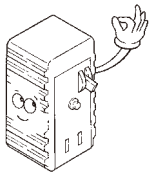
**⚠ CAUTION**

- **Spill precautions**
  Ensure protection and containment of solution in the event of plumbing or pump damage (secondary containment).
- **Keep electric parts and wiring dry**
  Risk of fire or electric shock. Install the pump where it can be kept dry.
- **Do not operate the pump in a flammable atmosphere.**
  Do not place explosive or flammable material near the pump.
- **Do not install/store the pump:**
  - In a flammable/corrosive atmosphere.
  - In a dusty/humid environment.
  - Where ambient temperature can exceed 5-40°C.
  - In direct sunlight or wind & rain.
- **Do not use a damaged pump**
  Use of a damaged pump could lead to an electric shock or death.

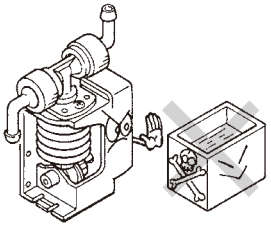
- Use care handling the pump. Do not drop. An impact may affect pump performance.



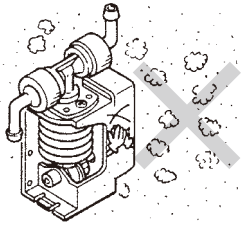
- To reduce the risk of electric shock or death, purchase and install a GFCI (earth leakage breaker) separately.



- Banned solutions:
  - Strong acid or alkaline solution
  - Solutions with hazardous fumes or vapors
  - Paraffinic hydrocarbons such as gasoline and kerosene
  - Halogenated hydrocarbons such as trichloroethylene and carbon tetrachloride
  - Ether and low-grade ester



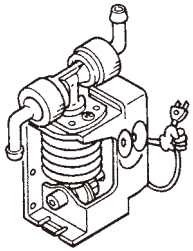
- The pump is not dust-/water-proof. Do not operate the pump while wet with solution or water.



- Risk of electric shock! Always properly ground the pump. Conform to local electric codes. See page 12 for detail.

- Provide the inlet with a filter to prevent foreign matters from getting into the pump and periodically clean the filter, or the pump performance will reduce.

- For the pumps with the variable cam, always stop the pump before adjusting the stroke length (adjustment can not be made while the pump is running.).



**⚠CAUTION**

**The motor may fail when rotated in reverse (positive direction seen from motor end). Do not rotate the motor by hand.**

- Observe the allowable discharge pressure range of 0-0.01MPa.

**⚠CAUTION**

**Operation beyond the pressure range can lock, damage or even burn out the motor.**

- **Do not clean the pump or nameplate with a solvent such as benzine or thinner. This may discolour the pump or erase printing. Use a dry or damp cloth or a neutral detergent.**



## 2. Installation/ Piping/ Electrical wiring

***If you notice any abnormal or dangerous conditions, suspend operation immediately and inspect/solve problems.***

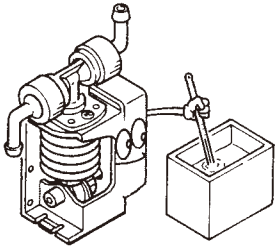
**⚠CAUTION**

- **Turn off power before service**
  Risk of electrical shock. Be sure to turn off power to stop the pump and related devices before service is performed.
- **Wear protective clothing**
  Always wear protective clothing such as an eye protection, chemical resistant gloves, a mask and a face shield during disassembly, assembly or maintenance work. The specific solution will dictate the degree of protection. Refer to SDS precautions from the solution supplier.
- **Qualified personnel only**
  The pump should be handled or operated by qualified personnel with a full understanding of the pump. Any person not familiar with the product should not take part in the operation or maintenance of the pump.

