SKIMMER

YD-1600PS-T

INSTRUCTION MANUAL

Version: 211014

World Chemical Co.,Ltd.

Thank you very much for purchasing World Chemical's skimmer, YD-1600PS-T.
This is a system which collects floating oil efficiency and is configured with floats and a submersible pump.
This manual describes features of the parts and procedure. Please read and understand this manual thoroughly.

TABLE OF CONTENTS

Notice:
This manual describes the explanation of products with standard specification. In case of products with non-standard specification, read the manual with replacing items and words to those of non-standard one.

SKIMMER
YD-1600PS-T Instruction manual

I. MODEL DESCRIPTION

YD – 1600 PS – 02 V06 620 (N) (T)

(1) (2) (3) (4) (5) (6) (7)

(1) Float diameter

40 : ϕ 450 1600 : ϕ 1600

(2) Model

PS series

(3) Power of the submersible pump

A6 : 0.25kW (1PH), Y6 : 0.25kW, A0 : 0.4kW (1PH), 00 : 0.4kW,

01 : 0.75kW, 02 : 1.5kW

(4) Cable material & length of the submersible pump

V : VCT P : 2PNCT / 06 : 6m (The length is described as meter.)

(5) Frequency & Voltage of the submersible pump

5 : 50Hz 6 : 60Hz

20 : 200V, 22 : 220V, 38 : 380V, 40 : 400V

- The option and specialty are indicated as follows.

(6) Anti-dust net

N : with Net No indication : without Net

(7) Specialty

T : Special conditions

II. FEATURES

1. This is configured with four large floats (main float), four small floats (gate float), a gate ring, a suction hopper and a submersible pump to float the main body and collect floating oil.

2. The main floats have enough buoyancy to support the weight of the suction hopper, submersible pump, connections and flexible hose.

3. The gate floats make the oily water inlet (gate ring) and liquid level (inflow drop) keep constant even if the surface is fluctuated.

4. The main floats and gate floats move up and down independently. The flow drop of the gate ring is not affected by the movement of main floats and oil can be collected stably.

5. It is easy to adjust the flow drop of the gate ring by turning itself and collect thin oil layer of the surface.

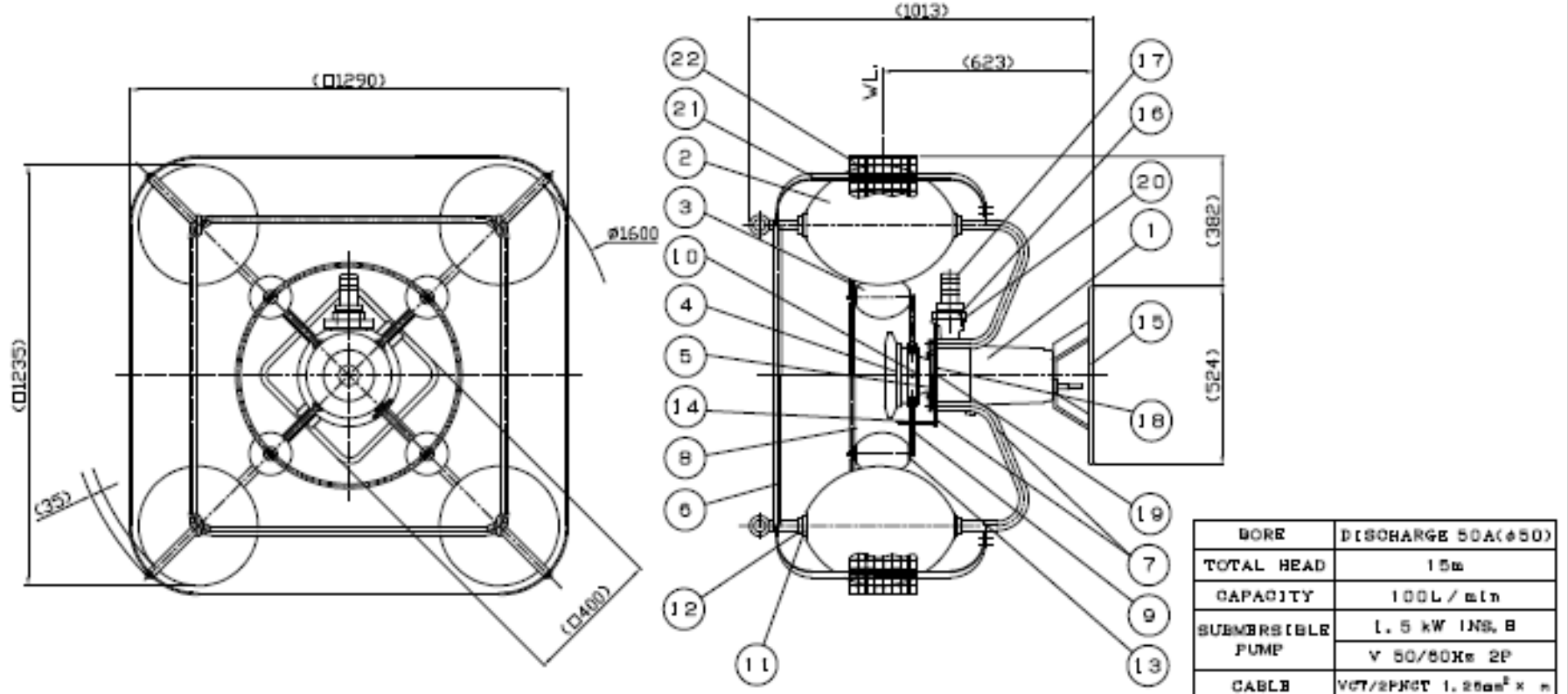
6. The skimmer is combined with a pump. By simply connecting a flexible hose and supplying power, it collects the oil layer towards the gate ring and suction hopper during drawing continuously.

