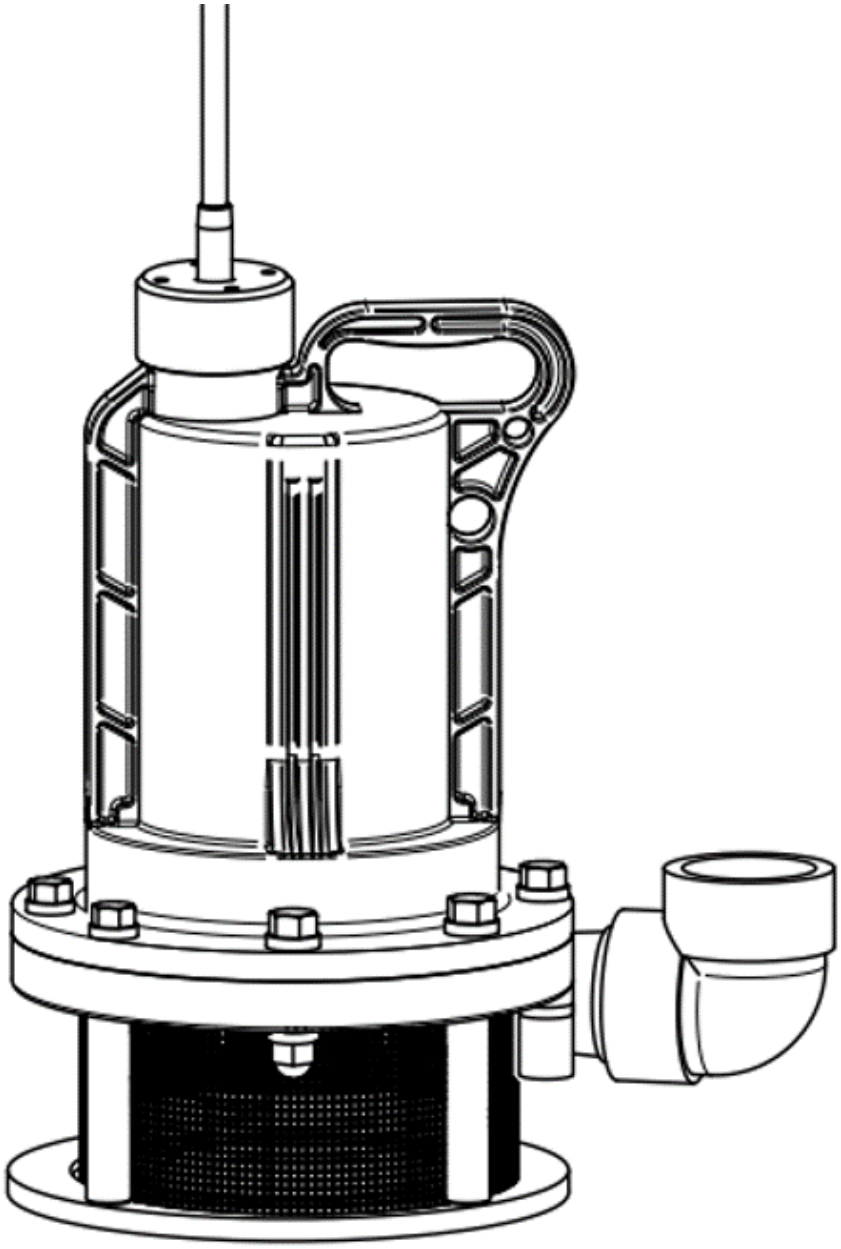
SUBMERSIBLE MAGNET DRIVE PUMP

SUBMERSE

YD-5002GWN1

INSTRUCTION MANUAL



World Chemical Co.,Ltd.

Version: 20251201

Preface

Thank you for purchasing World Chemical's SUBMERSE submersible magnet drive pump. To effectively use SUBMERSE for an extended period, operating it correctly and maintaining it as described in the instruction manual is necessary. Before use, please read and understand the safety precautions outlined in this manual."

Meanwhile, we are not responsible for any accidents resulting from the use of the pump in a manner not indicated in this manual. If additional safety measures are required, please contact your supplier or us. The specifications of the pump and the information in this manual are subject to change without prior notice for improvements or design modifications."

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Warning

Using with dangerous liquids or atmosphere

When transferring dangerous liquid using this pump, or using in potentially explosive atmospheres (only explosion-proof type), observe the equipment standards set forth by law and make sure to perform daily inspection to prevent liquid leakage. If the pump is operated under the abnormal conditions such as liquid leakage, it may cause a severe accident, such as a physical injury, an explosion, or fire. Always comply with instructions of the supplier or manufacturer of liquids.

Prohibited use of a damaged or modified pump

Using a damaged or modified pump may cause a physical injury, electric shock, or product failure. Such usage will not be covered by our warranty.

Cautions on transporting and lifting the pump

Use the hoist bolts when lifting a pump. If a hoist bolt is not available, use a belt sling to lift the pump with careful attention to the weight balance. Only a qualified person should perform this with a strong enough sling. The lightest pump weighs approximately a minimum of 50lbs (23kg). Do not hand carry the pump as much as possible, as it may cause an accident.

Prohibited work with the power ON

Do not perform inspection or disassembly of the pump or motor while the power is ON. Rotating parts can cause physical injury. You can also be subject to electric shock. In addition to confirming the main power is OFF, check the hand switch of the pump as an additional safety measure before performing any work.

Connection of a ground wire

Using the motor without a ground wire connected may cause an electric shock. A qualified person must ground it according to the electric equipment technical standards and wiring regulations.

Protection of a power cord

Pulling, tucking, or damaging a power cord or motor lead wire may damage the cable, causing fire or an electric shock. Install the terminal box cover in the designated position after wiring.

Installation of Ground Fault Interrupter (GFI)

If a ground-fault interrupter is not installed when using the pump, an electric shock may occur. Install a ground-fault interrupter or overcurrent protective device to prevent electric accidents or motor damage.

Cautions on removing the pump

When removing the pump from pipes, close the suction and discharge pipe valves to ensure no spillage occurs. Directly touching chemical liquid may be hazardous, and may cause severe injuries. Wear protective equipment before starting work.

Caution

Prohibited use

Do not use the pump with other than as listed on the pump specifications or nameplate. Especially, check the motor's power supply specifications (phase, voltage, and frequency) before connecting. Incorrect usage may cause a physical injury or damage of the filter pump or peripheral devices.

Restriction on users

Only knowledgeable experts of the pumps should handle and perform installation, wiring, operation, or maintenance.

Cautions on unpacking

Check and confirm the proper side up when unpacking. When unpacking the crate, be careful with nails or wood chips to avoid any injury.

Ventilation

If any object is placed around the pump, it can block ventilation, causing the motor to overheat.
When handling poisonous or odorous liquid, install the pump where sufficient ventilation is available, due to risk of inhalation.

