SDP Sludge Dewatering Screw Press
Installation, Operation and Maintenance Manual

GSD (China) Co., Ltd.

Preface

Thank you for using our Multi-disk screw press SDP series. Its multi-disk screw filter-pressing structure is both water & power saving and durable. As the precedent of low concentration sludge dewatering equipment, reducing the costs for design, construction, running and maintenance, multi-disk screw press is a new kind of sludge dewatering machine with high efficiency.

Please read the operation instruction & related documents carefully to maximum its superior performance before usage.

Contents

Safety Information

◆ Warnings & Marks in Operation instruction

According to security issue, matters which must be abided by are marked in WARNING and ATTENTION as precaution.

⚠ WARNING	May cause danger, serious injury or even death by faulty operation.
⚠ ATTENTION	May cause danger, bad personal injury or goods damage by faulty operation.

※ Matters marked in ATTENTION should cause serious injury or death, needs to be reconfirmed about details before usage.

◆ Safe Use

Please abide by the following instructions and warnings, it may cause equipment damage or performance weakening by misuse.

⚠ WARNING

- **Please do not use under explosive environment.**
  It may cause explosion, fire, electric shock, or equipment damage.
- **Professional staff are required during transportation, setting, connection, installation, operation, maintenance and inspection.**
  It may cause fire hazard by electric shock or equipment damage.
- **Cut down the power before wiring**
  It may cause electric shock.
- **Don't disassemble or transform the elements of the equipment.**
  It may cause electric shock or equipment damage.
- **Don't touch the equipment with wet hand.**
  It may cause electric shock.
- **Operations involved with WARNING & ATTENTION should be executed when power off.**

⚠ ATTENTION

- **Please operate within the scope of application and choose right chemicals and support equipment.**
  It may cause electric shock and equipment damage.
- **Please operate within the treatment capacity of the equipment. (Treatment capacity, water content etc.)**
  It may cause overload of equipments & unusual wear of wearing parts.
- **Please don't use for the dewatering of sludge with high chloride as seawater, sludge with salt.etc.**
  It may cause corrosion of stainless steel and equipment breakage, as per the specific high chloride content sludge dewatering (caused by inflow change or treatment method changes), please contact us or our agent.
- **Please do not use chemicals which its main ingredients are chloride (Fecl2, AlCl)**
  It may cause corrosion of stainless steel and equipment breakage by using chemicals of high chloride content, as per the specific high chloride content sludge dewatering (caused by inflow change or treatment method changes), please contact us or our agent.
- **Please do not put your hands or tools in the open end. It may cause personal injury or equipment damage.**
- **Equipment running is not allowed when the spray proof cover is open.**
  As the sludge or chemicals would spatter to the workers and cause injury when the spray proof cover is open, please make sure that safety appliance is worn during cleaning or adjustment when the cover is open.
- **Please do not use damaged equipments, may cause injury or fire accident.**
- **Do not take off the name board.**
- **We are not responsible for the maintenance of the equipments which are disassembled and reformed by customers.**
- **The normal rotating direction of the screw is counter-clock wise direction, please do not allow clock wise rotating without the guide of our technicians.** It may cause equipment damage.

◆ About Safety Mark

There are WARNING, DANGER & INDICATE Mark in special places, please make sure you well understand its meaning before use.

①WARNING　Electric shock

Do not touch electric wire or other electrical components when wiring or PLC operation in case of electric shock.

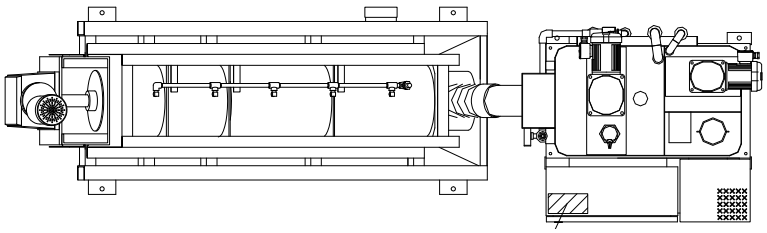
② DANGER　Roll-in injury

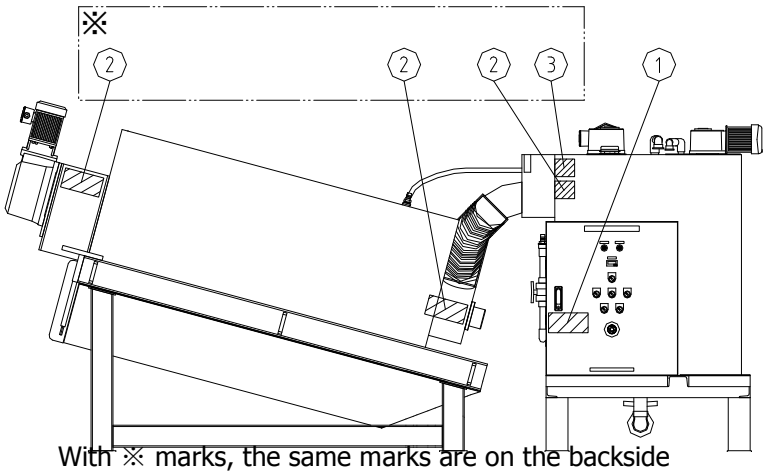
Please keep your hands or tools away from the hand wheel while the machine is running in case of serious injury or even death.

③ CAUTION　Wear protective glasses

Please wear protective glasses when operating with chemicals or when opening the chemical container.

＜Positions with safety marks（SDP-301）＞





With ※ marks, the same marks are on the backside

Matters to be confirmed for acceptance

Please confirm the following issues when receiving the machine

Please contact us if there are parts missing, damage or any question.

⚠ ATTENTION

- **Please check if the product complies with the order.**

  Product with inconsistent configuration may cause personnel injury or machine damage.

＜Items to be checked＞

① Check if the name on the nameplate complies with the machine in the order.

② It may cause breakage during transportation.

If there's breakage in the good when receiving from forwarder, take the picture of damaged part and contact us before acceptance.

※damages happened after acceptance by FOT terms is beyond our responsibility.