7. The submersible pump smoothly transfers entered oily water and solids from the gate ring and have the quality of last long.

8. The skimmer is made of plastic and stainless heavily and excellent at corrosion resistance.

9. Except the submersible pump, there is no electrically operated part. It is easy to handle it and perform maintenance like washing.

10. The parts except the pump are originally designed. The well-balanced one makes the ability exert fully.



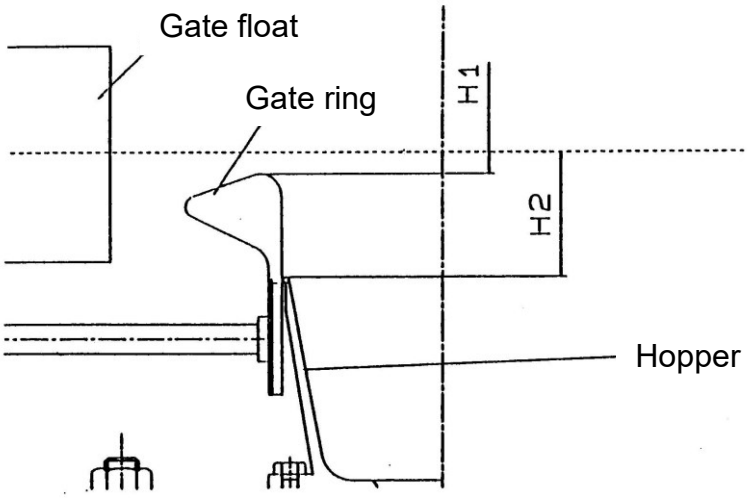
BORE	DISCHARGE 50A(ø50)
TOTAL HEAD	15m
CAPACITY	100L/min
SUBMERSIBLE PUMP	1.5 kW INS. B
	V 50/60Hz 2P
CABLE	VCT/2PNCT 1.25mm² × m
WEIGHT	Approx. 75kg

No.	品名 PARTS NAME	数量 Q'TY	材質 MATERIAL	備考 NOTE	No.	品名 PARTS NAME	数量 Q'TY	材質 MATERIAL	備考 NOTE
22	Net	1	PE	Mesh Width 1 inch	11	Main Float Collar	8	PP	
21	Net Mounting Stay	4	SUS304		10	Gate Ring Lock Bolt	1	SUS304	With nut
20	Gasket	1	Non-Asbestos Joint Sheet		9	Gate Float Under Pipe	1	SUS304	
19	Gasket	1	PVC	Hopper Side	8	Gate Float Upper Pipe	1	SUS304	
18	Gasket	1	PVC	Pump Side	7	Main Float Under Bracket	1	SUS304	
17	Hose Joint	1	PP	50AX50	6	Main Float Upper Brackets	1	SUS304	
16	Discharge Flange	1	SUS304		5	Suction Hopper	1	PP	
15	Base	1	SUS304		4	Gate Ring	1	PP	
14	Gate Float Stopper	1	SUS304		3	Gate Float	4	PP	
13	Gate Float Collar	8	PP		2	Main Float	4	PP	
12	Set Collar	8	SUS304		1	Submersible Pump	1	FC etc,	

