SAVE OUR EARTH
NEO CLEAN SYSTEM

COOLANT FLOATING OIL PORTABLE COLLECTING SYSTEM

“COOLANT SAVER PORTABLE”

YD-200FS-16CSP

Instruction Manual
Version: 230425

World Chemical Co.,Ltd.

“COOLANT SAVER PORTABLE”
YD-200FS-16CSP Instruction Manual

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Caution	**This instruction manual is intended for standard specification systems. For special specification systems, replace the corresponding items or phrases in the text accordingly.**

Safety Precautions

This document classifies safety precautions into "Danger" and "Caution" as follows.

Danger Wrong handling may result in a dangerous state which may cause a death or severe injury.

Caution Wrong handling may result in a dangerous state which may cause a medium or light injury or property damage.

Any item described as Caution ⚠ Caution may result in a serious result depending on the situation. Both of the above describe important information that must be observed.

I. Cautions on transportation and installation

Danger (1) When transporting **"Coolant Saver Portable,"** be careful not to spill liquid out of the separation tank. After use it, it becomes slippery due to accumulated oil, so take extra care of a fall or slip.

Danger (2) Wrong handling of the system or accessories may **cause a serious accident.** For example, it is excessive air, use of inappropriate fluid or chemical or whatever.

⚠ Caution (3) When unpacking the wooden crate, be careful **not to get injured by nails or chips of wood.**

⚠ Caution (4) **Install the mount horizontally on a stable place,** and take measures to prevent unexpected movement during operation.

⚠ Caution (5) Use compressed air supplied from the air compressor to operate the pump. Do not use other type of compressed air (refer to the pump operation manual).

II. Cautions on preparation and operation

Danger (1) **When using the product with high-temperature liquid, the flow path temperature of the collected liquid such as the collection skimmer, pump, separation tank and hose will rise close to the liquid temperature. Handle it carefully to avoid burns.**
The maximum temperature of collected liquid shall **be 50C° or less.**

⚠ Caution (2) **Stop the operation** of the product **at time of emergency such as an earthquake or fire.**

⚠ Caution (3) If **any abnormality occurs**, **stop the operation** immediately and take **appropriate measures**.

Danger **(4) Do not use it in a place where a flammable gas enters in, because fire or explosion may happen.**

Danger (5) If you touch a rotating part (shaft or power transmission) **during operation**, you may get injured. **Keep your hands and fingers away from it.**

III. Cautions on maintenance inspection

⚠ Caution (1) **For repair of "Coolant Saver Portable,"** contact your supplier or us. Also, clean the main body thoroughly, check for no accumulation of collected liquid or no leakage before returning, wrap it with a plastic bag. Then, pack it in a wooden crate or corrugated box, and send it back to us.

IV. Other cautions

⚠ Caution (1) **Do not use "Coolant Saver Portable" with any specifications other than specified. Any use outside the specifications shall not be covered by the warranty of us.**

⚠ Caution (2) **Any modification of the product by customer shall not be covered by the warranty.** Do not modify it.

⚠ Caution (3) **When disposing of "Coolant Saver Portable,"** remove accumulated oil, and **dispose of it as industrial waste.**

⚠ Caution (4) **When collecting chemical substances** other than oil (mineral oil and oil extracted from animals and plants) with **"Coolant Saver Portable,"** confer with your supplier or us.
The product **cannot be used for collecting of solvents, organic acids, strong acids, or strong alkaline solutions** regardless of oil layer or water layer unless it is a special specification system. **Do not use it for flammable fluid.**
(Do not use it for any operation rather than collecting of floating oil.)

1. Preface

Thank you for purchasing our Coolant Floating Oil Portable Collecting System “COOLANT SAVER PORTABLE”.
It is the floating oil collecting and separating system which is installed with tanks flowed waste oil or water in from factories or drainage tanks.
Before using, read this manual to understand the capability or features thoroughly. Keep the manual in at hand for reference as appropriate.