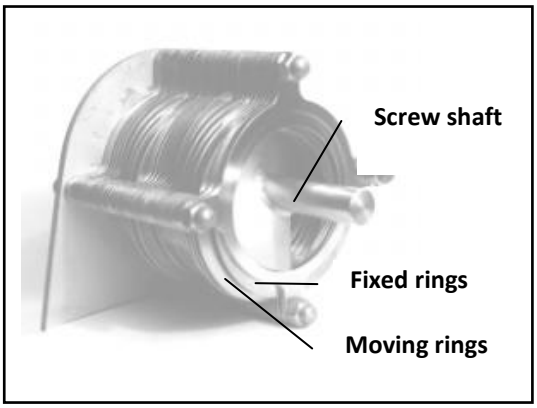
③ Please retighten the screws if they are loose during shipment.

④ Check if all the components are complete.

⑤ Check if there is T hex wrench in the side cover.

Product profile

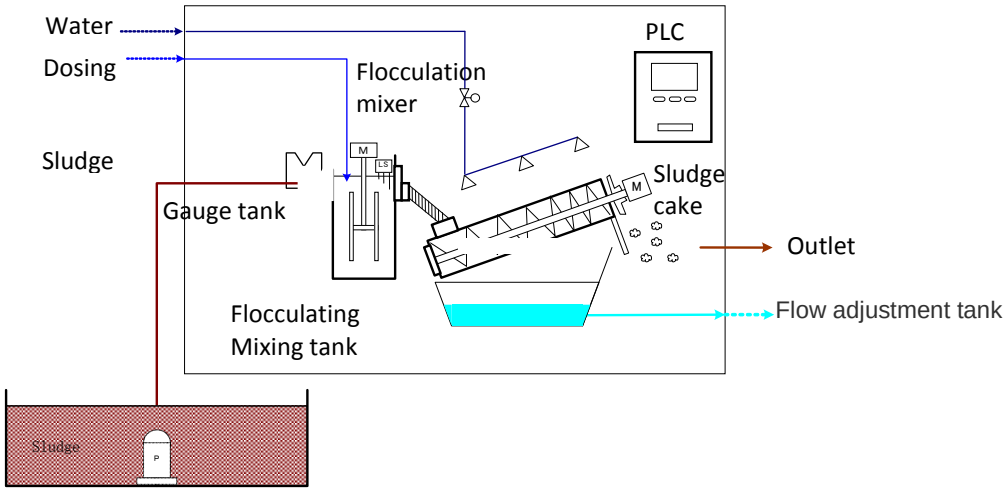
◆ Dewatering Machine Working Principles



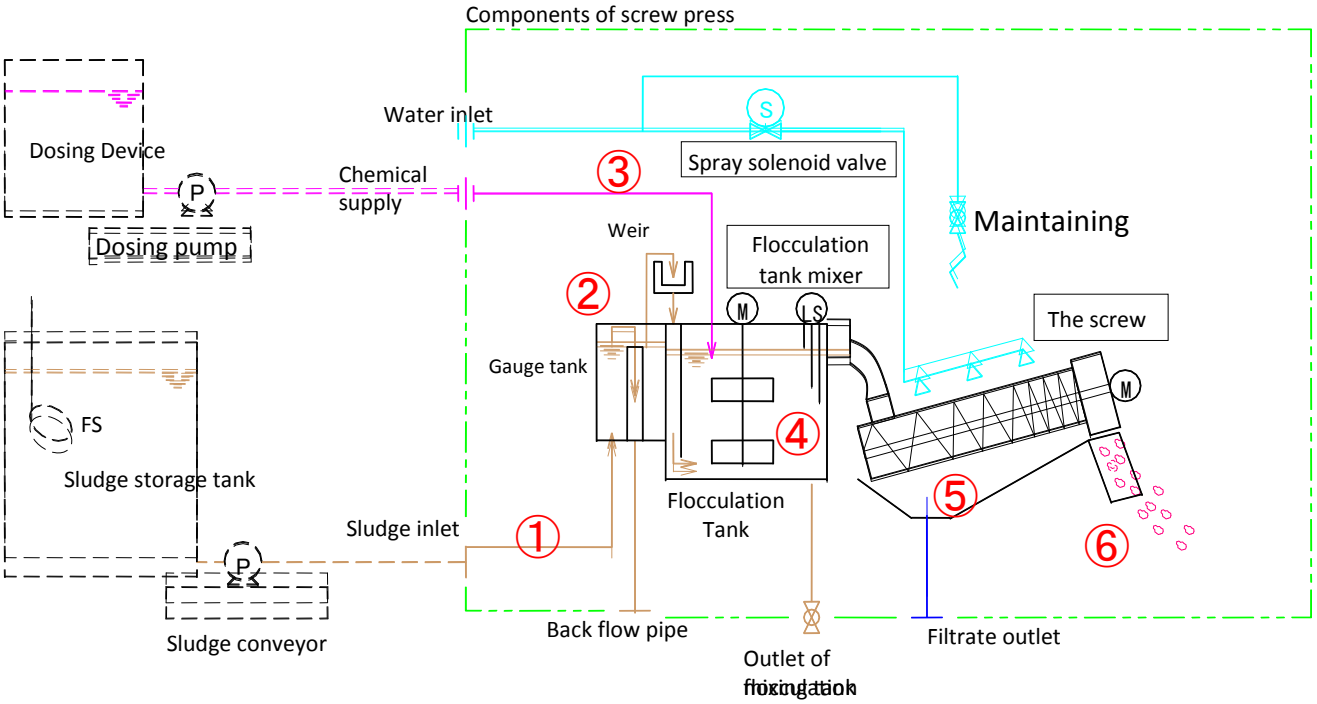
The gaps between the fixed rings and moving rings, and the pitch of the screw narrows down gradually from the concentration zone to dewatering zone, The thickened sludge was transferred to the dewatering zone, in this zone, the gaps between the rings and screw pitch gradually narrow, and the end plate blocks the flow, thereby, narrowing the volume and increasing the pressure encourage the dewatering process.

◆ Workflow of dewatering machine

1. The sludge is transported to the inlet by sludge conveyor.
2. The sludge are transported to the flocculation tank through metering tank, and adequately mixed by the mixer.
3. After big flocs are formed, the sewage is transported to the screw press.
4. Flocs moves from the concentration zone to the dewatering zone by gravity.
5. Gaps between moving rings and fixed rings narrows, and the pressure of the end plate increases dewatering and finally discharge the sludge cake.



◆ Workflow



① Sludge is transported from storage tank to the gauge tank by conveyor.