名称 TITLE	FLOAT SUCTION SKIMMER OUTLINE DRAWING
型式 MODEL	YD-1600PS-T
承認 APPROVED BY	
作図 CHECKED BY	
製図 DRAWN BY	
日付 DRAWN DATE	
図面番号 Dwg. No.	
尺度 SCALE	1:12

株式会社 ワールドケミカル
World Chemical Co.,Ltd.

III. FLOAT



1. Connect a flexible hose to the joint of submersible pump and secure them with a hose band. Then, float it in a tank where the oil is floating.

2. Four eye nuts atop the main float are used to lift and tie up the skimmer on floating oil.

3. Do not apply any excess force on the flexible hose connected with the submersible pump. If tension is applied to the hose when tying it up, the gate ring inclines and may not collect oil evenly. Alternatively, the slide part between the suction hopper and the gate ring is tied and it exerts a bad effect on the up and down movement.

4. Check that the gate ring and the suction hopper are immersed in water.

5. The flow drop between the gate ring and suction hopper (H1 and H2 in the above picture) is adjusted in our factory (freshwater) before shipment. However, readjustment is required in case of using for liquids other than freshwater, thick oil layer, high viscosity floating oil or a low specific gravity liquid. H1 and H2 are effect by them.

6. When adjusting H1, turn the gate ring while holding the gate float.

7. Turning the gate ring clockwise as viewed from above makes H1 bigger and the oil-water flow rate increases. On the other hand, turning it counterclockwise makes H1 smaller.

8. Adjust H1 according to a balance of the property (like viscosity and specific gravity) / thickness of oil and capacity of the pump.

9. The best flow H1 is that the collected oil steams down on the inside wall of the suction hopper through the gate ring.

10. When the skimmer is operated in stable liquid, it is not necessary to adjust H2. However, if the liquid is fluctuated, the main float and gate float move up and down independently and the suction hopper slides in the gate. Therefore, adjust H2 that the top of the suction hopper stays at the center of the height of the gate ring.

11. Adjust H2 by the change of the main float height, because the suction hopper is connected with the submersible pump directly and does not have the function which adjusts the flow drop. Before the adjustment of H2, measure the depth from the liquid level to the top of the suction hopper and record the excess and deficiency of H2 while floating the skimmer in a tank.

12. Newly fix the main floats by considering of the excess and deficiency of H2 after bolts of the shaft clamp collar up and down the main floats are loosened and the main float moves freely.

13. Check H2 and the buoyancy balance of the main floats while floating the skimmer in a tank. If the top of the suction hopper declines and the buoyancy balance leans to one side, adjust the height of the main floats again.

14. For the smooth operation, perform maintenance like washing the skimmer and retightening the bolts at the connection depending on the dirt.

15. If the floats get dirty, foreign objects like sludge is easily adhered. As they become larger, the floats become harder to follow the waves. When foreign objects accumulate between the main floats and gate floats, it disturbs the independent movements of each other.

16. Keep watch dirt of the gate ring and suction hopper. The suction hopper and gate ring slide each other along the movement of floats. If they get dirty or solid foreign materials, the smooth movements is disturbed.

Notice:

Maintain the submersible pump after removing the pump from the main unit. The submersible pump is installed up and down from the original position. Therefore, if checking oil by the state of pulling up from a tank, oil drains from the oil filling port.

IV. SUBMERSIBLE PUMP

1. BE SURE TO READ FOR YOUR SAFETY

Be sure to thoroughly read this SAFETY PRECAUTIONS before using.

The precaution describes to use the skimmer correctly and prevent danger of damage to you or to others. The precautions are classified into two categories: WARNING and CAUTION to clear the level of the harm and damage and urgency. However, CAUTION may at times lead to a more serious problem, too. In either case, they are indications for safety and be observed carefully.