2. Configuration and Structure

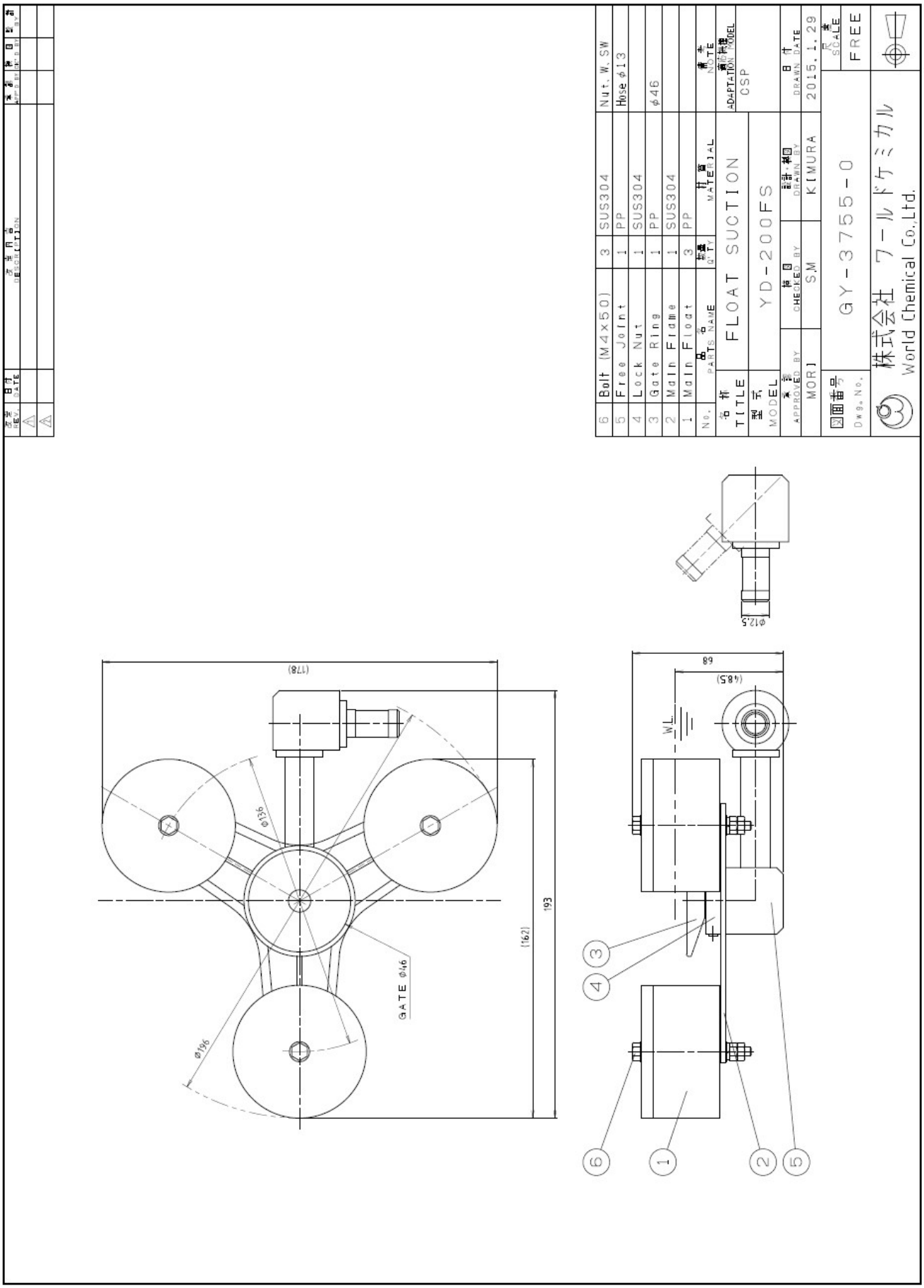
“COOLANT SAVER PORTABLE” is mainly consists of a collecting skimmer, a strainer unit, a collecting pump and a separator as shown on an outline drawing “YD-200FS-16CSP”. The weight depends on the specification, but the standard one is around 30kg in the dry state.

(1) Collecting skimmer
It consists of three main floats, a main frame, a gate ring and a free joint to collect floating oil with floating main body in a tank.
It is possible to collect the right amount of oil by adjusting the flow rate to rotate the gate ring up and down