② Sludge of certain volume flow to the flocculation tank through the weir,overflow parts flow back through the liquid level adjustment pipe.

③ Sludge are mixed in the flocculation tank where the polymer coagulant is added, after stable flocs formed, the sludge are fed into the screw press.

④ Flocs move to the dewatering zone form concentration zone by gravity.

⑤ The gaps between the moving rings and fixed rings decrease, and the end plate further compresses sludge for dewatering.

Handling ・Settings

◆ Working Environment

⚠ ATTENTION

- Please use the equipment under certain working environment, or it may cause machine failure.

■ Working Environment

Temperature scope	-10℃ ～ +40℃ (frozen not allowed)
Humidity scope	Maximum 90%RH (condensation not allowed)
Height	altitude below 1000m
Power voltage	Three-phase 380V 50Hz/60Hz
Water pressure	0.1～0.2MPa

◆ Handling・Setting

⚠ WARNNING

- **Professional staff are required for handling, setting and moving the machine.**
- **Only the staff with operation qualification can operate the crane.**
- **Please use the nylon ropes to lift the crane as per the graph.**
- **Please do not use forklift to move the machine in case of fell off and damage.**
- **Please use the nylon rope that can bear the weight of machine.**
- **Lift the machine slowly, always keep its balance.**
- **People are not allowed to stand below the hanging machine in case of falling and injury.**
- **The machine should be fastened to the ground by expanded screw in case of fell off and damage.**
- **The foundation of the equipment should be fastened to the ground to avoid falling and damage.**

⚠ ATTENTION

- Strong vibration and fell off should be avoided during movement and setting, in case of breakage or damage.
- Keep the nylon ropes away from the stands, pipes or wiring of the spray pipe.
- When lifting the machine, do not tie nylon ropes on the screw
- When lifting the machine, please remove the side cover firstly.
- Please cover the cloth to protect the machine from scratch or deformation if the nylon ropes would touch the screw press or tanks.
- Anti-frozen measurement should be prepared firstly.
- Please ensure enough maintaining room during setting. Without given enough maintenance space, machine failure or personal damage may be caused.

◆ Tubing

⚠ ATTENTION

- Decline is not allowed in case of split of filtrate and stain the floor at the outlet of filtrate tubing.
- Anti-frozen measurement should be done to prevent damage.

◆ Power Supply Wiring

⚠ WARNING

- Please cut the power during wiring, in case of electric shock.
- Please close the cover after wiring in case of electric shock.
- Wiring and check should be done by professional staff in case of electric shock.
- Broken wire & heavy stuff should be moved away from the wire in case of electric shock and fire hazard.
- Please use the designated power in case of fire and breakdown of machine.
- Ground connection should be done to prevent electric shock.
- Specific terminal are required to prevent electric shock.
- Electrical insulating material should be used to prevent electric shock for wiring.

POWER SUPPLY

Phase	3
Voltage	380VAC
Frequency	50/60/60Hz
Power variation	±10%
Permissible weekly frequency change rate	±1%
Permissible voltage non-balance ratio	±2%

① Connect the power supply to the appointed terminal as per circuit diagram.

② Implement ground connection

③ Make clear the parts should be connected to the terminals.

④ The separate-placed flocculation tank should be connect with the screw and control panel

Terminal spec.	BNH30W	BNH40W	BNH50W
Wire spec.	5.5mm^2	8.0mm^2	14mm^2
Screw spec.	M4	M5	M5

◆ External Power Wiring

⚠ WARNING

- Please cut the power during wiring, in case of electric shock.
- Please close the cover after wiring in case of electric shock.
- Wiring and check should be done by professional staff in case of electric shock.
- Broken wire & heavy stuff should be moved away from the wire in case of electric shock and fire hazard.
- Please use the designated power in case of fire and breakdown of machine.
- Ground connection should be done to prevent electric shock.
- Specific terminal are required to prevent electric shock.
- Electrical insulating material should be used to prevent electric shock for wiring.

① The external devices including polymer coagulation dosing pump, $FeSO_4$ dosing pump, sludge conveyor should be connected to the terminals according to circuit diagram.

② Ground connection is required for external devices.

③ Make clear the components which should be connected to the terminals.

Terminal Type	BNH15MW	BNH30W	BNH40W
Wire size	2.0mm^2	5.5mm^2	8.0mm^2
Terminal screw spec.	M3	M4	M5

◆ Connect with external signal

⚠ WARNING

- Please cut the power between the control cabinet and external power supply, in case of electric shock.
- Please close the terminal cover after wiring after the wiring job finished in case of electric shock.
- Wiring and check should be done by professional staff in case of electric shock.
- Broken wire & heavy stuff should be moved away from the wire, clamp of the wire should be avoided in case of electric shock and fire hazard.
- The output of the external signal do not exceed the capacity in case of fire or electric shock.
- Please use the input signal non-voltage contact above input spec. in case of fire or electric shock.
- Specific terminal are required to prevent electric shock.
- Electrical insulating material should be used to prevent electric shock for wiring.

① The connection of external information should be done as per circuit diagram.
The wire & Screw Spec. of the terminal table as following

- wire : 1.25mm^2
- screw : M 3

② The output contact of external signal should be non voltage contact. The contact capacity of receiving signal end should be within the listed contact capacity.

- AC380V / 2A
- DC24V / 2A

③ The signal is input on the non-voltage terminal, please check the output capacity of terminals according to the input spec.

- power voltage / 6mA

◆ Transducer

Rotational speed of the screw is adjusted by the transducer.

⚠ WARNING

- **Please do not adjust the transducer when power of machine &control of cabinet is on, it may cause electric shock, need to operate very carefully.**
- **Do not operate with wet hands, it may cause electric shock.**
- **Insulating shoes and tools are required to wear before operation.**

Details please refer to the transducer direction.

The adjustment process of motor rotational speed

① Check current motor rotational speed.

The LED screen will display the set motor frequency when the motor is running.

Pictures on the screen change with the switch of function key / data switching key.

(output frequency・set frequency ・output current・output voltage・output power)

② Adjust motor rotational speed.

Pictures on the screen change with the switch of function key / data switching key.

Set rotational speed by upper and down key.

◆ Valves

⚠ ATTENTION

- Valves should restore to the original state after using, or it will cause electric shock because of leakage.