- **WARNING:** It may lead to death or injury to humans, if ignoring the sign.
- **CAUTION:** It may cause injury to humans and other physical damage, if ignoring the sign.
- **NOTICE:** Others.
- **Explanation of symbols**

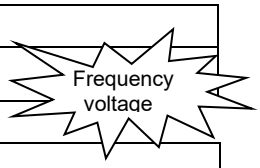

: It shows Danger, Warding or Caution. The inside symbol shows the abstract context.
(The left means Caution for electric shock.)


: It shows prohibition. The inside symbol shows the abstract context.
(The left means Disassembly prohibition.)


: It shows imposition or instruction. The inside symbol shows the abstract context.
(The left means Wire the earth cable.)

Precaution to the specification

⚠ CAUTION

	● Do not use the product for other than the set specification. If not, it leads to **electrical leakage, electrical shock, fire or liquid leakage.** 

Precaution for transportation/installation

⚠ WARNING

			● Install the product properly under the manual. If it is failure, it causes electrical leakage, electrical shock, fire, water leakage, or injury. 
	● Set electrical wiring under the electric regulations. Wiring failure causes electric leakages or fire. 		● Wire the earth cable securely and not in conjunction and install Earth leakage circuit breaker. If electric leakage occurs when at the time of pump failure, it may cause electric shock. 
	● Use the 15A outlet by itsself. If using with other instrument, it may burn by abnormally heated. 		

⚠ CAUTION

	● Wire the earth cable securely. Do not connect to gas pipe, water pipe, lightening rod, or telephone wire. If it is failure, electric shock may occur. 		● Prevent pins or dust from the power plug. It causes fire. 
	● Do not scratch, fold, twist, make alterations, or bundle the cable. It causes the cable damage and electric shock, short, electric shock and fire. 		● Do not use the damaged cable and plug and connect the tip of the cable to the terminal block securely. If failure, it causes electric shock, short or fire. 
			● Carry the pump by hands with enough people. When lifting it, do not bend over. It causes back trouble. 
	● Do not install the pump at a dusty place or where toxic, corrosive or explosive gas, because it is neither dust-proof nor explosion-proof. It may cause fire. 		● When using a hose, set it without moving. If happen, it causes injury. 

PRECAUTIONS DURING TEST OPERATION AND OPERATION

⚠ WARNING

- Do not use the pump in the tank where somebody stays. If electric leakage occurs, electric shock may happen.

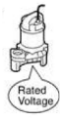
- When changing the connection, make sure to turn off the power and stop the impeller. If not, it may cause electric shock, short or injury.

- Do not start the pump when hanging. It may cause injury for the back action.

- Make sure to turn off the power to prevent to start the pump accidentally when maintenance. If happen, it may cause serious accident.

⚠ CAUTION

- Do not use the pump with no rated voltage. When using a generator, do not use other equipment together. It causes a bungle, the pump damage, electric leakage or shock.



- The motor may be hot. Do not touch the product by bare hands during or after the operation. It may cause burn.

- Do not dry run. It causes the pump damage, electric leakages or electric shock.

- Do not use the pump with high temperature liquid. It causes the pump damage, electric leakage or shock.

- Do not put foreign objects into the suction inlet. It causes the pump damage or abnormal operation.

- If it is not used for a long time, turn off the power or pull the cord out of the wall. If the insulation becomes depleted, it causes electric leakage, electric shock or fire.

PRECAUTIONS WHEN MAINTENANCE

⚠ WARNING

- When maintenance, make sure to turn off the power or pull the cord out of the wall. Do not do by wet hands. It may cause injury by electric shock.

- At an abnormal, stop the operation and contact your supplier. If continued, it causes electric shock, fire or liquid leaks.

- Do not repair the parts which are not indicated in the manual. If want, ask your supplier. Repair failure causes electric leakage, electric shock, fire or liquid leakage.

⚠ CAUTION

- At the restart after reassembly, do the trial operation. If the assembly failure, it causes abnormal action, electric shock or liquid leakage.