Repair and return

To request repair of a damaged pump, contact our sales representatives or your distributor.
When returning the pump using a carrier service or parcel delivery service, wash both inside and outside of the pump with clean water, make sure no liquid residue is left, and wrap it with a plastic bag.

Resin parts

The pump consists of resin parts, so a strong impact may damage parts or lead to physical injury. Do not strike the pump with any objects or climb on it. Additionally, install a pipe support to prevent a load being directly applied to the pump.

Starting of the pump

Make sure to check the rotational direction when starting the pump for the first time. Open the suction and discharge valves and ensure no liquid leakage near the pipe connection area. After air is released from the pipes and liquid is filled within the pump, briefly start to check the rotational direction. If the direction is reversed, in the three-phase power supply, switch two of the three cables. As a precaution, ensure the power supply is disconnected before performing any work.

Disposal of the pump

When discarding used pumps, dispose of them as industrial waste following the applicable laws and regulations after removing accumulated chemicals.

Protection measures for leakage

In case of liquid leakage from the damaged pump or pipe, take appropriate safety and protection measures.

■ Model Description

Model: YD-5002GWN1
YD-5002GWN1-HP (High pressure version, Only 60Hz)
Type: Chemical Submersible Magnet Drive Pump
Name: SUBMERSE

YD – 50 02 GWN1 – CP – A D 6 2 – HP - V
(1) (2) (3) (4) (5) (6) (7) (8) (9)

(1) Bore: 50 = 50A
(2) Motor output: 02 = 1.1kW = 1.5HP
(3) Main cover material: CFR PP
(4) Bearing material: R = PTFE A = Alumina Ceramic
(5) O-ring material: E = EPDM D = FPM
(6) Frequency: 5 = 50Hz 6 = 60Hz
(7) Specific gravity: 1 = 1.1 3 = 1.3 5 = 1.5
(8) Impeller: No mark = Standard type HP = High pressure type
(9) Special mark: (Ex.) V = Non-standard voltage Z = With PVC cable sleeve

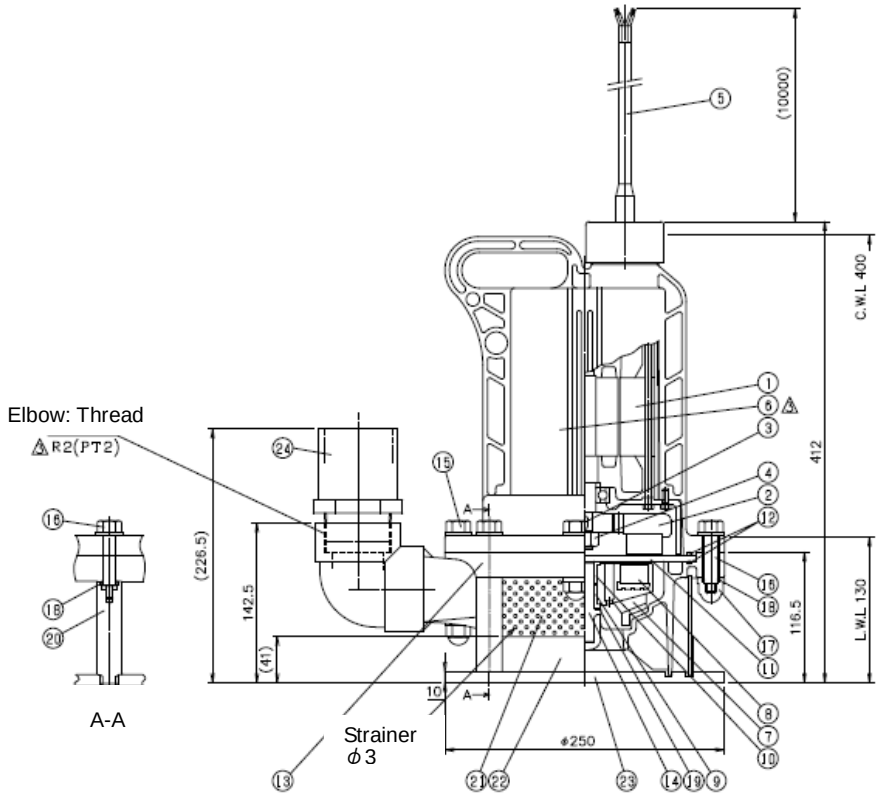
* When the special mark is other than above listed, it means a custom requirement by customer or special specification with some modifications added.

■ Specification

Model	Frequency	Standard Specification		Output	Power	Discharge bore	Weight
		Total head	Capacity				
5002GWN1	60Hz	8.3m (27ft)	200L/min (52gpm)	1.1kW	200/220V/460V 60Hz	50mm (2")	23kg (50lbs)
5002GWN1-HP	60Hz	11.9m (39ft)	100L/min (26gpm)				

Pump				**Motor**		
Main material		**Carbon Fiber Reinforced Polypropylene**		Type		Dry three phase induction motor
Bore		50A=2"		Insulator		H
Model		**5002GWN**	**5002GWN-HP**	Rated output		1.1kW=1.5HP
Frequency		60Hz	60Hz	Phase		3
Total head	Max	41	47	Pole		2
	Standard	27	39	Rated Voltage	60hz	440/460V (200/220V)
Capacity	Max	87	80			
	Standard	52	26	Rated Current	60hz	2.10/2.05A (4.75/4.38A)
Others						
Dimension	Outline	15" x 9.8" x 16" (H)		Starting Current	60hz	11.06/11.31A (23.03/22.73A)
	Height					
Weight		50lbs		Method of Stating		Direct
Attached cable		2PNCT 4cores		Rotating speed		3380/3410min-1 (3340/3390min-1)
		1.25mm2x 10m (32ft)		Liquid temperature (max)		140F (0-60℃)
Thermal protector		Built-in motor				

Outline dimension



No.	Part name	Remarks
1	Motor	FC
2	Motor magnet	Ferrite
3	Motor magnet key	SS
4	Motor magnet nut	SS
5	Cabtyre Cable 10m (32ft)	2PNCT
6	Motor cover	CFR PP
7	Impeller	CFR PP
8	Impeller magnet	Ferrite
9	Front bearing	PTFE / Ceramic
10	Rear bearing	PTFE
11	Separating board	Ceramic
12	O-ring for separating board	FPM / EPDM
13	Casing	CFR PP
14	Pump shaft	SiC

No.	Part name	Remarks
15	Set bolt 92	CFR PP
16	Set bolt 52	CFR PP
17	Set bolt nut	CFR PP
18	O-ring for set bolt	FPM / EPDM
19	Floating washer	PTFE (Only Ceramic bearing)
20	Standoff bolt	HT, PVC
21	Strainer	PP
22	Sludge fence	PP
23	Bottom plate	PP
24	50A Valve socket	PVC

* When the temperature of the liquid is high (131F/ 55C degrees and more), do not use No. 24: Valve socket (PVC). If using a valve socket, HT-PVC valve socket is recommended.