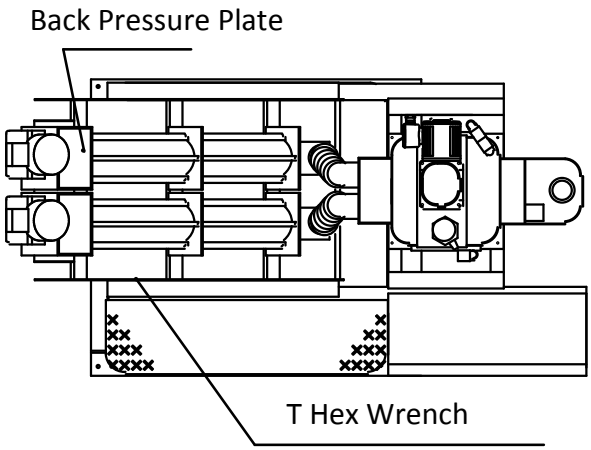
◆ End plate

The end plate is used for adjusting the inner pressure of the screw press.

⚠ WARNING

- **Please stop running the screw press when adjusting end plate.**

Tools and hands might be dragged by the screw if you adjust the machine when the screw shaft is rotating.

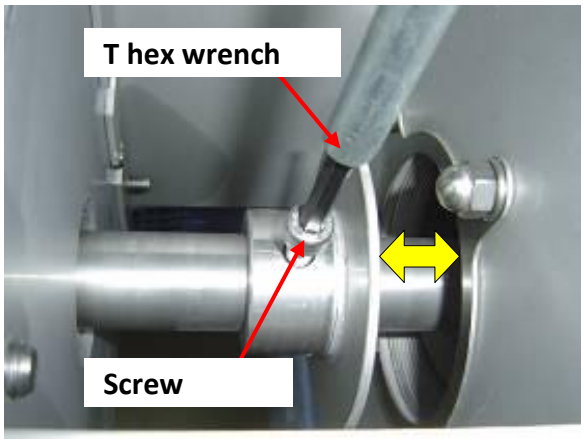


⚠ ATTENTION

- **If there's nothing abnormal during daily regular inspection, please do not adjust the end plate.**
- **Please do not set the space of end plate below 4mm.**

  The extreme big inner stress will cause overload and the wear down of moving rings, and screw shaft.
- Please do not over-screw up the screw sets, it may cause worn of screws.

The adjustment of end plate



① Please switch off the running switch and the screw is totally stop, then open the upper cover of discharge outlet.

② When the screw turns to the upper side and stops, unscrewing the screw.

③ Unscrew the screw with the matching T type hex wrench, adjusting the position of the end plate.

④ Fix the end plate with screws when the position is fixed

Running

◆ Check before running

Check inner tubing

① Check if the connector between inner tubes & external pipes is loose.

② Open the valve of water supply to check for leakage.

③ Check if valves are in the state below

name	state
ball valve in the flocculation tank	close

Check if there's foreign object in

Check if there's foreign object such as packing material in the gauge tank and flocculation tank.

Check the wiring of power supply

⚠ WARNING

- The check of power supply wiring should be done by professional technicians in case of electric shock.
- External terminals should be tightened up in case of fire disaster.

① Check if the main power and PLC power is cut off.

② Tighten the screw in the terminal of control cabinet.

③ Turn on the switch of main power.

④ Measure the terminal pressure of control cabinet by multi-meter, check if it complies with the specification.

⑤ Check if the electric power light in the control cabinet is on.

⑥ Turn on the operating power, control loop power, spray washing power in the control cabinet.

Check the rotating direction of motor

⚠ WARNING

- Wiring and checking should be done by professional technicians in case of electric shock.

① DO check if the phase wiring of power supply is correct after wiring.

② Turn off the running switch in the control cabinet.

③ Turn on the running switch of screw shaft and flocculation mixer, check the rotating direction. The correct direction should be

It should be counter clockwise rotation direction when observing from the discharge outlet side.

It should be clockwise rotation direction when observing from the upper side.

④ If the motor reverses, please exchange the terminals in Phase1 A and Phase 3 C, cut off the main power and power in the control cabinet.

◆ Running setting

Inlet setting of the sludge conveyor

Set proper sludge inlet for treatment capacity of the machine.

And the response time about 3mintues should also be added into consideration.

Sludge conveyor setting ：SDP-301（surplus sludge treatment capacity：30kg-DS/h sludge concentration: 10000mg/L）

（conversion：10000mg/L = 10000g/m^3 = 10kg/m^3 = 10 g/L）

Sludge treatment capacity for SDP-301 is ：

30kg-DS/h ÷ 10kg/m3 ÷ 60min/h × 1000L/m3 ＝ 50L/min

Dry solids treatment(A) sludge concentration sludge treatment capacity

■ Addition volume of the dosing pump for polymer coagulants

Addition volume of polymer coagulants should be set as per sludge treatment capacity and sludge concentration.

Addition volume of polymer coagulants：SDP-301（surplus sludge treatment capacity：30kg-DS/h sludge concentration：10000mg/L）

Powder flocculants add rate is 0.5%,Under the condition of 1000 times dilution, the addition volume for polymer coagulants per minute is：

30kg-DS/h	×	0.5%	÷	1/1000	÷	1kg/L	÷	60min/h	＝	2.5 L/min
DS treatment capacity		add rate		dilution ratio		density		unit conversion		add qty per min

⇒ Compare the calculation result with the performance curve of the pump, set the add quantity through the dial. Please adjust dial during operation process of the pump.

■ Spray running time setting

	Stop	Running
Initialization	10 minutes	25 seconds

■ Screw shaft rotating speed setting

Confirm the state of the sludge cake; adjust the rotating speed of screw shaft through transducer.

The transducer can be adjusted within 20-120Hz.

※ Unless there's abnormal phenomena, do not adjust after debugging.

Initialization	50 Hz

■ Water content of the sludge

The adjustment of water content and treatment capacity is achieved by the end plate and screw shaft transducer.

① The gap setting of end plate

reduce water content・・・decrease the gap of end plate to increase the inner pressure and thus lower water content.

increase water content・・・increase the space of end plate to reduce the inner pressure and thus increase water content.

※ Do not adjust the space of end plate under 4mm.

The extreme big inner stress will cause overload and the wear down of moving rings, and screw shaft.