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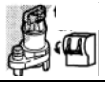
PRECAUTION WHEN ELECTRIC POWER FAILURE

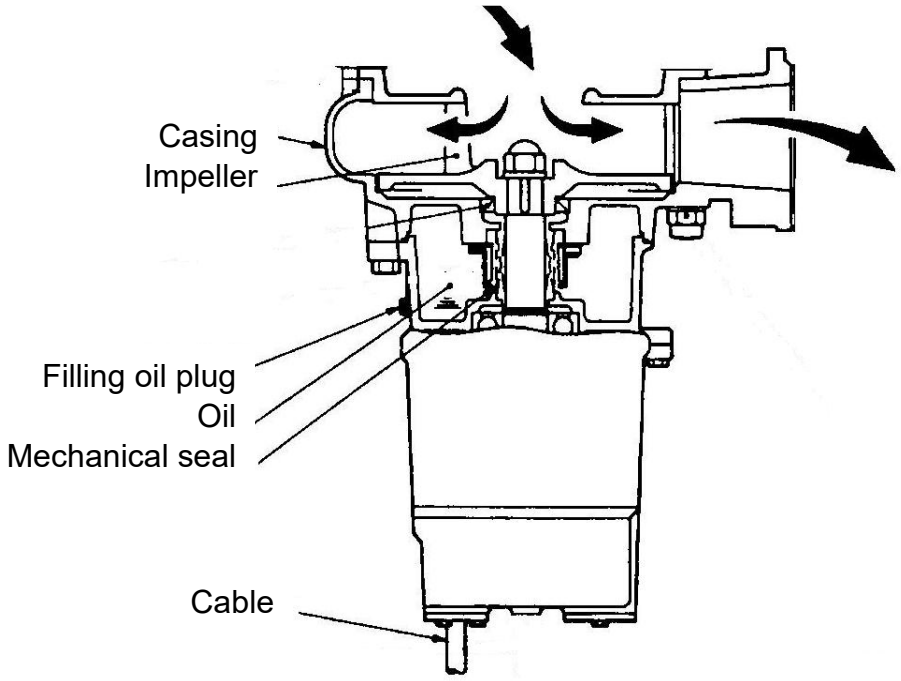
- When electric power failure, stop the operation. The pump which starts accidentally after recovery is danger for the people surrounding the pump.



OTHERS

- Do not use the product for drinking water.
  It may have an affect on the human body.

2. PARTS NAMES



3. BE SURE TO READ FOR YOUR SAFETY

When receiving the product, check the followings.

➢ Product check

Unpack and check that there are damage parts or loosen bolts and nuts during transportation.

➢ Specification Check

Check that the product is what you ordered by checking the nameplate, especially the voltage and frequency.

Notice: If there is any defect, contact your supplier.

➢ Specification

⚠ **CAUTION**: Do not use the product under any conditions other than the structured specification. If use, it causes electric shock, electric leakage, fire or liquid leakage.

■ Major Standard Specifications

Liquids	Consistency and Temperature	Water, waste water, sewage · 0 - 40°C
Pump	Impeller	Open
	Sealing	Double Mechanical Seal
	Bearing	Shielded Ball Bearing
Motor	Specification	Dry Submersible Induction Motor, 2-Pole
	Insulation	Class E
	Protection Equipment (built-in)	Thermal Protector
	Oil	Turbine oil, V32 (Addictive-free)

4. INSTALLATION

CAUTION: Observe the followings. If not, it causes the pump damage, electric leakage or electric shock.

- It is possible to temporary use the product by sea water, but do not use it constantly.
  Notice: Wash it thoroughly with tap water after using by sea water to prevent salt and corrosion.
- Use it with the rated voltage of plus or minus 5 % or less.
- The water temperature is 0 – 40 degrees.

Note: If using the product for a special solution, contact your supplier.

■ Maximum Allowable Pressure

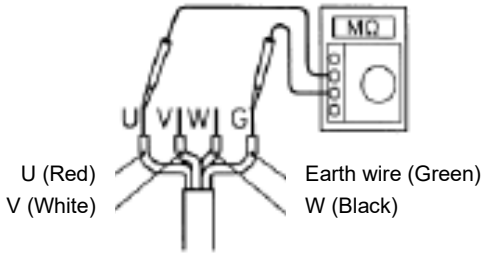
CAUTION: Do not use the product where it is affected by the following number and more.

Applicable Pump	Maximum Allowable Pressure
Output : 0.75kW or less	0.2MPa(2kgf/cm2) – discharge pressure during operation
Output : 1.5kW – 2.2kW	0.3MPa(3kgf/cm2) – discharge pressure during operation
Output : 3.7kW	0.5MPa(5kgf/cm2) – discharge pressure during operation
Output : 5.5kW and more	0.3MPa(3kgf/cm2) – discharge pressure during operation

➢ Precaution before installation

Measure the resistance between each core of the cable and the (green) ground wire by a megger and check the insulation resistance of the motor.