### 2.1 Installation

1. Installation location

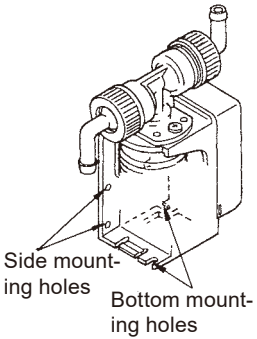
- Select a level location. Ensure proper ventilation at the operation site.
- Keep electric parts and wiring dry.
- Observe the allowable ambient temperature of 5-40°C and ambient humidity of 35-90%RH.
- Allow sufficient space around the pump for easy access and maintenance.



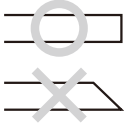
2. The pumps with FKM wet ends must be installed under flooded suction.

3. Secure the pump by two M4 screws.

**⚠CAUTION**
**Do not install the pump on an unstable place.**




4. Cut the tube ends flat beforehand.



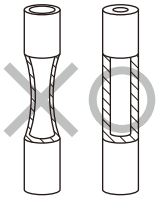
## 2.2 Piping

1. The short piping with the minimum bends is optimal to reduce resistance. Use a proper suction line I.D. (8mm) and a proper length (2m or less) for the prevention of cavitation.

**⚠CAUTION**

**Use a corrosion-/pressure-resistant vinyl tube, otherwise a suction tube can be crushed by negative pressure (especially with a high temperature liquid). Use of a Teflon or braided tube is recommended.**

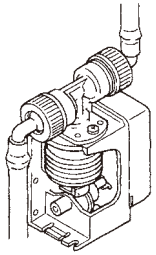
2. Select a suitable discharge line I.D. as well.



Tube ID: 8mm

3. Install valves on both discharge and suction lines for easy pump removal and maintenance.

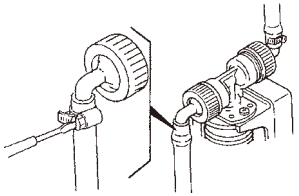
4. Insert the tube into the inlet and outlet as far as it will go.
   Air is entrained and performance reduction results if a suction tube connection is imperfect.



5. Use a band clamp to secure the connection and eliminate the possibility of leakage.

**⚠CAUTION**

**Do not tighten the clamp too much. The plastic inlet or outlet may break.**



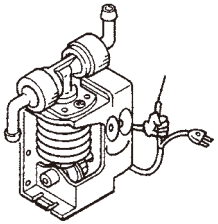
## 2.3 Electrical wiring

*Electrical wiring must be performed by a qualified electrician. It is not the manufacturer's responsibility for personal injury or property damage resulting from non-observance of this warning. Contact us or your nearest distributor for wiring as necessary.*

### ■ Before wiring

1. Check that the main power is turned off.
2. Electrical work should be performed in accordance with local electric codes, with an appropriate wire gauge or so.
3. Apply the specified power voltage. See the spec label.
4. The pump doesn't have an ON-OFF switch and so starts as a power cable is plugged in.
5. This product is not protected against an electromagnetic field. Take appropriate measures as necessary.
6. After wiring work, check that the system is free from the inductive noise at start-up.
7. The drive circuit generates noise because of its high-speed switching. Check if peripheral devices are not affected by the noise.

### ■ Wiring



1. Power cable

The motors for the KBR pump generally have the power leads coming from the motor. Use suitable solder-less connectors to the bare ends of the leads and make an electrical connection with an external power supply. Some MG8 motors may not have lead wires. In this case, open the motor cover and locate the power connector of the motor to make an electrical connection with an external power supply.

2. When an earth leakage breaker is used and has tripped: Always investigate and solve root causes. Be sure to unplug the pump before investigation is performed.

## 1. Before operation

***The pump becomes ready after pipework and wiring are completed.***

■ Before operation

1. Check for loose screws or tube connections.
2. Check the discharge and suction lines are fully opened.
3. Check for a leak when commissioning is performed.

■ Operation/Stop

For the pump with the Hole IC/Custom # of "S (no hole IC)" or "H (hole IC)", it doesn't have an ON-OFF switch and so starts as a power cable is plugged in and stops as unplugged.

