COOLANT SAVER

YD-25CS N series

INSTRUCTION MANUAL

Ver.20230425

World Chemical Co.,Ltd.

PREFACE

Thank you for purchasing our High-Temperature Coolant Saver. Coolant Saver is designed to collect floating oil from high-temperature oily waste liquids and wastewater discharged from factories and other facilities. The unit is connected to an oil separator to form a floating oil collection and separation system. Please read the instruction manual carefully before use in order to fully understand the functions and features of Coolant Saver, and keep it on hand for future reference.

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.

SAFETY PRECAUTIONS

Safety precautions with WARNING and CAUTION signs are defined as follows:

WARNING

WARNING indicates a potentially hazardous situation, which could result in death or serious injury.

CAUTION

CAUTION indicates a potentially hazardous situation, which may result in personal injury or property damage.

Please observe safety precautions fully.

I. Precautions for Handling and Installation

WARNING 	1	When transporting Coolant Saver, unplug the motor power cable and drain Coolant Saver. Be careful not to fall or slip on slippery floors with spilled oil.
CAUTION 	2	When unpacking the wooden crate, take care to avoid personal injury from nails or wood splinters.
CAUTION 	3	Install Coolant Saver in the tank horizontally, and tightly secure the pump base with bolts.
CAUTION 	4	All wiring and electrical connections must comply with applicable electrical codes and must be performed only by qualified personnel.
CAUTION 	5	Use crimping terminals to connect the motor to the power cable.
WARNING 	6	Do not bend the power cable and motor lead wires sharply; do not apply strong tension or place them in narrow gaps. Damaged cables and lead wires may cause fire and electric shock.
WARNING 	7	Make sure to connect the ground terminal in order to prevent electric leak or shock and motor failure.
WARNING 	8	Install overcurrent/thermal protectors and circuit breaker to the main power supply of the motor to prevent electric shock or fire.
CAUTION 	9	Avoid strong impact or lateral stress, particularly on the float part that has a delicate structure.

II. Precautions for Preparation and Operation

CAUTION 	1	Make sure that the rotational direction of the motor is clockwise as viewed from the motor fan. If the three-phase motor rotates in reverse, turn off the main power supply and exchange two of the three motor wires.
WARNING 	2	The temperature of Coolant Saver and its peripheral parts rises as high as the liquid temperature. Maintain the maximum liquid temperature at less than 90 ℃ (194 F). Handle the unit with caution to avoid personal injuries.
WARNING 	3	Always unplug the main power supply cable of the motor except when Coolant Saver is in use to prevent electric leak or shock.
CAUTION 	4	In the event of emergency such as earthquakes or fires, immediately suspend operation of Coolant Saver.
CAUTION 	5	Keep free of objects that may block airflow around the motor to prevent fire or pump failure.

CAUTION 	6	If a power failure occurs or the motor protective device is activated, turn off the main power supply to reduce the risk of accidental operation of Coolant Saver and personal injury.
WARNING 	7	Never use Coolant Saver in an area where flammable gas is present to avoid fire or explosion.
WARNING 	8	If any abnormality is observed, immediately suspend operation.
WARNING 	9	Do not insert objects or fingers into an opening of Coolant Saver during operation.
WARNING 	10	Do not touch the rotating parts (such as the shaft) during operation to avoid personal injury.
CAUTION 	11	Do not place inflammable materials near the motor. Overheating of motor may result in fire.

III. Precautions for Maintenance and Inspection

WARNING 	1	Turn off the main power supply before performing the maintenance work to avoid electric shock.
CAUTION 	2	Contact your distributor for repair service. When returning Coolant Saver, clean it first so that it is free of leaks/liquid stains, place the unit in a plastic wrap and pack it securely in a wooden crate or cardboard box.

IV. Other Precautions

CAUTION 	1	Operate Coolant Saver in accordance with the designated specifications. **Specifications other than those stipulated in the instruction manual void the warranty.**
CAUTION 	2	Do not modify the product. **Alterations of the product will void the warranty.**
CAUTION 	3	In case of disposal of Coolant Saver, thoroughly remove residual oil from Coolant Saver and dispose according to local regulations as industrial waste.
CAUTION 	4	Contact your distributor if chemicals other than mineral oil, animal oil or vegetable oil are collected. Regardless of oil layer and water layer, do not use Coolant Saver for applications of solvent, organic acid, strong acid and strong alkali. Never operate Coolant Saver in flammable liquids.