Insulation resistance reference value =20M Ω minimum



Note: *The insulation resistance reference value of 20M Ω minimum is based on a new or repaired pump. For reference values of a pump that has already been put into operation, refer to "7. Maintenance*

5. ELECTRICAL WIRING

➢ Electrical Wiring Work

WARNING

- Electrical work is performed by an authorized electrician, in compliance with local electrical equipment standards and internal wiring codes. An unauthorized person is not allowed the electrical work not only against the law, but also it is dangerous.
- Improper wiring leads to current leakage, electrical shock, or fire.
- Make sure to install a dedicated earth leakage circuit breaker and a thermal overload relay suitable for the pump. If not, it may cause electric shock when pump damage and liquid leakage.

Provide enough capacity of the power supply and wiring.

➢ Earth

WARNING Make sure to connect the earth wire. If not, electric shock may occur when pump damage or liquid leakage.

CAUTION Do not connect the earth wire to gas pipe, water pipe, lightening conductor or telephone earth wire. If the earth wire is failure, it may cause electric shock.

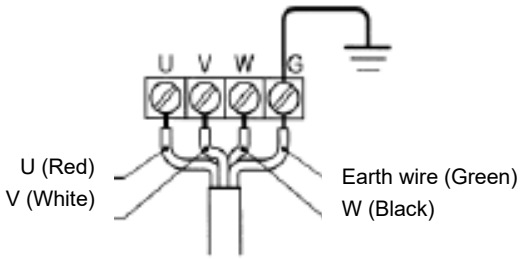
➢ Connecting Power

WARNING Make sure to turn off the power before connecting the plug or the connecting terminal block. If not, it may cause injury by electric shock, short, unexpected pump start.

CAUTION If the cable or plug is damaged or failure, do not use it. It may cause electric shock, short or fire.

Connect as follows.

Connect the tip of the cable to the terminal block of the control panel surely.



➢ Motor protector

The motor protector (Miniature protect circle thermal protector) is built in.

If overcurrent or abnormal heating is occurs for the following causes, stop the pump without any reference to the operation liquid level and it protects the motor.

- Drastic change of the voltage
- Overload operation
- Open-phase operation or restraint operation

Note: The motor protector is automatically deactivated, so remove the cable from the terminal block and plug and make sure to eliminate the cause of problem. Do not operate the pump when the liquid level is very low or the impeller has foreign objects. It may cause noise, abnormal vibration or pump failure.

6. OPERATION

➢ Before operation

(1) Once again, check the voltage and frequency in the nameplate.

⚠ **CAUTION** If they are wrong, not only the high performance is not delivered, but also the pump failure may occur.

(2) Check the wiring, the voltage, the capacity of the earth leakage circuit breaker, and the insulation resistance of the motor. * Insulation resistance reference value is 20MΩ and more.

Note: The insulation resistance reference value is based on a new or repaired pump. Regarding the value after installation, refer to “Daily check / Periodical check”.

(3) Coordinate the setting value of the thermal relay (3E relay) with the current rating of the pump.

Note: The current rating is in the nameplate.

➢ Trial operation

⚠ **WARNING** Do not start the pump with hanging. It may cause serious injury by back action for the rotating.

(1) Check the rotating direction in manner of 1. If impossible, check it in manner of 2.

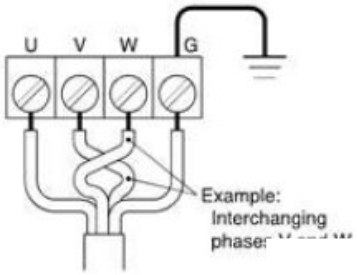
1. Operate the pump in a 1 or 2 seconds and visually check the rotating direction of the impeller from the above the gate. When operation, fix the pump by hanging rope to prevent the moving and falling.
2. Check the direction of the back action of the pump at the start after set the product on the water. The impeller rotates anticlockwise as the view of the above. The main body moves clockwise instantly by the back action of the start. It is possible to check the rotating direction by the back action.

⚠ **CAUTION** Do not put hands or tolls into the pump through the gate during operation for checking. It causes serious accidents by the rotating impeller. If it rotates backward for long time, it may cause the pump failure, liquid leakage or electric shock.

(2) The measure when it rotates backward.