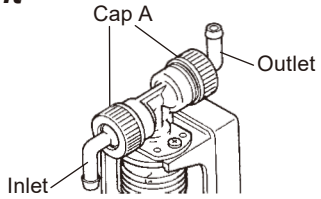
**⚠CAUTION**

**Any rotating part such as the cam, connecting rod and bellows may catch the hand or finger, and it may result in serious injury.**

## 2. Pump head adjustment

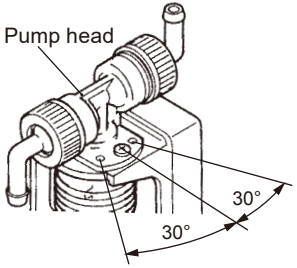
■ Inlet/Outlet directions

Loosen the cap A to release the inlet and outlet to any directions you want. Tighten the cap A to fix them afterwards.



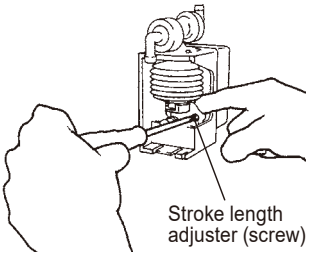

■ Pump head directions

Loosen the fixing screw to change the direction of the pump head in the range shown at right. Tighten the screw to fix the new angle afterwards.



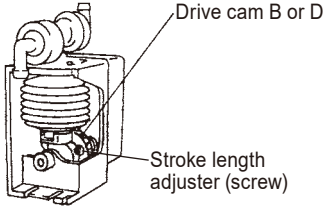
**⚠CAUTION**
**A broken screw hole may result. Do not use excess force when tightening the screw into the plastic frame.**
**To screw it in without breaking the plastic screw hole, be sure to find the start of the female screw thread.**

2. Use a Phillips screw driver to loosen (90°-180° counter-clock-wise rotation) the screw. Do not loosen too much, or the nut behind the screw will comes off.

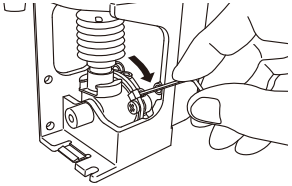



■ Stroke length adjustment (pumps with variable cam type)

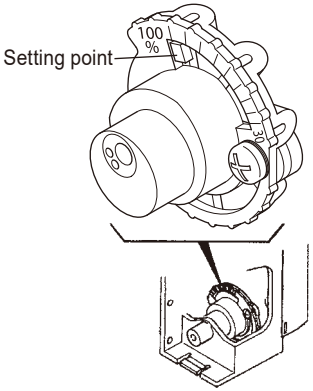
*The flow rate can be changed by the stroke length adjustment.*




1. Stop the pump, locating the stroke length adjuster screw to the right position.



3. Set the gauge to the desired position in between 30-100% stroke length (default setting is 100% SL).




4. Tighten the adjuster screw to secure the position.

## 1. Troubleshooting

***If you notice any abnormal or dangerous conditions, suspend operation immediately and inspect/solve problems. Contact us or your nearest distributor as necessary.***

| Phenomenon / Cause | Pump does not take in liquid. | No flow rate | Poor flow rate | Leakage | Measure |
|---|---|---|---|---|---|
| The check valve is wrongly built. | ○ | ○ | | | Correct the valve. |
| Clogged check valve | ○ | ○ | ○ | | Clean the valve. |
| Damaged check valve | ○ | ○ | | | Replace the valve. |
| Loose inlet/outlet | ○ | | ○ | ○ | Tighten the cap A. |
| Loose pump head | ○ | | ○ | ○ | Tighten the pump head fixing screws. |
| Broken bellows | ○ | ○ | | ○ | Replace the whole pump unit. |
| An air lock in the bellows | ○ | ○ | | | Disconnect the discharge line and fill up the bellows with liquid. |
| Air suction from the inlet | ○ | | ○ | | Secure the tube connection. |
| The motor doesn't start. | ○ | ○ | | | Check the power voltage. Replace the pump as necessary. |
| Empty supply tank | ○ | ○ | | | Refill the tank with liquid. |
| Stroke length is too short (pumps with the variable cam). | ○ | | | | Run the pump with 100% stroke length and reduce it to a desired length. |