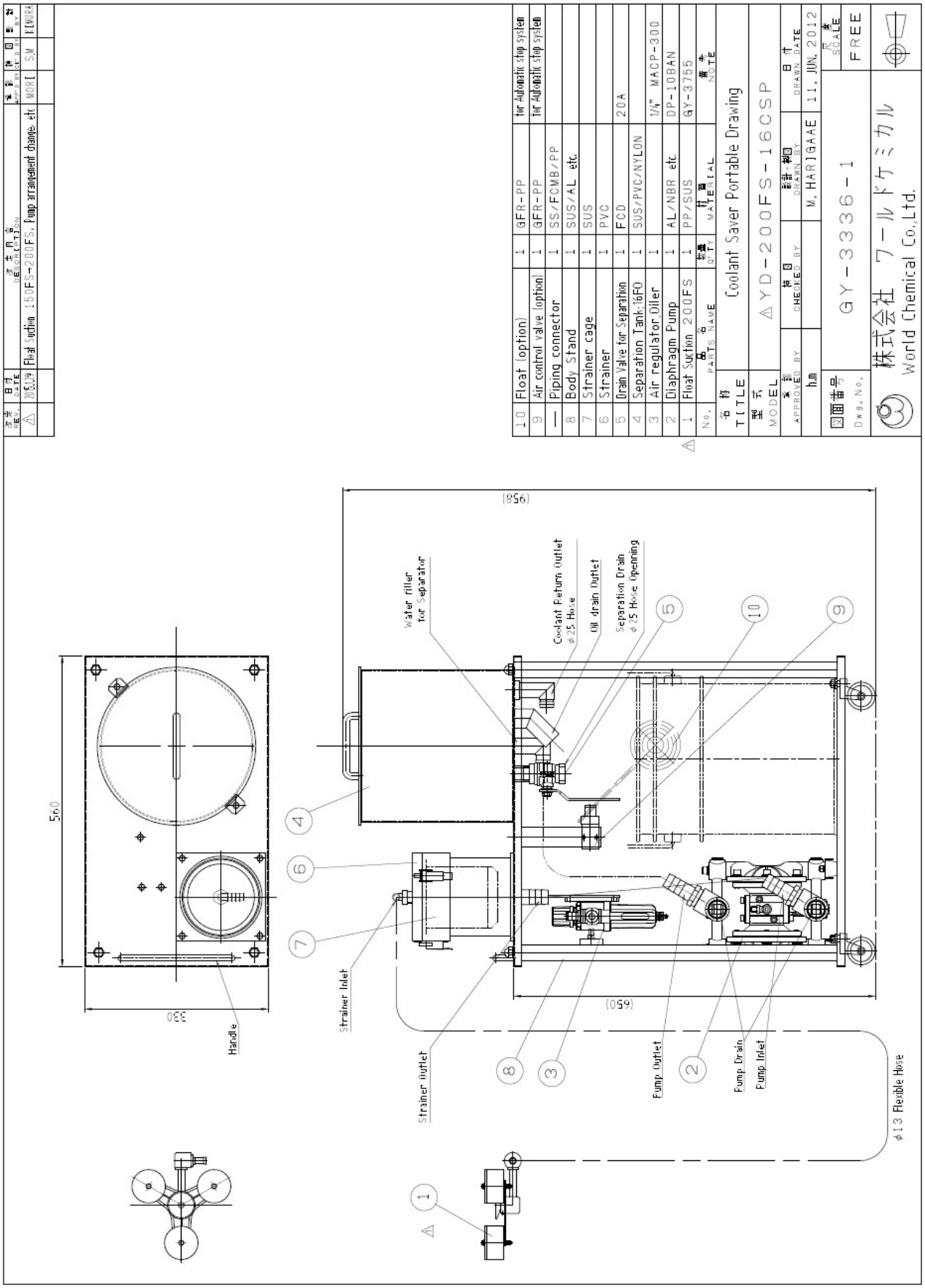
(2) Strainer unit
The strainer unit is installed between the collecting skimmer and the pump (Diaphragm pump) and it separates and collects objects (sludge) in the collected oil with the inner basket. This reduces problems such as the pump damage for objects entering into the pump or deposition in a separator.
The unit is made of PVC（Vinyl chloride）and the inner basket is made of stainless.
The basket mesh is approx. 1 mm and the volume is up to 1200 cc.

(3) Collecting pump
Air-driven diaphragm pump is used for the collecting pump.
It is possible to adjust the flow of the pump for smooth collecting by adjusting air supplied from a regulator.

(4) Separator
The separator adopts the mandatory oil drain system of difference in specific gravity and the volume is approx. 16 L.
Transferred oily water from the collecting skimmer through the strainer unit by the collecting pump enters into the separator, is separated from floating oil and is drained from the drain oil outlet.
On the other hand, drainage water is drained from the drain outlet at the bottom of the separator. Usually, a flexible hose is used for the drain hose and it makes the drainage water go back to an oil collecting pit.
It is possible to adjust the liquid level in the separator by the drain cap up-and-down.
The ball valve for drain is installed at the bottom of the separator.



Collecting skimmer YD-200FS Outline dimension



COOLANT FLOATING OIL PORTABLE COLLECTING SYSTEM
“COOLANT SAVER PORTABLE” YD-200FS-16CSP Outline dimension

3. Installation

(1) **When moving the product, beware of overflow from the separator by vibrations.**
It is possible to curb it by moving it after drain liquid from a drain valve and reducing the liquid level in the separator.

(2) The product separates the collected oily water from the oil collecting pit into oil and water in the separator and drains it by natural drop. For this reason, the drain outlet of the separator should be mounted higher than the liquid level of the pit.

(3) **The mounting should be installed on the firm and flat place.**
If it is inclined, the oil drain function may works properly.

(4) **Fix the mount by using a stopper of casters or a wheel stopper.**
If the product is installed without fixing, it may become unstable by vibrations. It also may cause unexpected accident. Make sure the safety position and operate the product.

(5) Attach a suction hose from the collecting skimmer with the suction inlet of the strainer unit and fix it with a hose band firmly.
If the hose is attached improperly, air enters from the connections and it cause suction failure.
Do not twist or squeeze the hose.

(6) Connect a drain hose with the drain outlet of the separator and fix it with a hose band firmly.
When returning the separated water to oil collecting pit, install the tip of the hose at the nearly same height of the liquid level as far away from the collecting skimmer as possible.
If installing the drain hose near the collecting skimmer, it may disturb the floating oil layer by the momentum of the drain and the oil collecting efficiency may be reduced. Additionally, if it is drained from the higher position from the liquid level, it enhances emulsification of floating oil. However, if the tip of the drain hose is submerged, the drain becomes less efficient and do not submerge it.
On the other hand, when move the separated water to the other tank, install the drain outlet of the tank lower than the drain outlet of the separator.
In any case, the drain hose should be descended to drain smoothly.