⚠ **WARNING** When the connection change, make sure to turn off the power and stop the impeller rotating. If not, electric shock and short may occur.

Measure: Switch two phases, U, V or W.

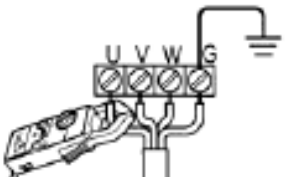


(3) Connect the pump to pipes and submerge it.

(4) Operate the pump for 3 – 10 minutes and check the below.

- Check the operation current at U, V, W phase with a clamp meter.

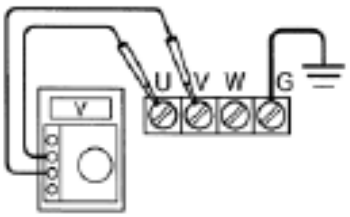
Measure: If the current is over, it may be overload. Refer to 4. INSTALLATION.



- Check them at the terminal block by using a current gauge.

* Acceptable amount of the voltage: ±5% or less than the rated voltage.

Measure: If the voltage is over or less than the above acceptable amount of the voltage, it may cause the capacity of the power or the extension cable. Refer to 5. ELECTRIC WIRING.



⚠ **CAUTION** If the very hard vibration, noise or smell occurs, stop the operation and contact your supplier. If the operation is continued, it may cause electric shock, fire ore liquid leakage.

(5) When no trouble at the trial operation, operate it continuously.

7. MAINTENANCE / CHECK

Regular maintenance is necessary to keep the pump's ability. If any failure, refer to 9. TROUBLESHOOTING and take measures shortly. It is recommended to prepare a spare pump for an emergency, if possible.

➢ Before check

WARNING Make sure to turn off the power and remove the cable from the terminal block. If not, serious accident may occur by electric shock or unexpected start the pump.

(1) Washing pump: Remove any fouling on the pump and wash it with tap water. Completely remove any fouling on the impeller especially.

(2) Pump exterior check: Check no damaged parts or loosened bolts or nuts.

Note: If any parts are damaged or bolts and nuts are loosened, disassembly may be necessary. At that time, contact your supplier.

➢ Daily check / Periodical check

Interval	Check item
Daily	Operating current check ■Within the rated current Voltage check ■Acceptable value of voltage = within ±5%of the rated voltage
Monthly	Insulation resistance check ■Reference value=1MΩ minimum **Note:** If the insulation resistance is drastically lower than previous check, check the motor.
Yearly	Oil check (Output: 0.75 kW or less) ■3,000 hours or 12 months, whichever comes first Oil check (Output: 1.5 kW and more) ■6,000 hours or 12 months, whichever comes first
Once 2 years	Oil check (Output: 0.75 kW or less) ■4,500 hours or 24 months, whichever comes first Oil check (Output: 1.5 kW and more) ■9,000 hours or 24 months, whichever comes first Change the mechanical seal. **Note:** The special knowledge is necessary to maintain or replace the mechanical seal. Contact your supplier, if necessary.
Once 2 to 5 years	Overhaul ■Even if there is no failure, do the overhaul. When the pump is operated continuously, it is recommended to do overhauled earlier. **Note:** When overhaul, contact your supplier.

Note: Refer to section "Oil check / Replace procedures".

Note: If the wastewater contains fine refuse like grease, paint or fine ash, it is necessary to check earlier, because the cabtire cable swollen or immersion from the mechanical seal cause the failure.

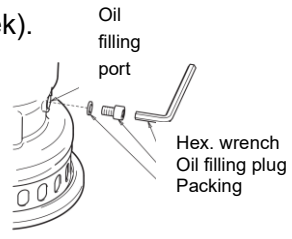
➢ Storage

If the pump is not operated for a long time, pull up and wash the pump. Store it indoors.

Note: When reinstallation, try a trial operation before the normal operation.

If the pump remains immersed in water, operate it on a regular basis (i.e. once a week).

➢ Oil check / Replace procedures



Oil check

Remove the oil plug and take out a small amount of oil. It is easy to drain oil by declining the pump that the oil filler plug faces downward. If the oil appears milky or intermixed with water, the seal such as mechanical seal may be failure. At that case, it is necessary to disassemble or repair the pump.

Replace oil

Remove the oil plug and drain oil completely.

Pour a specified volume of oil from the oil filling port.