② The transducer of screw shaft

Reduce water content · · · turn down the frequency converter, rotation speed of the screw shaft slows down, throughput will decrease accordingly. Thus the dewatering time of sludge will be lengthened, and the water content will be lower.

Increase water content· · · turn up the frequency converter, rotation speed of the screw increases, throughput will increase accordingly. Thus the dewatering time of sludge will be shortened, and the water content will be higher.

※ Other parts of the machine should also be adjusted accordingly once the speed of the screw shaft is changed

◆ Running

In the formal operation, please make sure the machine and switch in the right installation position

① Check if there's polymer coagulants in the dosing unit and if the dosing unit works well.

② Switch off all the running switches in the control cabinet.

③ Turn on the spray switch firstly before running, to moist the screw shaft and disks.

④ Make sure the dosing unit works well and then turn on the dosing pump

⑤ Turn on the sludge pump.

⑥ Check the flocculation effect, the ideal flocs diameter is around 5-10mm

Adjust the dosing pump to achieve good flocs.

＜ Ideal flocs＞

⑦ Flocs flows into the screw press and discharged from the outlet as sludge cake

The inner pressure of the screw body increases by the influent of sludge, it takes about 60 minutes to form sludge cakes.

Don't blank run the machine. It will shorten the life span of machine.

Operation adjustment

WARNING

- Do not touch the inner parts of control cabinet with wet hands in case of electric shock.
- Please well insulation shoes while operating in case of electric shock.
- Adjust the transducer in Cut-Off Condition in case of electric shock.
- Please Stop the machine then adjust the end-plate. In case of hands or tools involved in.

ATTENTION

- Do not set the end plate gap under 4mm.

In case the internal pressure of the screw body increased and cause the machine overload, And also can prevent wearing parts (moving rings ・ screw shaft) from service life shortening.

◆ About operation adjustment

When the first adjustment is done, no other adjustment needs to be done other than chemical supplement. Please check the remaining content of chemical at regular intervals.

The shape of sludge will change greatly when the sludge concentration is changing rapidly (above ±10%). Please adjust sludge inlet content and the water content of dewatered cakes and treatment capacity.

The adjustment when the sludge concentration is changing

If the sludge concentration is changing, it might influent the treatment capacity. Please adjust according to following method.

- To increase the treatment capacity, please increase the rotation speed of the drive motor of the screw shaft, and increase sludge inlet content.
- To reduce the treatment capacity, please reduce the rotation speed of the drive motor of the screw shaft, and reduce sludge inlet content.

※ If only increase treatment capacity without adjusting the gap of end plate, it might result in sludge overload in the machine body. Under such situation, it will not only cause electrode overload, but also increase the wear and tear of moving rings, screw shafts, etc.

The adjustment when the sludge water content is high

The decrease of sludge concentration will cause the decrease of solid dosage, which will result in the increase of water content. Because of the decrease of solid dosage, the pressure inside the screw press will decrease accordingly, which will reduce the dewatering performance as well.

Under following conditions, sludge inlet should be increased; therefore solid dosage is also increased.

·The water content of dewatered sludge and machine treatment capacity is not stable.

·Sludge content supplied to the screw press is not stable.

·Pump stops working because substance mixed on the electrode.

·If the pump is often working intermittently, its service life will be shortened.

The wear and tear of wearing parts will result in the insufficiency of the machine's performance.

In case the adjustment doesn't solve the treatment capacity decrease and water content increase problem, please contact us or our agent.

Maintenance ・Inspection

⚠ WARNING

● Make sure the power is off while cleaning the main part of the screw press

To prevent roll-in injuries

⚠ ATTENTION

● The machine is shut longer than 1 week (easy dry sludge for 2-3 days), please ensure that the sludge in the main body is emptied

If the sludge stay in the main body of the fold the screw with the machine shut down for 1 week (easy dry sludge for 2-3 days), the machine will be damaged by the dried sludge when it is restarted to working.

◆ Inspection & Troubleshooting

Manual includes daily inspection and periodic inspection forms. Please make the rational use of them.

In addition, when abnormal conditions occur to the motor, pump, inverter, etc. please look up to the relevant manual.

Daily inspection items

Inspection point	Inspection Item	Inspection result
Motor	normal operation	□
	abnormal noise	□
	vibration	□
End plate	appropriate clearance	□
	large variation of the moisture content of dewatered cake	□
Main body	abnormal Filtrate solids content	□
Metering tank	sludge piled around the return pipe and the weir	□
Flocculation mixing tank	sludge piled around the advection tube and electrode sludge	□

	suitable flocs formed	□

Regular inspection items

Inspection point	Inspection Item	Inspection result
Electric control cabinet	indication lights normally shine	□
Motor	abnormal heating	□
	leakage phenomenon	□
	current value similar with the usual one	□
Timer	operating according to the set value	□
Inverter	operating according to the set value	□
	abnormal heating	□
	display and LED normally shine	□
Main body	moving ring in motion	□
	considerable filtrate leaks from the gaps between the rings	□
Solenoid valve	in operation	□
	able to switch normally	□
	leaking	□
Screw ・ Nut	loose	□
Pipe・ Valve	loose	□
	ruptured or damaged	□

Abnormal case handling

Abnormal parts	Abnormal content	Possible cause	solution
Electric control cabinet	lights not on	the bulbs exceed the service life	change the bulbs
Motor	out of operation	overload	contact us or our agents
		motor itself Fault	replace the motor
		poor contact	check the line
	abnormal heating	overload	reduce the load
		motor Fault	replace the motor
		voltage is too high (low)	check the voltage
	abnormal noise	motor fault	change the motor
		foreign object mixed in the impeller	remove the foreign body or replace the motor
	vibration	loose screws	tighten the screws
		motor Fault	replace the motor
	oil leakage	motor Fault	replace the motor
Timer	out of operation	poor contact	check the line
	do not run in accordance with the set value	timer failure	replace the timer
Inverter	do not run in accordance with the set value	wrong set method	refer to the inverter manual
	abnormal heating	frequent start and stop	refer to the inverter manual
		voltage too high (low)	refer to the inverter manual
	vibration	fixed screws loose	tighten the screws
		inverter failure	replace the inverter
	display and LED lights not on	poor contact	check the line
		inverter failure	replace the inverter
Back pressure plate	do not adjusted to an appropriate gap	backpressure board screws loose	adjusted to a suitable gap and tighten the screws
	large variation of the moisture content of dewatered cake	sludge altered properties	refer to the manual
Main body	moving ring fixed	moving rings worn	contact the company or the agents
	much leakage around the filter seam	suitable flocs not formed	refer to the manual
		too much sludge gets in	reduce the mud into the level regulator tube
		screw shaft rotational speed too low	tune fast screw shaft rotational speed
	the filtrate containing solid rate is too high	suitable flocs not formed	refer to the manual
		too much sludge gets in	reduce the mud by adjusting the level
		screw shaft rotational speed too low	tune fast screw shaft rotational speed
Solenoid valve	out of operation	wiring adverse	check the line
		foreign object mixed in	remove the foreign body
		valve closed	open the path