(7) The oil drain tank should be put under the mount of the separator. There is the space for the 20 L pale can. (The pale can is option.）

(8) If the suction hose, which connects the collecting skimmer and the main product, is caught or twisted, the movement of the skimmer may be blocked or inclined and it may work improperly. Check whether the collecting skimmer does not incline.

4. Preparation for operation

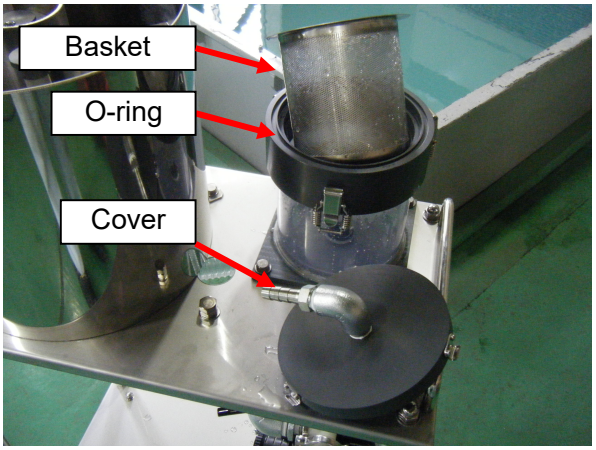
(1) Check that there are not any damages such as holes or cracks on each flexible hose.

(2) Check that each flexible hose is fixed firmly and the connection is correct. (Hose check)

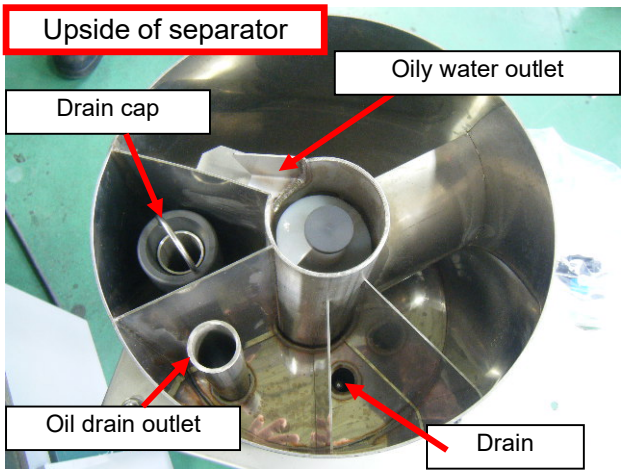
(3) Let the collecting skimmer in a tank with floating oil.
Install the skimmer and hoses at the position which does not make them incline.
Check that the collecting skimmer is floating and the gate ring is submerged. If the gate ring is not submerged, rotate it clockwise and make the position of the gate ring low. On the other hand, when rotate it anticlockwise, the position of the gate ring becomes up.

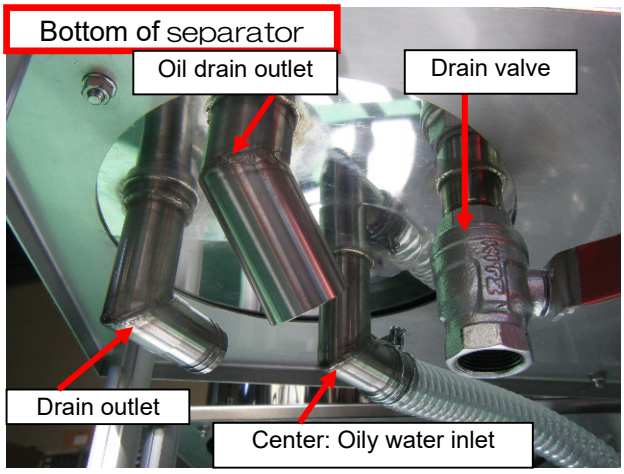
(4) Open the cover of the strainer unit and pour priming water.
* Even if there is no priming water, it may be possible to be self-priming. However, pour priming water for smooth self-priming at the start of operation.

Check that O-ring is installed in the strainer unit and the cover is closed firmly.
Additionally, if there are foreign objects, remove them.