■ Features

SUBMERSE is constructed of Carbon Fiber Reinforced Polypropylene and a corrosion resistant ceramic shaft. Additionally, the structure is a magnet drive type which does not require a shaft seal, which makes the submersible pump compatible with strong acid and strong alkaline liquids that the previous pumps could not handle.

1. All the wet parts are made of corrosion resistant resin and ceramic.
2. The pump can be used for strong acid and alkaline liquids.
3. It is a magnet drive structure which does not require a shaft seal. Liquid will not enter the motor.
4. There are little consumables and parts are replaceable.
5. Operation of the pump is as simple as placing it in a tank. If proper fixation is provided, hanging operation is possible.
6. Easy grip for carrying, and durable construction ideal for emergency purpose.
7. A ceramic plate is used between the motor and pump chamber, which makes it resistant to both heat and chemicals.
8. A thermal protector is incorporated. If motor overload is detected from any cause, the thermal protector is activated to stop the motor.

■ Precautions in handling

1. Slurry will accelerate bearing wear. Especially when the pump is used in a sedimentation tank, mount the pump to prevent slurry from entering the pump, or clean any slurry before reaching the pump. (Replacement of the bearing is easy. Use a ceramic bearing on liquids with slurry.)
2. Completely submerge the pump to use. Operation with air may cause pump failure.
3. If the check valve is attached at the discharge pipe, air will not be released, which will cause dry running. If you attach the check valve, install the air release pipe beneath to always release air.
4. If the pump is not completely submerged in liquid and exposed to air, the motor will not cool down, causing a damage to the motor resin cover.
5. A liquid level gauge malfunction can cause dry running. Check before the operation.
6. Make sure to attach the strainer to the pump in order to prevent debris from entering, and always clean it to be clog-free. If it is clogged, the pump may overheat.
7. When considering electric wiring, ensure the wiring gauge is adequate to prevent voltage drop.
8. When the liquid temperature is high (131F/55C degrees and higher), change the material of the valve socket (PVC) at the discharge outlet. (High temperature- PVC is recommended.)
9. Do not use the pump for highly concentrated sulfuric acid (50% and more).
10. Frequently starting and stopping the pump causes premature damage to the pump, so limit the frequency to 6 times or less per hour.

■ Operating temperature

YD-5002GWN1: 140 Fahrenheit / 60 Celsius (MAX.) Cable material: 2PNCT

■ Minimum required liquid level during operation

Minimum required liquid level for continuous operation is 16 inches (400 mm).

Keep the minimum liquid level during operation, enough to submerge the whole pump. (Liquid level for continuous operation: 16 inches/400mm or higher from the pump's bottom surface.) Operation below the required liquid level, such as for dead head operation, should be less than 5 minutes.

Do not repeatedly run for less than 5 minutes.

Depending on the operational situation, the incorporated thermal protector may get activated to stop the pump in order to protect the motor. In that case, stop the operation for a while. Check the pump status and ensure the proper liquid level to resume the operation.

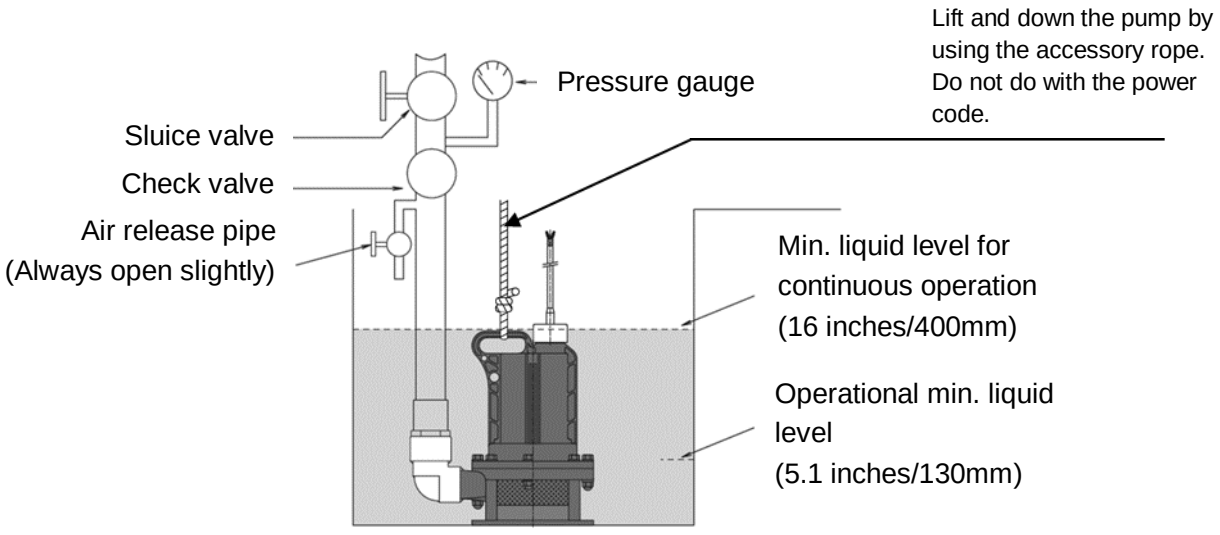
Minimum liquid level for operation is 5.1 inches (130 mm).

The minimum liquid level for operation is 5.1 inches/130mm from the pump's bottom surface.

- Even with the proper operational liquid level, depending on the liquid surface condition, there is a chance that the operation may be interrupted due to air entering.
- If the impeller of the pump runs with air, the rotating parts may be damaged.

■ Example of installation

To prevent water hammer, refer to the following image for pipe installation. During installation, use appropriate equipment, such as the accessory rope, to lift and down the pump. Do not use the power cord for lifting purposes. This may cause electrical leakage.

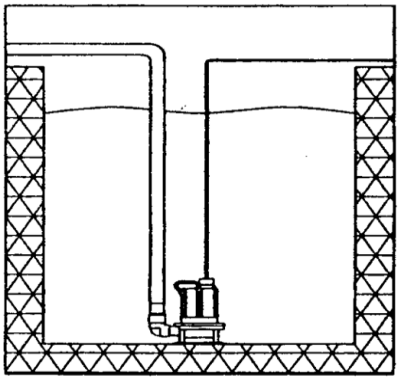


■ Usage

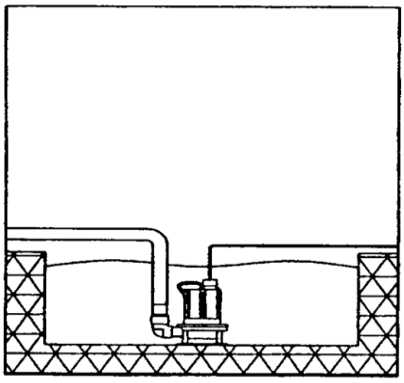
1. To pump chemical liquids or wastewater from a deep or narrow tank.
2. To pump liquids that are easily aerated.
3. To pump chemical liquids from a sealed tank.
4. To circulate liquids in a tank.
5. To mix liquids in a tank or an equipment.
6. To pump or transfer liquids in an emergency.