UNPACKING AND INSPECITON

Please examine the product before use.

(1) Check that the product specification matches your order.
(2) Check that the product has not been accidentally damaged during transport.

COMPONENTS AND STRUCTURE

Coolant Saver is a compact oil recovery device designed and developed to function effectively in high-temperature applications ranging between 55 ℃ and 85 ℃, and maximum liquid temperature of 90 ℃ (131 F ~ 185 F; max. 194 F). The unit consists of a pump integrated with a floating oil-collection skimmer.

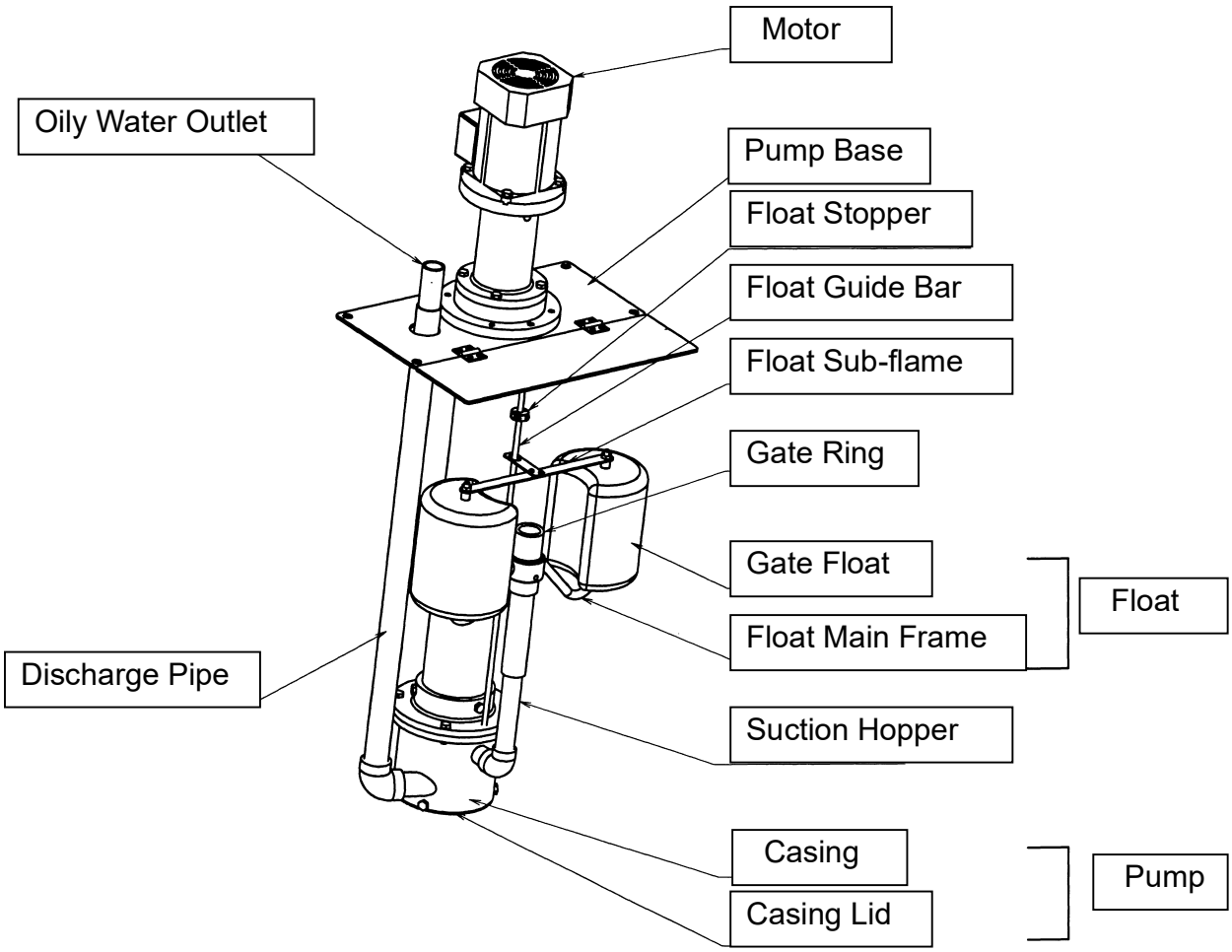
(1) As shown in the illustration, the main components of Coolant Saver are two gate floats, a gate ring, a suction hopper, a pump and a motor. As a countermeasure to heat, these components are mainly made of stainless steel or aluminum. (Some resin parts are used.)