	can not completely switch	foreign object mixed in	remove the foreign body
		solenoid valve failure	replace the solenoid valve
	Leakage	foreign object mixed in	remove the foreign object
Flocculation mixing tank	sludge accumulation in the stratosphere tube or electrode	—	remove accumulated sludge
Screw・Nut	loose	—	tighten
Pipe・Valve	loose	—	tighten
	ruptured or damaged	—	replace the breakage

◆ Precautions for long-term shutdown

＜Shut down longer than 1 week (easy dry sludge for 2-3 days)＞

In the case when the shutdown is longer than 1 week, make sure to do the following operations to protect the machine:

① In order to prevent the sludge in the tank from rotting, dried, the sludge of the flocculation mixing tank should be drained from the cleaning outlet, and the tank should be washed with water.

※To drain away the sludge from the mixing tank, the stirrer should be kept under stirring condition, and the spherical valve below the mixing tank should be opened. Thus sludge can be smoothly drained form the tank.

② Open the backpressure board to the maximum, and let the helical axis hand within the main body manually run one hour. Clean properly with water after the sludge within the main body all discharged.

③ Turn off the power of the control cabinet.

＜Shut down longer than3 months＞

If in the case of more than 3 months shutdown, besides the completion of the above-mentioned "**shutdown longer than 1 week (**easy dry sludge for 2-3 days)", the following work should also be carried out.

① In order to prevent the port of the control cabinet from rusty, the control cabinet door should be closed; smooth indoor air should be ensured.

② In order to prevent the electromagnetic relay inside the control cabinet from rust, it is required to run the machine manually every 3 months.

Failure or not

When the malfunction indicator of the control cabinet on, please reconfirm the following proceedings before going to consult ask to be repaired.

◆ Confirmation before consulting

Please reconfirm the following proceedings before going to consult ask to be repaired. After confirmation, if the machine can not operate normally, please contact the company or local agents.

＜Recurrent questions＞

Cannot operate automatically

If it's already set to run automatically, and run under automatic mode, but the machine cannot run automatically, please confirm the following:

- Is there anything abnormal with the dosing device and sludge storage tanks?
- Is the thermal overload disconnected?
- Is the power cord connection off?

※ Under nonstandard production circumstances, there may not be fully carried out according to the above-described steps.

After the implementation of the above-described method, the situation is still not solved; a more detailed confirmation should be carried out.

① Before the inspection, ensure all switches be transferred to the "off" position. And also check to see if the state of the valve is normal

② When the main power of the machine is turned on, the power indicator will light up, and the inverter LED screen will also light up

When the lights and the screen do not light up, it may be caused by no power to support the machine, the life of indicator exceeded or the failure of the inverter. Therefore, before the exchange or wiring job, be sure to cut off the power, and ask the professional technician to operate.

③ When the power of the machine control cabinet is on, the fault indicator is not lit.

When the fault indicator is lit, there may be the following causes.

- The screw shaft of the drive motor overloaded.
- Polymer flocculent dosing pump overloaded.
- Sludge transfer pump overloaded.
- The transducer of the screw shaft drive motor fails.

If you want to recover, please rule out the cause of the failure, and lift the open circuit error.

④ Do not let the sludge level of the storage pools be below the minimum level.

⑤ If the sludge liquid level is below the minimum level, please cut off the main power and operating power.

Check to see if the liquid level of the sludge storage pool is in the normal position before starting dewatering machine.

⑥ Before the exchange or wiring job, be sure to cut off the power, and ask the professional technician to operate.

After the completion of the above mentioned methods, the machine can be started to run automatically. If the machine can not operate normally, please contact the company or local agents.

Sludge did not enter the flocculation mixing tank

① Sludge transfer pump is not running.

If the pump can not operate, it's due to a pump failure, please contact the relevant company.

② Is there residual air in the sludge transfer pump?

Liquid level controller can not operate normally caused by the level controller failure of the sludge storage pool; sludge can not be properly transported caused by the inhaled air in the sludge transfer pump, check the sludge holding tanks.

③ Is the sludge transfer pump blocked?

Turn off the main power and check whether the sludge transfer pump is clogged.

④ Is the sludge transfer pump impeller worn?

The pump is running but the sludge cannot be completely transported. It may caused by the impeller worn. When this happens, please contact the provider of the pump.

⑤ Is the sludge flocculation mixing tank too full (exceeds the high level of the electrode)?

The sludge in the flocculation mixing tank is too full, and there is too much sludge fed in.

In this case, reduce the sludge quantity by adjusting the liquid level adjustment tube, and re-adjust the dosage of chemicals.

If the flocculation mixing tank is in the state of overflow, it will take a while to recover; if this running state continues, it will be repeatedly filled with water and automatic recovery.

This will make the pump in an intermittently working state, and shorten the service life of the pump. Therefore, it is important to adjust the sludge throughput and drug dosage to the optimum value.

⑥ Is the sludge pipeline valve closed, or the pipe blocked?

Inspect the switch position of the check value and whether the pipe is blocked.

Dewatered cake cannot be discharged

① Is there, in the flocculation mixing tank, sludge flowing into screw press body?

Check pipeline connecting the flocculation mixing tank and the main body of the screw press is blocked or not.

② Is the size of the flocs in the flocculation mixing tank inappropriate?

When flocs cannot be formed or fully formed, the solid material will leak from the gap of the main body, which will lead to the decrease of the solid material recycle rate, dewatered cake discharge content, even no cake discharge.

Please make adjustments so that the sludge can form suitable flocs.

③ Is the gap of back pressure plate appropriate?

When the gap of the backpressure plate is 0mm (fully closed), the cake cannot be discharged from the discharge outlet.