Samples of usage

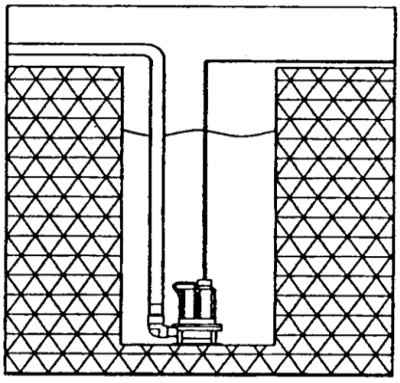
Pumping liquid from a deep tank



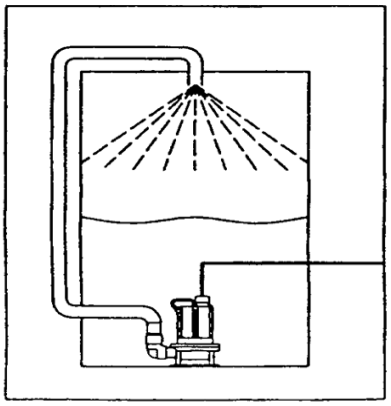
Pumping easily aerated liquid or from a shallow tank



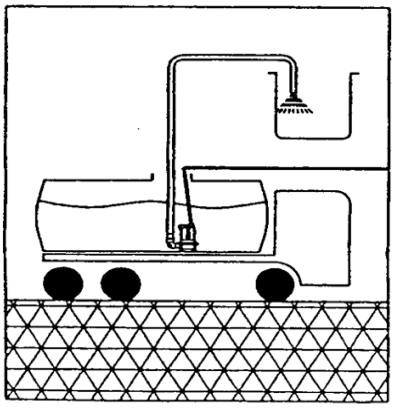
Pumping liquid from a narrow and deep tank



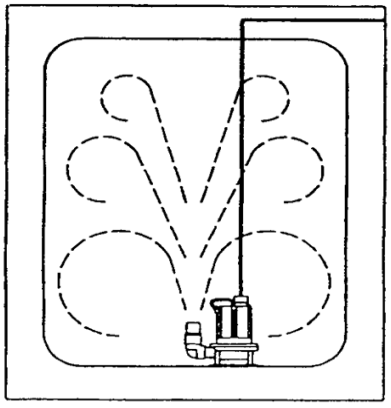
Scrubber system (Washing system)



Using for a tank truck



For mixing



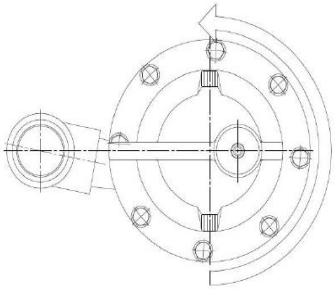
Check before operation

1. Electric wiring

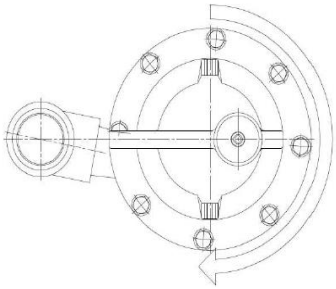
   Before starting operation, check the rotational direction. Connect U (red), V (white), W (black), and ground (green) wires to start the pump. The rotational direction can be checked as follows:

   1-(1) In reverse direction, the discharge amount will be 30% of what it would be in the forward direction.

   1-(2) When turning the switch ON while the pump lifted in water, it should be a counterclockwise rotation observed from the above.



Forward rotation



Reverse rotation

Note: In case of the reverse rotation, switch two of the three cables (Red, White, and Black).

2. Precautions in electric wiring

   - Make sure to connect a green ground wire to a ground plate or bar before connecting the Cabtyre Cable 10m(32ft) with Plug to prevent electric shock.
   - Never test the pump in the air. Generated heat may deform the pump and cause failure.
   - Install a circuit breaker to prevent unexpected problems.

   Note: To prevent electric shock or fire, the user is obligated to provide a circuit breaker according to the industrial safety and health regulations and electric equipment technical standards.

<Cabtyre Cable side>	Red – U White – V Black – W Green – Ground	<Motor cable side>

3. Voltage during operation

If voltage is low, current increases. This can cause the thermal protector to be activated as the temperature of the stator increases. Low voltage causes pump performance failure. Use the pump with the voltage within the specified range.

Note: Applicable voltage for this pump

Continue use : Within ±5% of the rated voltage.

Temporary use: Within ±10% of the rated voltage.

4. Thermal protector (Protection Instrument)

When the temperature of the motor coil is near the maximum temperature limit from electrical or mechanical reasons, motor burn protection function will be activated and stop the motor by cutting off the electric circuit. Carefully investigate the cause which activated the thermal protector, remove that factor, and resume the operation.

Note: Make sure to turn off the power before investigating. The thermal protector will automatically resume.

■ Maintenance

1. Daily check

・ Be sure to perform a start-up inspection before operating the equipment.

Inspection details		Frequency	
		Daily	Once a month
1. Start-up inspection	1-1 Check of open/close operation of outlet valve handle.	◎	
	1-2 Check of piping deformation by liquid temperature.	◎	
	1-3 Check of liquid leakage from piping.	◎	◎
	1-4 Check of looseness of fixing bolts.		◎
	1-5 Check of insulation resistance.		
	1-6 Clean	◎	
2. Inspection during operation	2-1 Check of current value	◎	
	2-2 Check of discharge pressure	◎	

2. Periodical check

・ Perform periodic overhaul by the manufacturer for the smooth pump operation.

・ When changing the installation location or moving the pump during repairs, be sure to drain the liquid and rinse it completely with water to ensure safety.

※ Recommended period for overhaul: Perform every 12 months or every 10,000 hours, whichever comes first. However, if operating in an environment with slurry or sludge, perform every 12 months or every 1000 hours, whichever comes first.

3. Long time storage

When store the pump for long time, it is recommended to store as follows.