(2) Two gate floats, connected to the gate ring with J-shaped float main frames, keep the gate ring at a constant depth in the water. The gate ring is kept in the horizontal position by a float guide bar and a float sub-frame.

(3) The gate ring is an inlet for oily water, with the top edge designed to take in the oily water easily. Turn the gate ring to adjust the height difference, which is the depth of oily water overflowing into the gate ring.

(4) The suction hopper is a guiding port that leads oily water flowing in from the gate ring to a flexible hose. When the water level fluctuates due to waves, the inner wall of the gate ring slides up and down along the outer edge of the suction hopper.

(5) The screw-shaped pump of the Coolant Saver causes less agitation of oil and water than do other types of pumps as it transfers oily water through multiple spiral impellers. With a clearance between the impellers and the casing, the pump is less likely to get clogged with sludge or other solid matters.



* The range of liquid fluctuation varies by Coolant Saver model.

Figure: Coolant Saver

INSTALLATION

(1) Install Coolant Saver in the tank where floating oil tends to concentrate and there is no current.
(2) Install the pump base in the tank horizontally, and tightly secure it with screws.
(3) Once the gate floats are on the water surface, push them gently by hand and check whether the gate ring slides smoothly along the outer edge of the suction hopper.
(4) Connect a flexible hose to the oily water outlet of Coolant Saver, and secure it with a hose band.

OPERATION

Always observe the safety instructions outlined below.

Warning

Do not operate in reverse The direction of motor rotation must be clockwise as viewed from the motor fan.
Prevent suction of solids Take appropriate measures to prevent solid matters from flowing into Coolant Saver.

[a] Turn off the main power supply of the pump except when making adjustments during operation.
[b] As Coolant Saver collects high-temperature oily water, allow it to cool down sufficiently before handling the unit at any time in order to prevent personal injuries.
[c] Ensure appropriate safety measures are taken, such as wearing rubber gloves or goggles, when hazardous liquid is collected.

(1) Preparation for Operation
   1) Make sure that the power specifications indicated on the nameplate of the motor match the AC power to be connected.

   2) Connect the AC power to the terminal box of the motor. Before connecting the AC power, always turn off the main power supply in order to prevent electric shock.

(2) Test Run
   1) Check that the gate ring is below the water level of the tank. If it is above the water level, adjust it in the manner described hereafter in (3) Adjustment.

   2) Keep free of objects such as lint, string and waste cloth that may reduce air flow into the motor fan, installed at the top of Coolant Saver.

3) Turn on the power switch and operate the motor for a moment to check the rotational direction of the motor. The correct rotation of the motor is clockwise as viewed form the motor fan. By way of caution, see also the arrow mark on the motor cover. If the rotational direction of the motor is wrong in the three-phase operation, open the terminal box of the motor and exchange two of the three wires.

(3) Adjustment

This section describes how to adjust the height difference in order to control the inflow of oily water.