Please set appropriate value of the back pressure plate gap.

④ Is the screw shaft drive motor operating normally?

Please check if the helix axis drive motor is under normal operation.

If the motor does not run normally, it may be due to motor failure. Please stop the operation of the machine immediately, and consult our company or local agents.

⑤ Is the rotation direction of the screw shaft drive motor correct?

While exchanging the main body of the screw press, if there's a wiring error of the screw shaft drive motor, it will cause the motor reversal.

When it's under reversal condition, sludge cannot be discharged, and it may result in damage to the machine.

Thus if the motor is under reversal condition, please cut off the power and check the wiring condition.

Spray without water

① Is valve closed?

Check if all water supply pipeline valves are open.

② Does the spray header have garbage clogging?

Take down the spray header, remove the garbage inside.

③ Check if the timer of the spray is closed.

④ Is solenoid valve used in the spray working normally?

Check if the solenoid valve used in the spay is working normally.

If it can't run normally, may be caused by the failure of the solenoid valve, please contact the company or agent.

⑤ Check the power is turned on or off?

The switch is provided in the solenoid valve in order to protect the solenoid valve of the spray, if the switch is not open, the solenoid valve will not work.

Water ratio of dewatered sludge cake is too high (the case of forming small flocs)

① Is sludge concentration too dense or not?

When sludge concentration is getting lower, the proportion between the solid substance and chemical dosage is becoming imbalanced, which cannot form suitable flocs. At this time, reducing the amount of sludge inputs combined with the processing power of the machine to reduce the amount of solid material inputs.

② Is the PH value of the sludge appropriate?

If the PH value is inappropriate, it may cause that the polymer coagulant can't work completely.

First check the applicable ranges of PH value of the used polymer coagulant, and then adjust the PH value of the sludge to an appropriate value.

In addition, the used drugs will reduce the pH value of the sludge, which will cause the polymer flocculants can't work completely. In this case, to minimize, as much as possible, the use of drugs which can reduce the PH value of the sludge.

③ Whether the concentration of the polymer coagulant liquid medicine is changed or not?

Once the concentration of the polymer coagulant solution changes, the balance between the solid material in the sludge and the chemical dosage rate will be destroyed, which will cause that it cannot form suitable flocs.

When infuse chemicals manually, please confirm the dosage of polymer coagulant and dosage of the dilution water.

When use the automatic drug machine, please confirm that the setting value and dosage are the same.

④ Is the polymer coagulant outflow appropriate?

Please stop the machine from running; remove all the sludge from the flocculation mixing tank.

In the manual operating mode, open the polymer coagulant dosing pump, and check whether the pump discharge rate is in accordance with its performance curve. Check the results obtained, if its discharge rate is low, or even zero, please check the following items.

- Whether the pipeline is blocked.
- Whether there's chemical in the dosing tank.
- Whether the fragile parts of the Pump are damaged.

⑤ Whether the level adjustment pipe in measuring tank and weir are attached by trash around?

If the level adjustment pipe and weir are attached by trash around, it will affect the sludge reflux. The proportion between the solid material in the sludge and the chemical dosage rate will becoming imbalanced, which will cause that it cannot form appropriate flocs. In this occasion, please clean the level adjustment pipe.

※ If after implementing above ① ~ ⑤still cannot solve the problem, please select different polymer coagulant. Please contact our company, our agent, or companies selling polymer coagulant.

Water ratio of dewatered sludge cake is too high (the case of forming big flocs)

① Is sludge concentration becoming lower?

When sludge concentration is getting lower, the proportion between the solid substance of the sludge and the amount of chemical dosage will be imbalanced, which cannot form suitable alum. At this time, increasing the amount of mud inputs combined with the processing power of the machine to increase the amount of solid material inputs.

② Whether the concentration of the polymer coagulant solution is changed or not?

Once the concentration of the polymer coagulant solution changes, the balance between the solid material in the sludge and the chemical dosage rate will be destroyed, which will cause that it cannot form appropriate flocs .

When infuse drug manually, please confirm the dosage of polymer coagulant and dosage of the dilution water.

When use the automatic dosing device, please confirm the setting value and dosage are the same.

If dosing the polymer coagulant too much, the following problems may occur.

Until the flocs have been adjusted to appropriate state, check if the following problems have been improved.

- Is the advection tube is accumulated around with highly viscous sludge?
- Is there highly viscous sludge in the gap of the rings of the screw press body?
- Is the filtration function of the screw press body is good?
- Is the filtrate viscous?
- If the water content of dewatered sludge cake decreases, is the load of motor (current value) also high?

③ Whether the weir in measuring tank is attached by trash around?

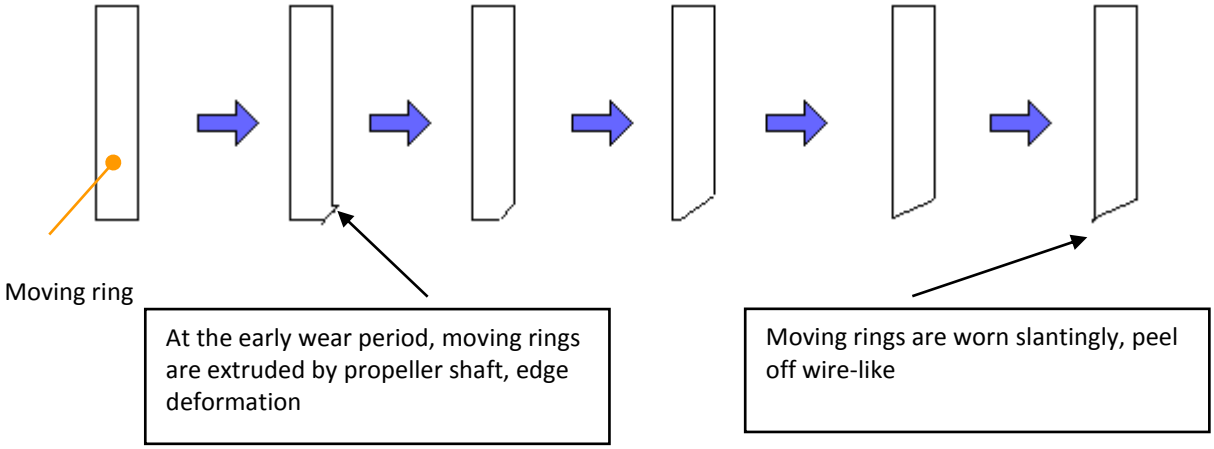
When the weir is attached by trash around, the amount of sludge into the flocculation mixing tank will decrease. The proportion between the solid material in the sludge and the chemical dosage rate will becoming imbalanced, which will cause that it form big alum flower. At this occasion, please clean the weir.