- Avoid outdoors, the place where direct sunlight affects, the place where with high temperature or high humidity, the place where condensation occurs, the place where to freeze, the place where possibility of infiltrate foreign objects or dust, in the corrosive gas.
  (Recommended temperature：10℃～30℃ Relative humidity：Lower than 95%)
- Operate the pump at least once every 6 months for products with motor.
- Make sure that the bolts are not loose before operation.
  If the bolts are loose, tighten them before operating the pump.
- Before operation and during long-term storage, perform the inspections listed in "Maintenance" periodically.
- Confirm that the insulation resistance is higher than 10MΩ before operation.
- Make sure there are no foreign objects on the pump and no dust or liquid on the electrical parts.
- If the liquid used is prone to solidification or sedimentation, remove the pump, drain and rinse it with water before storing.

4. Inspect the following consumable parts periodically and replace them if necessary.

(1) Front bearing (No.10) and Rear bearing (No.9) The inner of new one is φ17.

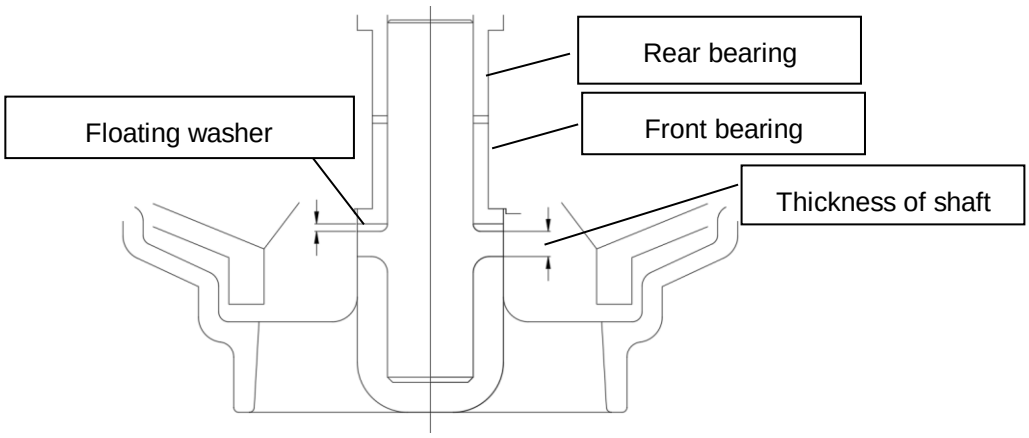
- Check no crack and damage.
- Check that the rattle between the bearing and shaft is not big. (Max. inner dia.: ϕ17.5)
  If the total abrasion with the shaft is more than 0.5mm, recommend to replace it.

(2) Shaft (No.14) The outer of new one is φ17.

- Check no crack and damage.
- Check that the rattle between the shaft and bearing is not big. (The max. diameter is ϕ16.5.) If the total abrasion is 0.5mm and more, recommend to replace it.
- Inspect thickness of shaft. (The thickness of new one is 5.0mm, Min. thickness is 4.5mm)

(3) Floating washer (No.19) (Only alumina ceramics bearing)

- Replace the mouth ring if scratch or bump is shown.
- Inspect thickness of floating washer. (The thickness of new one is 1.5mm, Min. thickness is 1.0mm)



(4) Impeller (No.7)

If there are wear track or degradation by corrosion on the surface of the impeller, replace it.

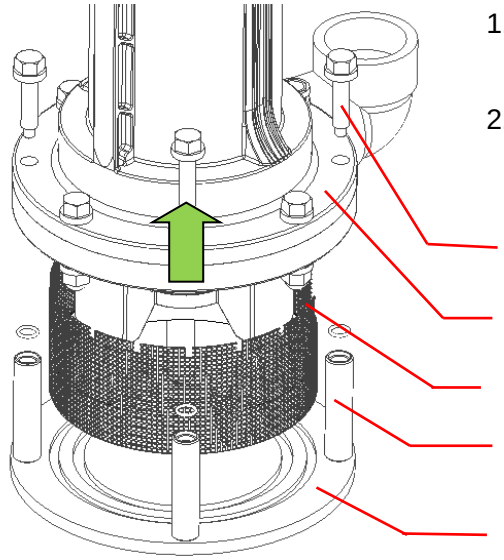
(5) Casing (No.13)

Check no wear track or degradation by corrosion in and out of the rear casing, replace it.

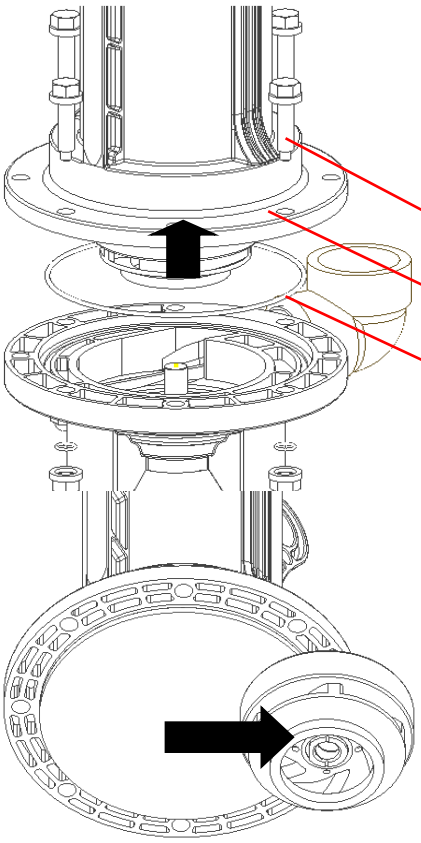
(6) O-ring, Gasket (No. 12, 18)

If the rubber cures, is less elastic or has cracks by the degradation or swollen, replace it.

■ Disassembly



1. Remove 4 set bolts (16) from the standoff bolts (20) which are affixed to the casing (13).
2. The bottom board (23) with the standoff bolts (20) and the strainer (21) are removed.



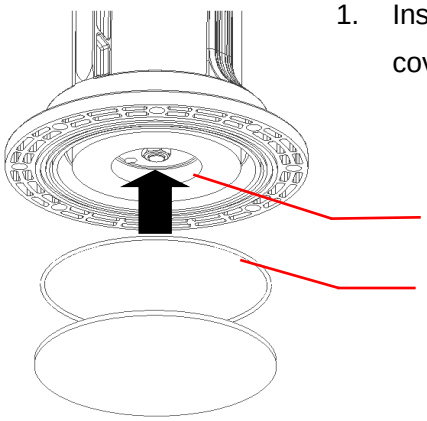
3. After removing the rest of the set bolts (15) (16), pull the casing (13) forward to separate. The impeller (7) is secured on the motor cover (6) through the separating board (11).

4. Remove the O-ring for separating board (12), and move the

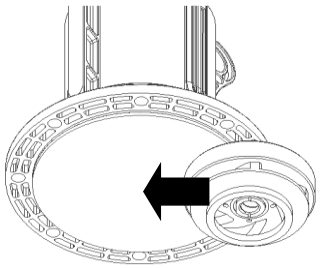
impeller (7) attached to the motor side magnet (2) outward to remove.