## 2. Maintenance & Inspection

***Check for abnormality such as a leak every day. If you notice any abnormal or dangerous conditions, suspend operation immediately and inspect/solve problems according to the troubleshooting section. If pump performance has remarkably reduced, replace the valve set (poppet valve A and B, valve gasket) or the pump as necessary.***

■ Wear parts list

To run the pump for a long period, wear parts need to be replaced periodically. It is recommended that the following parts are always stocked for immediate replacement.

| No. | Parts | | Estimated life |
|---|---|---|---|
| 7<br>8<br>9 | Poppet valve A*<br>Poppet valve B*<br>Valve gasket* |  | 3000 hr |
| 10 | O ring |  | Every time the bellows is replaced. |
| 11 | Bellows |  | 5,000,000 strokes |

The parts with * compose the valve set (check valve).
Wear part duration varies with the pressure, temperature and characteristics of gas.
The estimated life above is based on continuous operation with clean water at 20-25°C.

## 3. Wear parts replacement

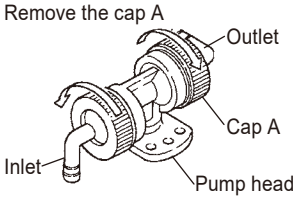
***Follow the steps below for replacing wear parts.***

**⚠ CAUTION**

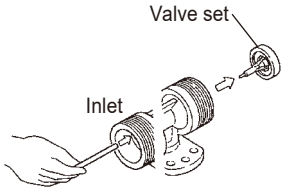
- Turn off power before service is performed.
- Solution in the discharge line may be under pressure. Release the pressure from the discharge line before disconnecting plumbing or disassembly of the pump to avoid solution spray.
- Dilute and flush out harmful liquid before removing a tube or a pipe.
- Be careful not to loose parts when taking apart the pump.

■ Valve set replacement

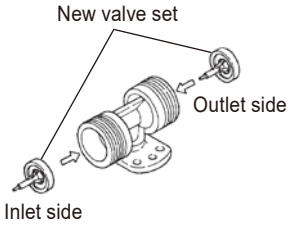
1. Unscrew the cap A to remove the inlet and outlet.




2. Take out the valve sets (check valves). If the outlet valve set has been stuck in the pump head, use a 4mm O.D. or smaller bar to push it out from the opposite side.



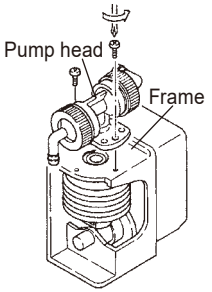

3. Replace the new valve sets in place.



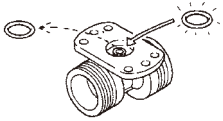

4. Refit the inlet and outlet in place and fasten the cap A to hand tight.

■ O ring replacement

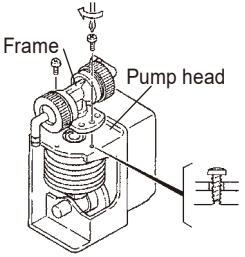
1. Remove the pump head fixing screws and disconnect the pump head.