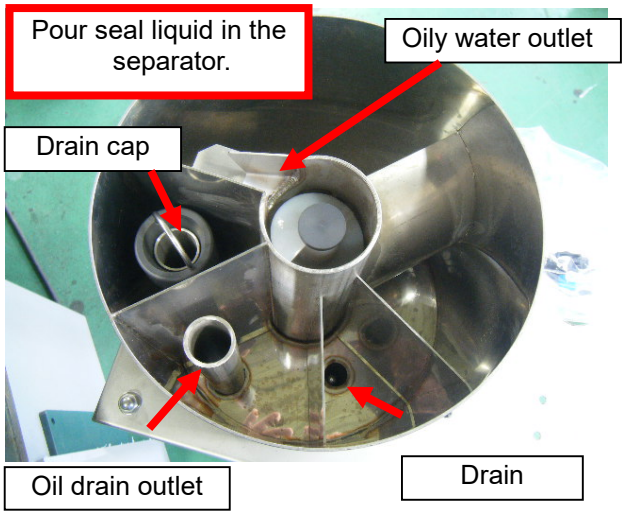


(5) Check that the drain valve of the separator is closed.
Adjust liquid level in the separator up-and-down by rotating of the drain cap for liquid level adjustment of the separator. It should be 3-5 mm lower than the tip of the oil drain outlet.
When rotating the drain cap clockwise, it becomes low and the liquid level becomes low.
When rotating it anticlockwise, it becomes up and the liquid level becomes up.
* If the drain cap is higher than the tip of the oil drain outlet, water is drained away from the oil drain outlet.



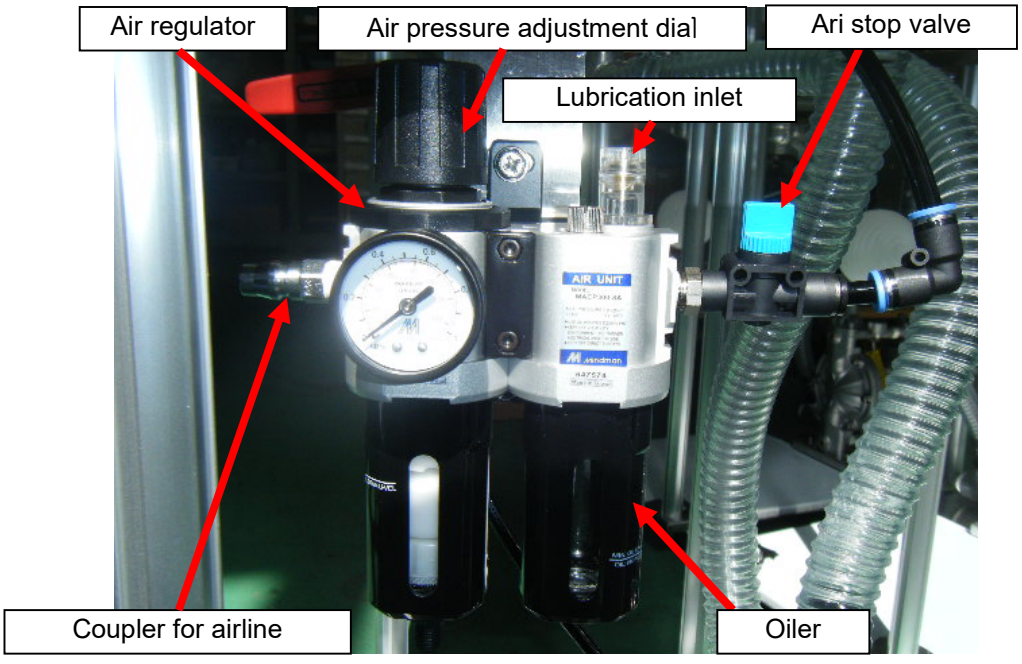


(6) Open the cover of the separator and pour seal water (Tap water) until overflow from the drain cap.
At that time, if the drain cap is higher than the oil drain outlet slop, tap water is overflow from the oil drain outlet not the drain cap.
* Even if the separator is empty, it is possible to
pump liquid up, but it is necessary to secure seal liquid to separate oily water properly.



(7) Lubricate to the oiler of the air regulator.
Use “Lubrication : Turbine oil worth of ISO VG32”. Pour oil more than the minimum level of the oiler gauge.

(8) Check that the air stop valve is closed and connect the supplied airline to the coupler of the air regulator.
If the valve is opened when connecting, the pump starts at same time as connecting.
Rotate the dial of the air regulator and adjust the air pressure of the air regulator lower than 0.1MPa.
When pulling the dial up, it is possible to adjust and when pushing it, it is locked.
When rotating the dial clockwise, the air pressure becomes high. On the other hand, when rotating it anticlockwise, the air pressure becomes low.
Meanwhile, use it with the air pressure lower than 0.4MPa.
If the air pressure is high, the pump may have too much work and it may cause the pump damage or accident.
Basically, the pump operation should be by the air stop valve.