- Do not disassemble the motor (including the cable). When maintenance of the motor is required, contact your distributor.

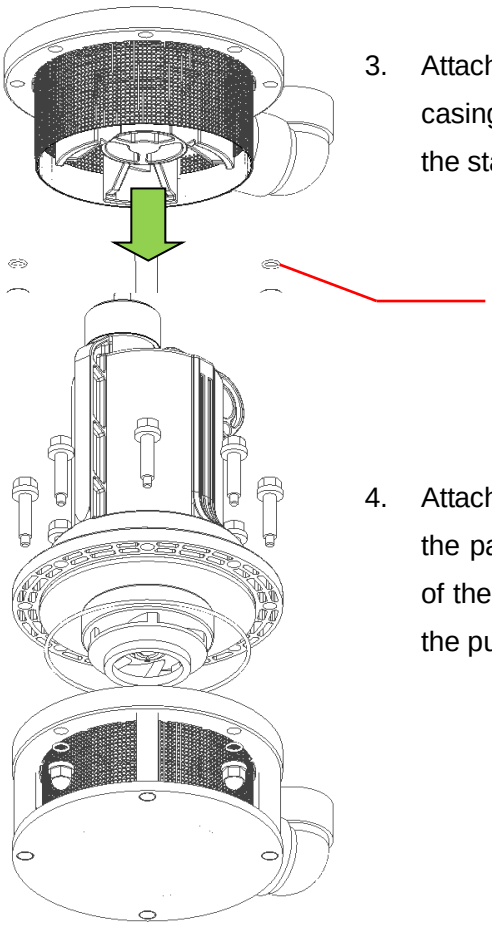
■ Assembly



1. Insert the O-ring for separating board (12) in the groove of the motor cover (6).



2. Slide the impeller (7) from the side of the separating board (11) to the center. Do not move the impeller (7) quickly, as the separating board (11) could be damaged by impact caused when the impeller (7) approaches to the motor magnet (2) as a result of magnetic force.



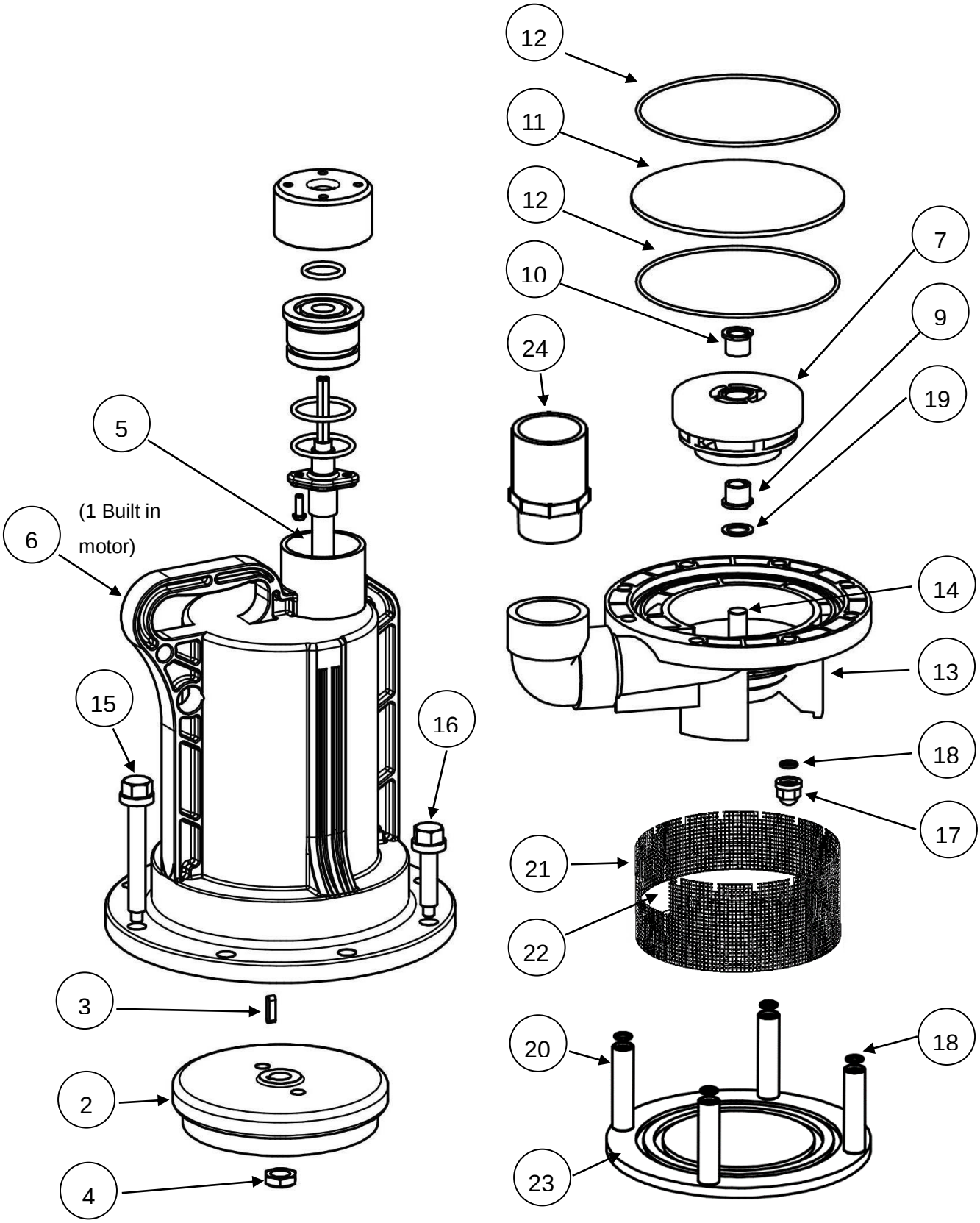
3. Attach the standoff bolts (20) to the bottom board (23) and put the casing (13) on the strainer (21). Attach the O-rings for set bolts (18) to the standoff bolts (20).

4. Attach the O-ring for separating board (12) to the casing (13) and put the parts assembled in the above procedures 1 & 2. Insert the bearing of the impeller (7) so that the inner diameter fits to the outer diameter of the pump shaft (14).

5. Insert the set bolts (15) (16). Install the O-rings for set bolts (18) to the nuts (17). Attach the nuts for the set bolts (17) first, then attach the standoff bolts (20).