Note: Do not dispose oil to the sewer or rivers and take appropriate measure. When oil check or oil replace, replace to new packing and O-ring each time.

Designated oil : Turbine oil VG32 (Addictive-free) ml

Output: 0.25-0.4kW	150	Output: 3.7kW	1,300
Output: 0.75kW	460	Output: 5.5kW	2,100
Output: 1.5kW	910	Output: 7.5kW	
Output: 2.2kW	1,040	Output: 11kW	

8. TROUBLESHOOTING

WARNING When maintenance, make sure to turn off the power. If not, it may cause serious accident.

Read this Operation Manual carefully before requesting repair. Check again and contact your supplier if any abnormality.

State	Cause	Measure
The pump does not work or stops immediately.	①Power is not supplierd (i.e. power outage). ②Malfunction in automatic control (control panel) ③The motor protector is working for foreight objects. ④The motor burns out. ⑤The cable is damaged or connection failure. ⑥The voltage decrease for the cable extension.	①Contact the electric power company or an electrical repair shop. ②Invesgate the cause and repair. ③Check the pump and remove the objects. ④Repair or replace. ⑤Replace the cable or connect it correctly. ⑥Short the cable or replace the bigger one.
The motor protect works.	①Malfunction of motor (seizure or water leakage). ②A 50Hz pump is used at 60Hz. ③The liquid is high temperature. ④The long operation in the air. ⑤Overcurrent.	①Repair or replace. ②Check the nameplate and replace the pump or impeller. ③Decrease the temperature. ④Raise the liquid level after the stop. ③Refer to the below "Overcurrent".
The pump works but does not pump up liquid.	①Air lock occurrs. ②The pump or piping is clogged. ③The piping is partially clogged or the valve is operating improperly. ④The motor reverses.	①Stop momentarily and clean the valve. ②Remove the foreign objects. ③Remove the foreign objects or repair / replace the valve. ④Change the power supply connection.
The capacity of pump is low.	①The impeller or the pump casing is significantly worn. ②There is a great piping loss. ③The operational liquid level is low and the air enters into the pump. ④A 60Hz pump is used at 50Hz. ⑤Liquid leakage occurs from pipes. ⑥There are foreign objects in the pump or the pipe.	①Repair or replace the affected part. ②Review the plan. ③Raise the liquid level or lower the pump. ④Check the nameplate and replace the pump or impeller. ⑤Check and repair. ⑥Remove the foreign objects.
Overcurrent	①The voltage is much imbalanced. ②The voltage decrease much. ③Open phase. ④A 50Hz pump is used at 60Hz. ⑤The motor reverses. ⑥There are foreign objects in the pump. ⑦The motor bearing is damaged.	①Contat an electric power company. ②Contat an electric power company. ③Check the wire connection and magnet. ④Replace the pump or impeller. ⑤Switch the wiring. ⑥Remove the foreign objects. ⑦Disassemble and replace the bearing.

V. MAINTENANCE / REPAIR

1. Warranty period and coverage
   (1) The warranty period is 12 months from dispatched from our factory.
   (2) During warranty period, if the pump breaks down or is damaged at the use under the condition instructed in this manual due to manufacturing defect(s), the failure parts are repaired free of charge.
   (3) Even if the failure occurs within the warranty period, the followings are repaired or replaced for compensation in principle.
   - Breakdown or damage due to different use or safekeeping from the instructions in this manual.
   - Breakdown or damage due to incorrect use or unjust repair or modification.
   - Breakdown or damage as result of pollution, salt damage, gas damage, abnormal voltage or undesigned power (voltage, frequency) as well as fire, earthquake, flood disaster, lightning strike or other natural disaster.
   - Abrasion or degradation of consumable parts like a packing or O-ring.
   - Breakdown or damage during transportation, for relocation or fall after your purchase

   (4) We cannot be responsible for the break down or damage of the customer-specified pump.
   (5) Irregularities or breakdowns due to chemical or hydrodynamic corrosion by liquid are not covered under the warranty. The material chosen at the time of the contract is only a recommendation. We do not guarantee the chemical resistance of the material.
   (6) If the determination of the cause for the breakdown or damage is questionable, it attributes to the negotiation between the customer and us.
   (7) Expenses or other damage incurred as a result of breakdowns at the use under the different condition from the instruction in this manual are not covered under the warranty.
2. 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:

Ver.20240819

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