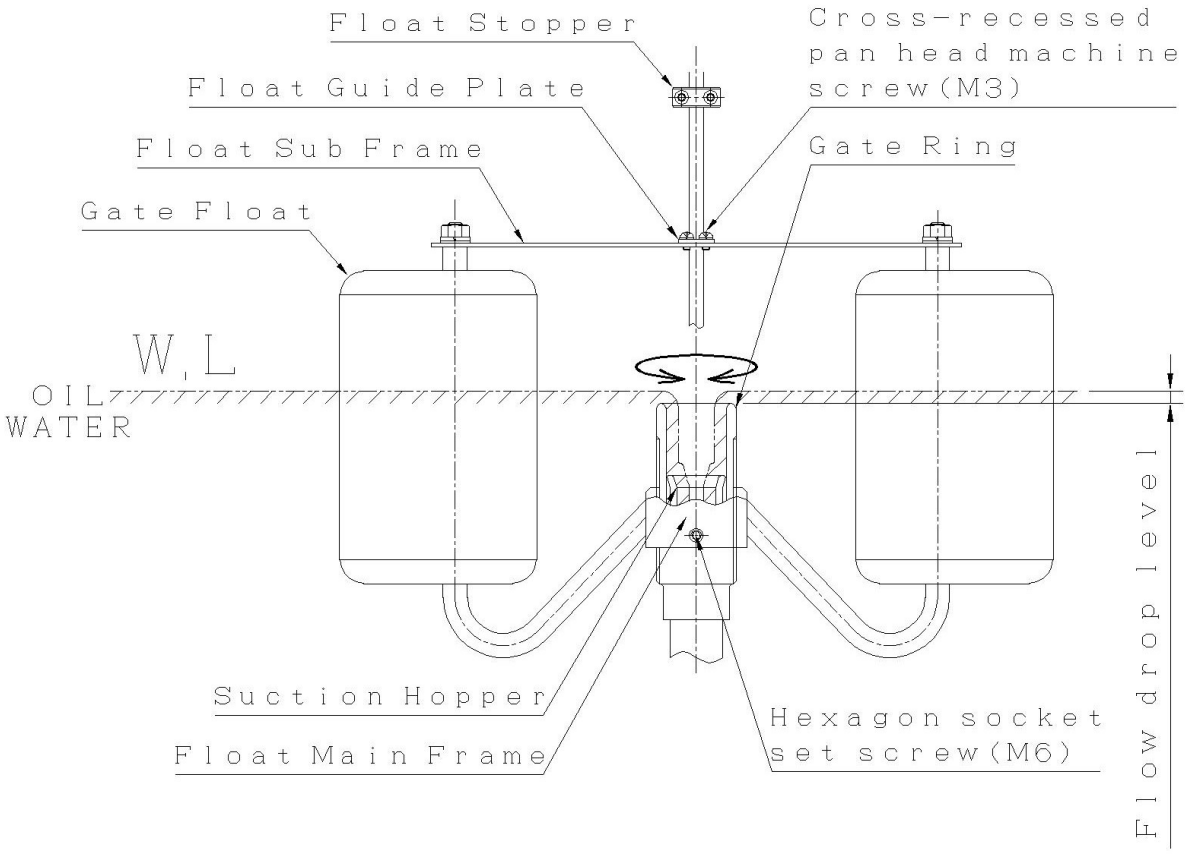
The gate ring is locked with a hexagon socket set screw (M6). Use a hexagon wrench (3mm) to loosen the set screw.

Turning the gate ring clockwise as seen from above increases the flow drop level and increases the inflow of oil.

Turning it counterclockwise reduces the flow drop level and reduces the inflow of oil.

For general mineral oil, the suitable height difference is approximately 5 mm below the water surface. If the gate ring is positioned too deep, the oil recovery performance will decline because of excess water collected with the floating oil.

At an optimal height difference value, oily water flows from the gate ring to the suction hopper as a thin, continuous layer and the bottom of the suction hopper is airtight. Adjust the height difference of the gate ring to obtain the optimum flow rate of oily water.



MAINTENANCE, INSPECTION AND TROUBLESHOOTING

Large amounts of sludge and other solid matters collected with oily water will affect the performance of Coolant Saver. We recommend that maintenance be carried out periodically or as needed. Observe the following safety precautions when performing maintenance and inspection work.