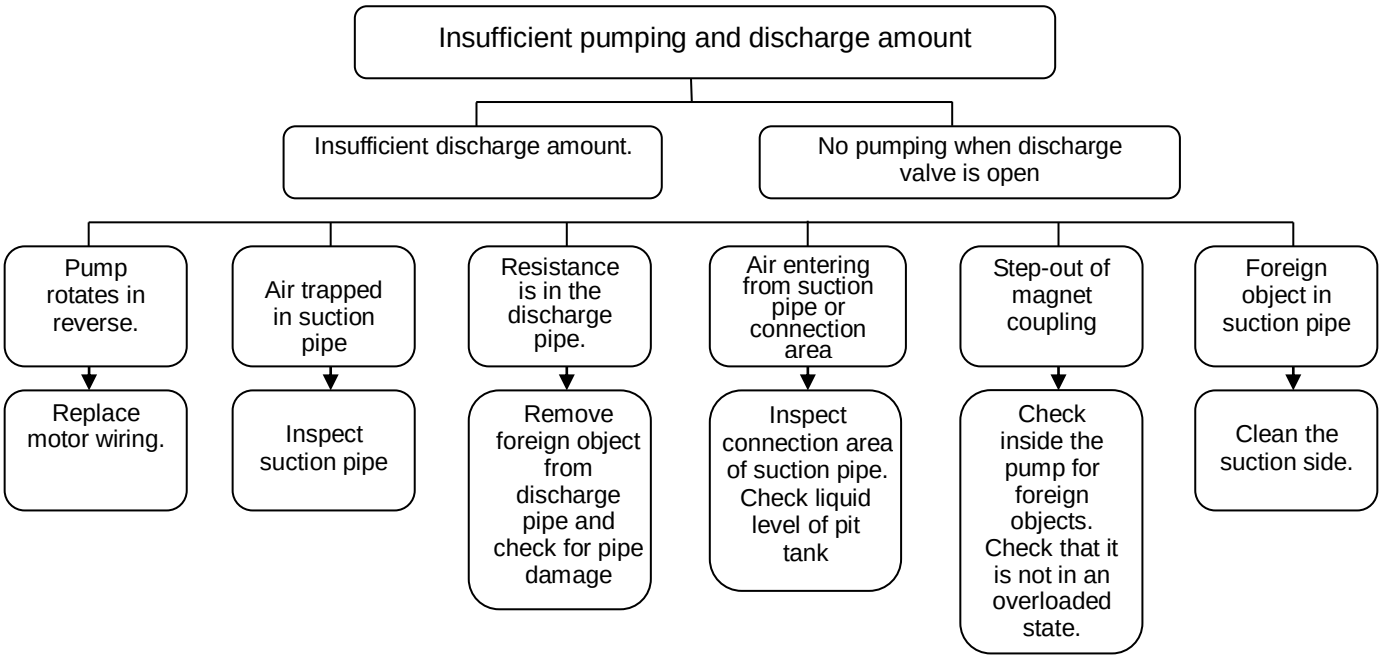
- The tightening torque is 8N・m to tighten the set bolts (15) (16). Tighten opposing bolts diagonally to fix.

■ Exploded view

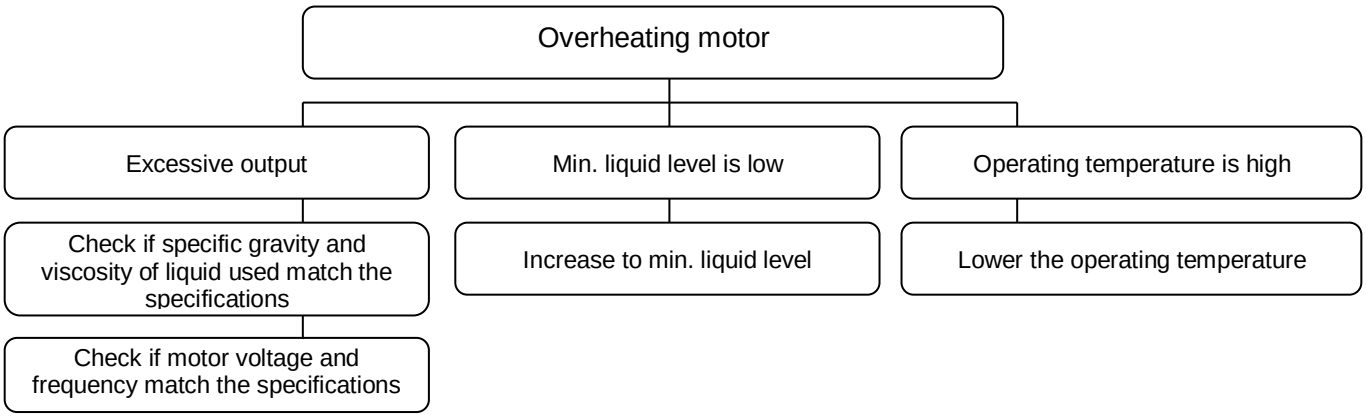


Troubleshooting

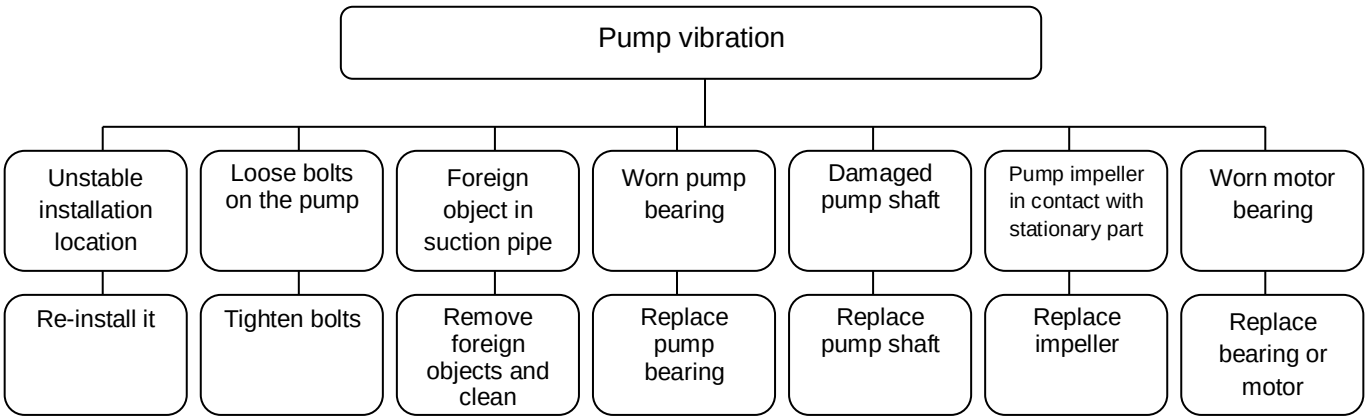
1. Insufficient pumping and discharge amount



2. Overheating Motor



3. Pump vibration



STANDARD ONE-YEAR LIMITED WARRANTY
FOR SALES MADE ONLY IN THE UNITED STATES, CANADA

This limited warranty completely replaces the warranty issued by World Chemical Co., Ltd. relating to the below described Pumps.