5. Operation and Adjustment

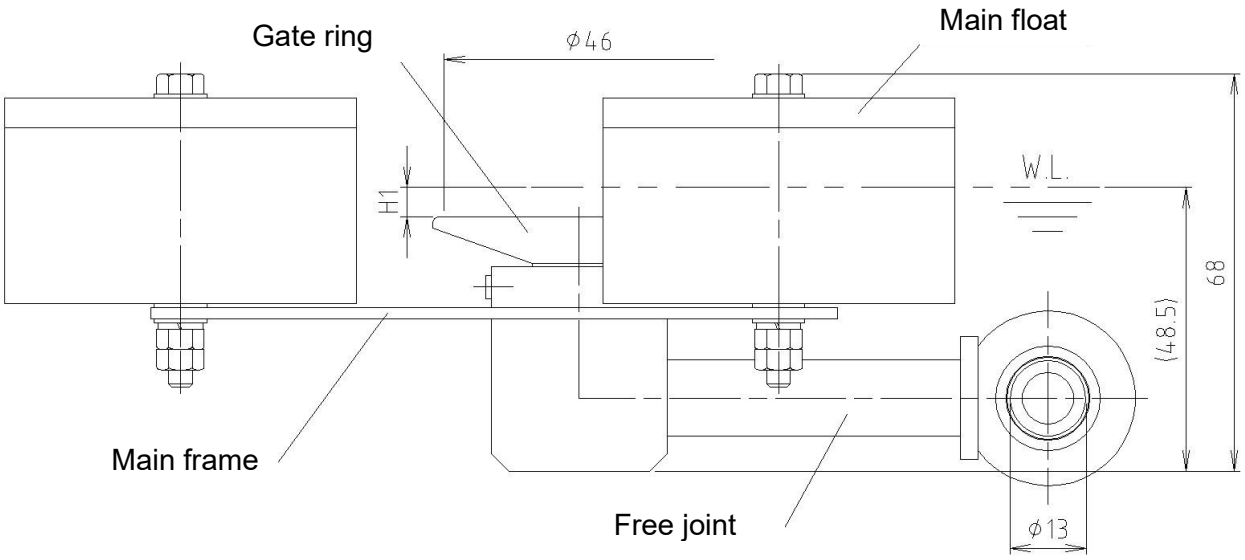
When adjustment, comply the following precautions.

Caution

When collecting oily water, the collecting simmer, pump, separator and hose become hot nearly the temperature of liquid. After the operation, leave them until the each parts temperature becomes enough low.
When adjusting during the operation, beware not burn.
Additionally, when collecting the hazardous liquid, take safety measures such as wearing rubber gloves and proactive glasses.

The product is conducted necessary tests in our factory. However, if the oil drain method is set according to customer's wishes, adjust it by the following procedures depending collected oil.

(1) Handing procedure of the collecting skimmer



① Fix the suction hose to the hose joint (The tip of the free joint: φ13) at the bottom of the main body. Then, make it float in a tank with floating oil.

② The free joint, which is connected with the hose, can revolve freely. Install the hose and the collecting skimmer at the position which has no effect by the tilt of the float by the connecting hose.

③ Check that the gate ring is submerged.

④ **Adjust the flow drop (the above picture H1) up-and-down and let oily water flow in.**
When the fluid in a tank is pure water, oily layer is thick, floating oil is high viscosity or the specific gravity is small, the float buoyancy or flow speed of oily water is changed and H1 may change. At that time, adjust it properly.

⑤ When adjusting H1, hold the main float by hands, rotate the gate ring and make it move up-and-down. When rotating the gate ring clockwise, it moves to down and when rotating it anticlockwise, it moves to up.

⑥ Adjust H1 balanced on the nature of floating oil (S.G., Viscosity, etc.), thickness or the pump flow rate.
Refer the following list regarding the balance between flow drop (H1) and flow rate to the gate ring. Nonetheless, the list is the figure base on the theoretic calculation and does not ensure the actual collected amount. The collecting amount depends on the nature of floating oil, liquid quality, with or without floating solid material or surrounding environment.

H 1 (Flow drop) mm	Flow amount to the gate cap (L/min)
5	5
6	6
7	7

⑦ If letting H1 become extremely deeper than the thickness of oil layer, low-level liquid flows in much more than floating oil. When it exceeds ability of the pump suction force, the gate ring becomes submerged and floating oil flows from the inlet and it is impossible to collect oil smoothly.
Additionally, if letting H1 become much lower to collect surface floating oil because the oily layer is thin, oil adheres to the tip of the gate ring and the viscosity makes the flow amount reduce extremely.

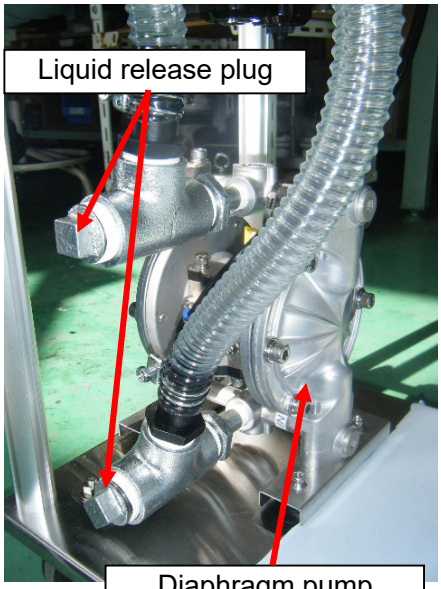
⑧ When the collected oil is normal mineral oil, the best flow drop H1 of the gate ring is about 4 – 7 mm.