2. Replace the O ring on the bottom of the pump head with new one.
   *Be careful not to scratch the O ring.



3. Reposition the pump head and fasten the fixing screws by 1.3-1.4N•m.



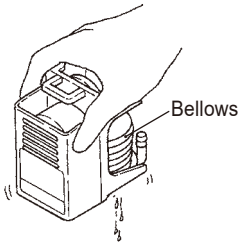

**⚠CAUTION**

**A broken screw hole may result. Do not use excess force when tightening the screw into the plastic frame.**
**To screw it in without breaking the plastic screw hole, be sure to find the start of a female thread tapped in the frame.**

■ Bellows replacement

1. Remove the pump head fixing screws and disconnect the pump head.

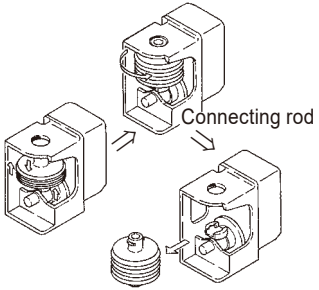
2. Hold the pump upside down to empty the bellows of chemical liquid. Use a syringe as necessary.



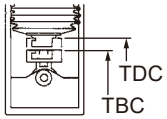

**⚠CAUTION**

**Make sure the bellows is empty and dry. Take measures to keep electric parts and wiring dry.**

3. Turn the bellows 90° counter-clockwise to remove it from the pump, vertically shrinking it as necessary.

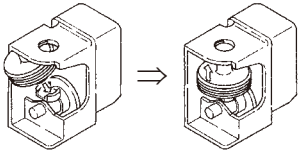


4. Rotate the motor electrically until the connecting rod bottoms out.



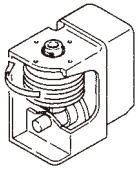

**⚠CAUTION**
**The motor may break. Do not rotate the motor by hand.**

5. Refit the new bellows, the bottom end first, into the pump.



6. Rotate the motor electrically until the connecting rod fully contracts.

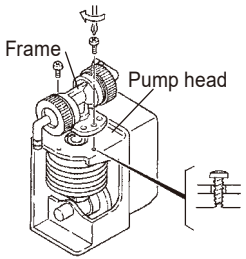
7. Turn the bellows 90° clockwise to catch the connecting rod and the pump frame.




8. Rotate the motor electrically until the connecting rod bottoms out again to check the bellows does not come off.

9. Attach the pump head onto the flame.

**⚠CAUTION**
**A broken screw hole may result. Do not use excess force when tightening the screw into the plastic frame.**
**To screw it in without breaking the plastic screw hole, be sure to find the start of a female thread tapped in the frame.**



## EC DECLARATION OF CONFORMITY

A copy of the original Declaration of Conformity

(SUPPLIER'S NAME)
WE
IWAKI CO.,LTD.

(ADDRESS)
6-6 2-CHOME KANDA-SUDACHO CHIYODA-KU TOKYO JAPAN

(PRODUCT)
DECLARE UNDER OUR SOLE RESPONSIBILITY THAT THE PRODUCTS
BELLOWS PUMP

(MODEL NAME)
KBR SERIES DC TYPE

TO WHICH THIS DECLARATION RELATES ARE IN CONFORMITY
WITH THE FOLLOWING STANDARDS OR DIRECTIVES AS FAR AS APPLICABLE

(DIRECTIVES)
MACHINERY DIRECTIVE 2006/42/EC (ANNEX IIA)
RoHS DIRECTIVE 2011/65/EU

(STANDARDS)
EN ISO12100:2010 EN809:1998+A1:2009 EN IEC63000:2018

(A PERSON WHO IS AUTHORISED TO COMPILE THE TECHNICAL FILE
IN THE COMMUNITY)
IWAKI EUROPE GMBH
SIEMENSRING 115 D-47877 WILLICH GERMANY

NOTE: THIS DECLARATION BECOMES INVALID IF TECHNICAL OR OPERATIONAL MODIFICATIONS ARE INTRODUCTED WITHOUT THE MANUFACTURER'S CONSENT.