WCUSA warrants its Magnetic Drive Pumps, Self-Priming Pumps, Oil Skimmer Systems, Vertical Pumps and Submersible Pumps ("Pumps") against defects in materials and workmanship for one year from the date of WCUSA's invoice to you for the affected Pump. This warranty requires you to return the Pump to WCUSA.

If there is a manufacturing defect, WCUSA will replace or repair the Pump with new or rebuilt parts at no charge to you. Please return the Pump to: World Chemical USA, 25691 Atlantic Ocean Dr. Unit B-15 Lake Forest, CA 92630.

When returning the Pump, include your name, address, daytime telephone number, and a description of the problem. No warranty work can be performed without this information.

Properly pack the Pump (preferably in the original carton) to prevent damage to the Pump in transit.

The repaired or replaced Pump will be warranted for a period equal to the remainder of the original one-year warranty.

All replaced Pumps, parts and components, shall become the property of WCUSA

This Limited Warranty does not cover: (a) defects or damage resulting from accident, misuse, abnormal use, abnormal conditions, improper storage, exposure to dirt, neglect, or unusual physical, electrical or electromechanical stress; (b) scratches, dents and cosmetic damage, unless caused by WCUSA; (c) Pump that has the serial number removed, defaced, damaged, altered or made illegible; (d) ordinary wear and tear; (e) defects or damage resulting from the use of Pump in conjunction or connection with other equipment not furnished or approved by WCUSA; (f) defects or damage resulting from improper testing, operation, maintenance, installation, service, caused by the use of unauthorized parts of service; (g) defects or damage resulting from external causes such as collision with an object, fire, flooding, dirt, windstorm, lightning, earthquake, exposure to weather conditions, or improper use of any electrical source; (h) irregularities or breakdowns due to chemical or hydrodynamic corrosion by liquid. We do not warrant the chemical resistance of the Pump to any chemical or to corrosion.

You will be responsible for paying for your own shipping costs for delivering the Pump to us. If we determine the Pump is covered by this warranty, we will return the new or repaired Pump to you at our expense. If we determine that the Pump is not covered by this warranty, we will return it at your expense.

WCUSA does not warrant accessory components, including, but not limited to, Impeller (including mouth ring and bushing), Rear Casing set (include shaft), O-Ring for Casing and other consumable parts.

REPLACEMENT OR REFUND OF THIS PUMP AS PROVIDED UNDER THIS LIMITED WARRANTY IS BE YOUR EXCLUSIVE REMEDY.

WE ARE NOT RESPONSIBLE OR LIABLE FOR ANY LOSS, INCONVENIENCE OR DAMAGE, WHETHER SPECIAL, DIRECT, INCIDENTAL, CONSEQUENTIAL, OR OTHERWISE, AND WHETHER KNOWN OR SHOULD HAVE BEEN KNOWN TO US, INCLUDING LOST PROFITS, GOODWILL, DAMAGE TO OR REPLACEMENT OF OTHER PUMPS AND PROPERTY AND PERSONAL INJURY RESULTING FROM ANY BREACH OF WARRANTY, THE INABILITY TO USE THE PUMP OR UNDER ANY LEGAL THEORY IN CONTRACT OR TORT. THESE WARRANTIES AND REMEDIES ARE YOUR SOLE AND EXCLUSIVE WARRANTIES AND REMEDIES IN CONNECTION WITH THE SALE AND USE OF THE PUMP. NO OTHER WARRANTIES, ORAL OR WRITTEN, EXPRESS OR IMPLIED, ARE GIVEN. OUR LIABILITY IS LIMITED TO THE ACTUAL PURCHASE PRICE YOU PAID TO THE RETAIL SELLER OF THE DEFECTIVE PUMP. EXCEPT TO THE EXTENT PROHIBITED BY LAW, ANY IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN DURATION TO THE DURATION OF THIS LIMITED WARRANTY.

Some states do not allow the exclusion or limitation of implied warranties or liability for incidental or consequential damages, or do not allow a limitation on how long an implied warranty lasts, so the above limitations or exclusions may not apply to you. You are advised to contact applicable state laws for a full determination of your rights. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

No dealer, agent or employee is authorized to make any modification, extension, change or amendment to this warranty. This warranty may not be assigned without the prior expenses written approval of WCUSA.

1. Repair

Notice:
For repair, consult the supplier. When returning a pump, thoroughly clean and pack the wet parts kit.

If irregularities are detected during operation, stop the operation immediately for check. Refer to the section on “troubleshooting”.

(1) Consult your supplier or us for repair.
(2) Read this manual again and re-check before requesting repair.
(3) When visiting to a distance location for repair, the travel expenses are charged.
(4) Inform the followings when requesting repair.
- Model name and serial number
- Use duration and condition
- Damages parts and condition
- Liquid (Name, Specific gravity, Temperature, Slurry)

If liquid leaks during transportation, it is very dangerous, so make sure to clean inside thoroughly. When ordering replaced parts, specify the name in the parts name list (P7, 9, 10). Although, inform the parts’ number and material, too.

Installation record

Model:	
Purchase date:	Serial number:
Start date:	Supplier:

World Chemical Co.,Ltd.

WORLD CHEMICAL CO., LTD. / Japan

Head Office / Overseas department

5F, 14, Gobancho, Chiyoda-ku, Tokyo, 102-0076 Japan

TEL : 03-5818-5130 FAX : 03-5818-5131 (Head office)

TEL : 03-5818-5131 FAX : 03-5818-5131 (Overseas Department)

Osaka Office

3F., 1-19-25, Edobori, Nishi-ku, Osaka-shi, Osaka, 550-0002 Japan

TEL : 06-6467-8565 FAX : 06-6467-8566

Nagoya Office

5F., 1-5-27, Nishiki, Naka-ku, Nagoya-shi, Aichi, 460-0003 Japan

TEL : 052-253-8426 FAX : 052-253-8436

Tsukuba Factory

6127-5, Onogo-machi, Joso-shi, Ibaraki, 300-2521 Japan

TEL : 0297-24-1071 FAX : 0297-24-1075

WORCHEMI TAIWAN CO., LTD. / Taichung, Taiwan

No.915, Zhongshan Rd., Shengang Dist., Taichung City 42955, TAIWAN

TEL : 886-4-2562-8358 FAX : 886-4-2562-8351

WORLD CHEMICAL USA, INC. / California, U.S.A.

25691 Atlantic Ocean Dr. Unit B-15 Lake Forest, CA 92630

TEL : 1-949-462-0900 FAX : 1-949-462-0999

SUZHOU WORLD TECHNOLOGY CO., LTD. / Jiangsu, China

402, Fu Yuan Road, Xiang Cheng Economic District, Suzhou, Jiangsu Province, China

TEL : 86-0512-6579-8212 FAX : 86-0512-6579-8215