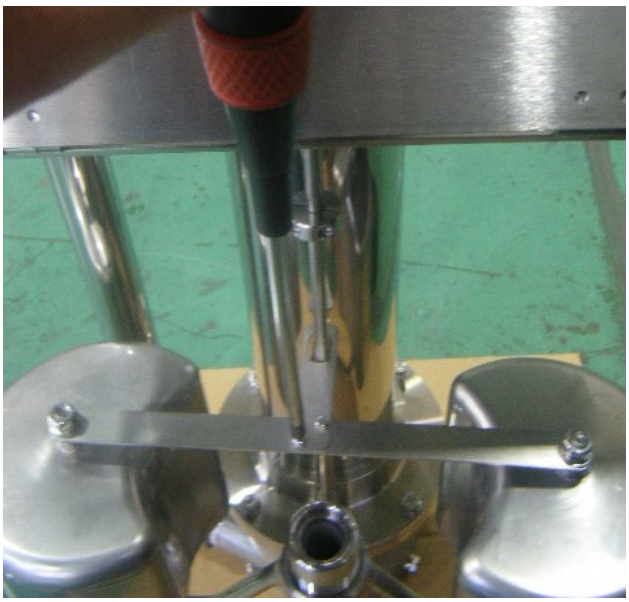
[a] Turn off the main power supply of the pump.
[b] Allow Coolant Saver to cool down sufficiently when performing maintenance and inspection work after operation.
[c] Ensure to follow safety precautions particularly when hazardous liquid is collected, such as wearing rubber gloves and goggles.

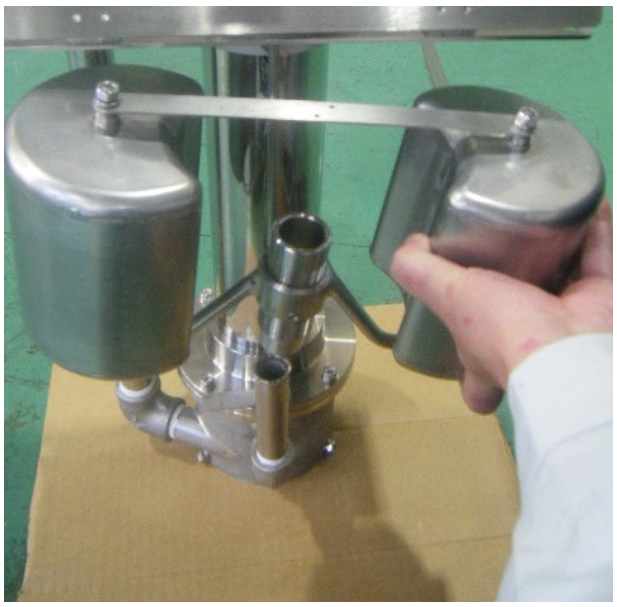
(1) Maintenance and Inspection

1) Remove the flexible hose from the oily water outlet of the pump, and detach the pump base from the tank.

2) Remove Coolant Saver from the tank, and drain the oily water into the tank. Gently place Coolant Saver on an absorbent sheet in an appropriate oil receiver.

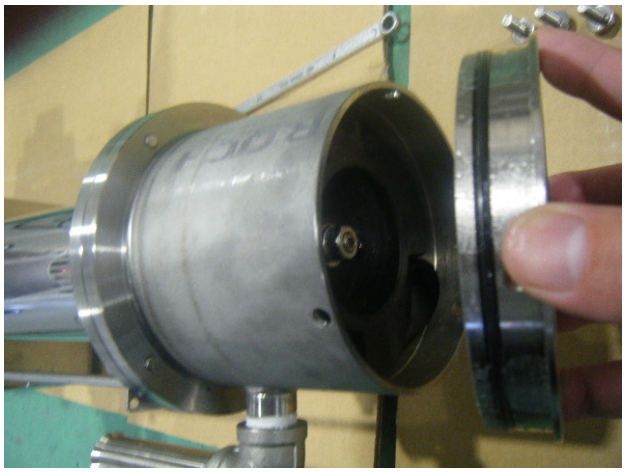
3) Use a Phillips screwdriver to remove the cross-recessed pan head screw (M3) from the float guide plate. When the float guide plate is removed, the gate float can be lifted up and removed from the main unit.