T. Sawada.

**TSUTOMU SAWADA**
**DEPUTY SENIOR GENERAL MANAGER,**
**QUALITY ASSURANCE HEAD OFFICE**

Tokyo, Sep. 13, 2021

**(PLACE AND DATE OF ISSUE)** **(NAME AND SIGNATURE OR EQUIVALENT MARKING OF AUTHORIZED PERSON)**

DOCUMENT NO. IS-51K-551-3

## *Waste Electrical and Electronic Equipment (WEEE)*



In accordance with the European Directive 2012/19/EU on waste electrical and electronic equipment, this product features the crossed-out wheelie bin symbol. When this product is disposed of in household wastes, toxic components included in it can cause major environmental and human health problems. Use appropriate waste collection systems for recovery and recycling. Contact your local distributor or nearest Iwaki company for the detailed collection systems.

https://www.iwakipumps.jp

IWAKI CO.,LTD. 6-6 Kanda-Sudacho 2-chome Chiyoda-ku Tokyo 101-8558 Japan
TEL: +81 3 3254 2935 FAX: +81 3 3252 8892

**European Headquarter** / IWAKI Europe GmbH
TEL: +49 2154 9254 0 FAX: +49 2154 9254 48
**Germany** / IWAKI Europe GmbH
TEL: +49 2154 9254 50 FAX: +49 2154 9254 55
**The Netherlands** / IWAKI Europe GmbH (Netherlands Branch)
TEL: +31 74 2420011 FAX: +49 2154 9254 48
**Italy** / IWAKI Europe GmbH (Italy Branch)
TEL: +39 0445 561219 FAX: +39 0445 569088
**Spain** / IWAKI Europe GmbH (Spain Branch)
TEL/FAX: +34 934 741 638
**Poland** / IWAKI Europe GmbH (East Europe Branch)
TEL: +48 12 347 0755 FAX: +48 12 347 0900
**Denmark** / IWAKI Nordic A/S
TEL: +45 48 242345
**Finland** / IWAKI Suomi Oy
TEL: +358 10 201 0490
**Norway** / IWAKI Norge AS
TEL: +47 23 38 49 00
**Sweden** / IWAKI Sverige AB
TEL: +46 8 511 72900
**Belgium** / IWAKI Belgium N.V.
TEL: +32 13 670200 FAX: +32 13 672030
**France** / IWAKI France S.A.
TEL: +33 1 69 63 33 70 FAX: +33 1 64 49 92 73
**U.S.A.** / IWAKI America Inc.
TEL: +1 508 429 1440 FAX: +1 508 429 1386
**Brazil** / IWAKI Do Brasil Comercio De Bombas Hidraulicas LTDA.
TEL/FAX: +55 19 3244 5900
**China** (Shanghai) / IWAKI Pumps (Shanghai) Co., Ltd.
TEL: +86 21 6272 7502 FAX: +86 21 6272 6929
**China** (Hong Kong) / IWAKI Pumps Co., Ltd.
TEL: +852 2607 1168 FAX: +852 2607 1000
**China** (Guangzhou) / GFTZ IWAKI Engineering & Trading Co., Ltd.
TEL: +86 20 84350603 FAX: +86 20 84359181
**China** (Shenzhen) / IWAKI Pumps (Shenzhen) Co., Ltd.
TEL: +86 0755 8656 3696
**Singapore** / IWAKI Singapore Pte Ltd.
TEL: +65 6316 2028 FAX: +65 6316 3221
**Indonesia** / IWAKI Singapore Pte Ltd. (Indonesia Office)
TEL: +62 21 6906606 FAX: +62 21 6906612
**Malaysia** / IWAKIm SDN. BHD.
TEL: +60 3 7803 8807 FAX: +60 3 7803 4800
**Korea** / IWAKI Korea Co., Ltd.
TEL: +82 2 6238 4800 FAX: +82 2 6238 4801
**Taiwan** / IWAKI Pumps Taiwan Co., Ltd.
TEL: +886 2 8227 6900 FAX: +886 2 8227 6818
**Thailand** / IWAKI (Thailand) Co., Ltd.
TEL: +66 2 322 2471 FAX: +66 2 322 2477
**Australia** / IWAKI Pumps Australia Pty Ltd.
TEL: +61 2 9899 2411 FAX: +61 2 9899 2421

T1068-3 '26/09