⑨ For smooth operation, take the product out from the tank according to the status of dirt and clean it and do maintenance such as re-tightening nut and etc.

⑩ The surface of the float is starting to get dirt, it is easy for solid material such as sludge to adhere to it. When the fouling growing makes the float following capability bad or the float sink.

⑪ Beware dirt of the gate ring and the free joint.
If the free joint gets dirt or clogged with foreign objects, it is impossible to move smoothly, because it moves with the movement of the hose float.

(2) Handing procedure of the collecting pump.



Regarding the collecting pump, supplied air should be adjusted by the regulator for the smooth collection.
It is up to the amount of supplied air, but usually adjust the pump with the air pressure 0.1 – 0.4 MPa.
Follow the pump manual about the handling such as supplier air for the pump drive, specification, caution at the operation.
The capacity of the collecting pump depends on the collected oily water rate, the nature of floating oil, the stroke count (supplied air amount, pressure, etc.) and total head. For this reason, adjust it to correspond with the ability of the separator at the time of the test run or adjustment.
If the pump is operated beyond the ability of the separator, it may cause separation fault or pour drainage.
If increasing the collecting amount, the separating ability decreases. Therefore, when the separating ability is enough, adjust the pump capacity and the gate ring of the collecting skimmer, and decrease the collecting amount.
The diaphragm pump has a liquid release plug. When releasing liquid, remove the plug with a monkey wrench.
After releasing liquid, it should put seal tape on the screw not to mix air in.

(3) Handling procedure of the separator.

The parts necessary to adjust for setting of the oil drain is only the height of the drain cap.
Firstly, leave the product work and collect oil as usual, then adjust the drain cap carefully.
It is possible to adjust the liquid level in the separator by rotating the drain cap.

If fluid mixed with drain oil decreases for the low viscosity of collected oil, rotate the drain cap clockwise, push it down and become the liquid level of the separator low.

If it is fine for a small amount of fluid to mix with drain oil, rotate the drain cap anticlockwise, pull it up and become the liquid level of the separator up.

When fluid mixed with drain oil decreases while sludge is mixed with the collected oil, rotate the drain cap clockwise, push it down and become the liquid level of the separator low.

The ability of the separator is 4 – 8 L/min. Adjust the collecting skimmer and the pump according to the ability.

The surface rises with the increase in the amount of the collected floating oil because the specific gravity is light and the oil is drained. If the discharge of the oil is at a stop, pull the drain cap up and become the liquid level in the separator up. It makes the collected oil drain.

(4) Handling procedure of the auto stop device (Option).

The auto stop device (Option) is which the air control valve is closed, air is stopped and the operation is stopped by raising a float ball, when the collected floating oil stays in the collecting tank (Pail) in the low part of the product under the unattended operation and increases until some liquid level.

① Set the float ball in a tank.

② When the collected oil is filled up, the float ball floats up, the air control valve associated with the float ball makes air stop and the operation stops.

③ Close the air stop valve and make the pump not to work in working state.
* If the float works unexpectedly because the air stop valve is not closed, the pump starts to work. Make sure to close the air stop valve.

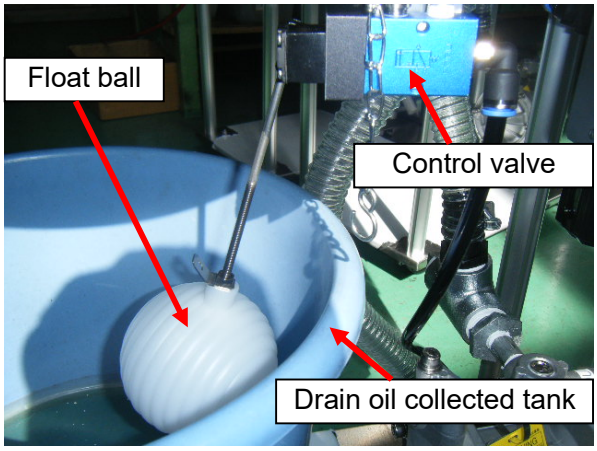
④ Secure the float ball on the upper side by using a hook chain.

⑤ Withdraw the pail and collect the collected oil.

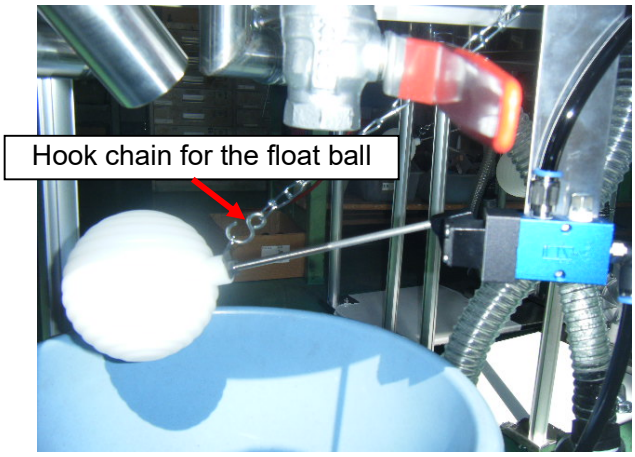
⑥ Get the pail back, remove the hook of the float ball and set the pail back in order.
* The pump does not work in the state of the float ball up.