※ If after implementing above ①～③still cannot solve the problem , please select different polymer coagulant. Please contact our company, Company's proxy point, or sales company about polymer coagulant.

Sludge cake and stainless steel wire are discharged together from the outlet of sludge cake.

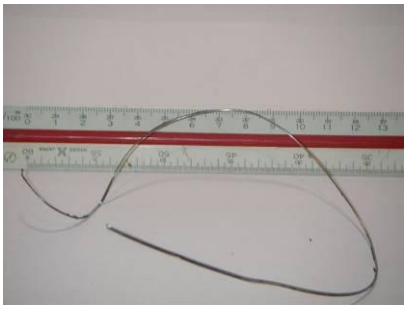
Moving rings will discharge stainless steel wire during wear process.

<The wear process of moving ring>



① The mechanical structure of the machine, sometimes may cause stripping of "burr" on the moving ring, The degree shown in the photograph below has no effect on the structure and performance of the machine.

② In order to pursue low moisture content, and make sure that machine can run beyond the handing ability. As shown in the below photos, if discharge a coarse wire - like stainless steel sheet, which indicates that the pressure in the stacked spiral body is too large, the friction between the moving ring and the screw shaft is too strong. The machine has been in a high-load operation, which can exacerbate the wear of fragile goods, and so if this kind of case happens, please make some appropriate adjustments.



About wearing parts

In the process of using machine, some parts will be worn, after certain periods, it is necessary to replace some components.

Here we declare in advance, even within the warranty period, the replacement of fragile parts is charged.

⚠ ATTENTION

- Because the concentration of sludge changes, the water content of the sludge cake and handling capacity of the sludge will change considerably, which will cause the machine to exceed its capacity range. Normal processing is to readjust the machine.
- If the machine runs in a state of overload for a long time, the main body might be clogged with sludge, and screw shaft drive motor overload, the fragile parts (moving ring, screw shaft) worn abnormally.

■ Standard of wearing parts replacement

The machine performance becomes less competent due to the wear of moving ring and screw shaft during running process. Please refer to the following table to confirm the running time of the machine.

Model	Part name	Replacement period (running period)
100-200 series	Moving ring(dewatering part)	5000 hours
	screw shaft	10000 hours
300 & 400 series	Moving ring(dewatering part)	10000 hours
	screw shaft	30000 hours

※The above replacement period of the wearing parts is only an approximate value, not the guarantee period of the wearing parts' service life. It also happens that the parts need not to be replaced after the replacement period; the main factors that impact service life are the use methods and conditions.

※Replacement period is obtained after certain experiment conditions. In the actual operation process, the change of related conditions (sludge type, sludge shape, treatment capacity, status of operation adjustment, supporting facilities condition) can cause the change of the replacement period.

■ About after-sales service

・In need of repair services, please inform the machine model and manufacturing numbers engraved on the nameplate.

・Even within the warranty period, the items beyond the scope of the warranty are all paid services.

・After warranty period, the cases that the function of the machine through the maintenance can be maintained are paid services, which according to customer needs.

・After the maintenance of machine, reusable components will be recycled.

Warranty Clause

1. Warranty objects

The warranty object refers to the machine recorded in the column of "machine name" in the warranty.

2. Warranty period

12 months after installation (no more than 13 months after delivery)

The following are storage conditions before use:

① Keep the machine where there's with no leakage of water/rain, which is to keep it indoor.

② Keep the machine away from extremely high temperature or temperature difference, extreme humidity or moisture condensation condition.

Temperature scope -10℃～40℃

Humidity scope below 85%

③ No corrosive gas and salt damage material.

④ In case there's construction nearby, make sure it will do no harm to the machine.

⑤ Do not put/lean things on the machine

⑥ Do not turn on the power before use, no storage water and sludge is allowed.

⑦ It's the buyer's responsibility to safe keep the equipment after delivery.

3. Warranty

① The warranty is limited to the products we manufacture.

② During warranty period, please install and operate as per the instruction, if it can't function well still, we will maintain it free after we find out the reason.

③ We are responsible for delivering the goods to appointed place, your company unloading and setting.

4. Items out of Responsibility

Even in the warranty period, the following items does not belong to the warranty scope, customers need to undertake the maintenance cost.

① Breakdowns due to dismantling or retrofitting by customers.

② Beyond permitted scope of specifications during operation (certain standard, specifications, etc.)

③ Forced lift during carrying & moving, and other impact that causes damage to the machine.

④ Breakdowns due to the failure of the customer's use, keep, maintain, safety management and other reasons not from our side.

⑤ Breakdowns due to the use of unqualified components or specified wearing parts.

⑥ Breakdowns due to the repair in other places (not in our plant or the plants specified by us).

⑦ Natural fade on painted parts.

⑧ Breakdowns due to the fire disaster, salt damage, poison gas and other natural disasters.

⑨ The replacement of the following wearing parts

Moving Rings, Screw Press, Screw nut, bearings, magnetic valve, baffles of two sides, paper marks, Operating panel display, fuses

⑩ Items not stated above will be determined by both sides through negotiation when the cause of failure is unknown.

Distinguished customers:

GSD (China) Co., Ltd. has been always adhering to the service spirits of "seriousness, honesty and reliability" and been continuously imposing higher requirements on ourselves with a purpose to provide you, our distinguished customers with even better services, your valuable feedback are highly appreciated. We will be very grateful if your can finish the following form and fax it to our company, we are sure to make a reply as soon as possible.

GSD (China) Co., Ltd.
E-mail: equipment.gsd@gsd-tech.cn
http://en.gsd.net.cn

Dissatisfaction Feedback Sheet

To: **GSD (China) Co., Ltd.**		ATTN: Business Department, Technology Service Department	
User's name		Purchasing unit	
Linkman		Tel	
Items	Instructions to unsatisfied items	Measures or suggestions expected our company may take	
Service attitude			
Maintenance technology			
Product package			
Product appearance			
Product property			
Product instructions			
Others			