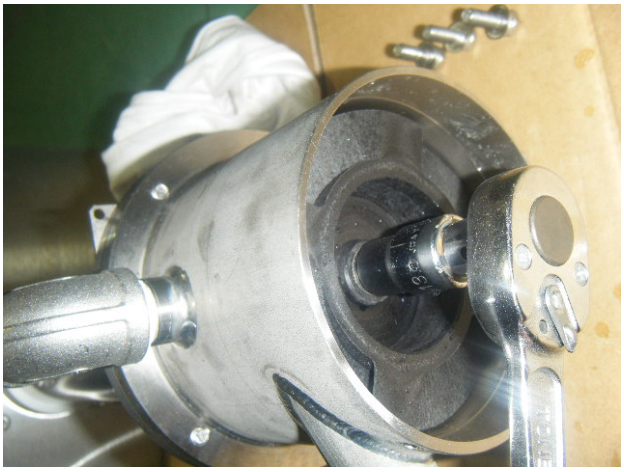


4) Wash the gate float and gate ring with water, and wipe off the dirt with a waste cloth.
In particular, the upper part of the gate ring is the part where oil and water flows in, so remove dirt and dirt to make it easier to slide in the oil and water.
Also, the inner wall of the gate ring is a sliding surface with the suction hopper, so remove dust and dirt sufficiently and move it up and down smoothly.
Wash the suction hopper, casing, and connecting pipe with water, and remove dust and dirt with a waste cloth.


5) When checking the inside of the pump, remove the hexagon bolt (M6) with a cross hole at the bottom of the casing, and then pull out the casing lid to remove it.

6) The impeller in the casing can be removed by removing the central hexagon nut (M8) and then turning the impeller counterclockwise.
When turning the nut and impeller, insert a hexagon wrench (2.5mm) from the hole in the motor bracket so that the shaft does not rotate, attach it to the set screw (M5) of the coupling, and turn the shaft.
Thoroughly clean the inside of the casing, the impeller, and the casing cover plate, and remove accumulated or adhered sludge and solid foreign matters.
Inspect pump parts such as casings and impellers to make sure they are not deformed, worn, cracked or damaged.



7) Inject clean water from the oil water outlet to clean the inside of the discharge pipe.

8) When inspection, cleaning, and parts replacement are complete, assemble in reverse order of disassembly.

9) Check the bolts and nuts on each part, and if they are loose, retighten them.

10) Check the inside of the flexible hose. If sludge, dust or solid foreign matter is accumulated, remove the hose and remove it cleanly.

11) Twist the flexible hose and attach it to the oil outlet of the pump, and fix it firmly with a hose band.

12) Attach the gate float and gate ring to the main unit correctly, and rotate and fix the float guide bar.

13) Return the washing machine saver to the water tank and fix the pump base.

(2) Inspection Interval

1) Inspect Coolant Saver at least once a month, even when it runs normally. When floating oil contains a large amount of sludge, dirt and solids, inspect Coolant Saver at appropriate intervals according to the inflow. Before daily start-up, check the inside of the flexible hose, the vicinity of the gate ring, and the surface of oily water in the tank for accumulated or floating sludge and solids.

2) If Coolant Saver makes an abnormal noise or exhibits poor suction performance, stop operation immediately. Check the inside of Coolant Saver, replace defective parts, or take other corrective action.
Overhaul Coolant Saver at least once a year, even when it runs normally. Check parts for wear, corrosion and deformation, and replace worn parts as needed.

(3) Troubleshooting

Symptom		Possible Cause	Corrective Action
Poor Suction	**Poor Suction**	Poor adjustment of gate ring	Turn the gate ring to adjust the flow rate of oily water.
		Air suction	
		Operation below the lower liquid level	Check the working liquid level and adjust it to an appropriate liquid level range.
		Operation above the upper limit of the liquid level	
	Flow rate drop	Parts wear	Check the pump and replace parts if necessary.
		Blockage by foreign matter	Check and clean the inside of the pump and the flexible hose.
		Lack of head	Review the total head to an appropriate range.
Noise	**Pump Noise**	Blockage by foreign matter	Check and clean the inside of the pump and the flexible hose to remove foreign matter.
	Motor Noise	Over load	Check the oil and water flow path including the entire pump and flexible hose.
		Improper power source	Check the power supply voltage and power cord connection.

WARRANTY / REPAIR

1. 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 gasket 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 and abrasion by the slurry 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.

Installation record

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

Ver.20240819

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