⑦ Open the air stop valve and start the operation.

At the start of the operation



At the stop of the operation



6. Maintenance

Large amount of sludge or solid materials mixed with the collected oil pose a problem for the performance. Do maintenance periodically or when needed.
When maintenance, follow the following precautions.

Caution

Stop air to the pump.
When collecting oily water, the collecting simmer, pump, separator and hose become hot nearly the temperature of liquid. After the operation, leave them until the each parts temperature becomes enough low.
When collecting the hazardous liquid, take safety measures such as wearing rubber gloves and proactive glasses.

When disassembling and checking the pump, follow the instruction manual.

(1) The collecting skimmer

① Remove the suction hose from the collecting skimmer and clean the inside of the hose.

② Clean the free joint of the collecting skimmer and check that the joint parts can move freely.

(2) The strainer

① Open the cover and clean the strainer.

② Check that there is not any crack on the strainer.

(3) The collecting pump

① Remove the suction hose with the collecting skimmer from the filling port.

② If the abnormal noise, liquid leak or performance degradation happens during the operation, check the pump.
If the abnormal is found, refer the next chapter “Troubleshooting” or contact us. Then take appropriate measures.
When needed, overhaul the pump, check or replace the parts.

③ The lifetime of the consumable parts are different according to conditions and they are not covered by warranty.

④ Even if the pump works properly, overhaul it more than once a year.
At the overhaul, check the abrasion, corrosion, scratch or deformation of the consumable parts and replace the damaged parts.

(4) The separator

① When withdrawing the liquid, put the pail for drain receiver in the low parts of the separator and drain the waste liquid by opening the drain valve.

② Check the inside of the separator and wash it by tap water, when sludge, dirt or scum is adhered on the inside wall of the separator.

③ Check that there is not any corrosion nor object on the wall after cleaning. If they are, remove them.

④ Close the drain valve of the main body after draining the inside of the separator, pour seal water gradually and check that there is any liquid leak at the drain parts or the connections of the hoses.

⑤ The period of maintenance of the separator depends on the nature change of floating oil or the amount of sludge or dirt flowed in. Even if the separator works properly, withdraw the liquid and check the inside once a month.
In the case of flowing sludge or dirt into the separator, drainage failure or oil drainage failure may occur for their accumulation. Withdraw or clean the inside when needed.

7. Troubleshooting

	Problem	Cause	Measures
Suction failure	Suction failure	Maladjustment of the collecting skimmer.	Move the suction inlet of the collecting skimmer up-and-down and re-adjust the flow amount of oily water.
		Reduction in the amount of the liquid pumping.	Check the pump and replace parts when needed.
		Strainer clogged for foreign objects.	Remove the cover of the strainer and clean it.
		Pump clogged for foreign objects.	Check the suction inlet, discharge outlet and the inside of the pump and clean them.
		Flexible hose clogged for foreign objects.	Check and clean the inside of the flexible hose.
		Air suction.	Check that air does not enter from the connection of the flexible hose, the cover of the strainer is sealed and there is not any abnormal with gasket.
Noise	Abnormal noise of the pump	Foreign objects enter into the casing.	Disassemble the pump and remove foreign objects.
Separa-tion failure	Oil in drain.	Maladjustment of the pump capacity.	Adjust the pump capacity accordance with the capacity of the separator (5-10 L/min).
	Water in the collected oil.	Emulsification of the collected oil.	It is very hard to separate emulsified oil completely.
		Adjustment failure of the drain cap.	Adjust the drain cap to be lower and become the water level low.

	Problem	Cause	Measures
Drain failure	Separated water is not drained smoothly.	Separator is installed at the lower position.	Re-install such that the drain outlet of the separator is higher than the oily water level in the oil collecting tank.
		Gradient failure of the drain hose.	Re-install such that the drain hose is gradient.
		The tip of the drain hose is submerged.	Install the tip of the drain hose upper than the oily water level in the oil collecting tank.
		The drain hose is clogged.	Check and clean around the drain outlet and the inside of the drain hose.
		Sludge is accumulated at the bottom of the separator.	Remove the drain of the separator and clean the inside.
Oil drain failure	Oil is not drained smoothly.	Oil drain outlet is clogged.	Remove oil and solid material adhered around the oil drain outlet, and clean it.

8. Warranty / Repair

1. period and coverage

The warranty period is 12 months from dispatched from our factory.
However, the warranty of the submersible pump is 3,000 working hours.

(1) submersible pump is 3,000 working hours.
(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:

World Chemical Co.,Ltd.

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