

Instruction MANUAL of STC Series M.S.T.P

W3102~W311100SM

NOTE

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CAUTION

1. Health & Safety Act Compliance. Before working on this equipment personnel should be made aware of, and ensure compliance with, the Health and Safety Regulation appropriate to this class of work.
2. Before lifting, installing and operating the unit, the instructions detailed below, and also the accompanying manual, must be read.
3. Ensure that all equipment used for lifting the unit is adequate for the weight. For the weight is normally stenciled on the unit and/or stamped on the machine nameplate.
4. The handling points are indicated on the unit and these must be used. The hooks of sling must not be fitted directly to lifting eyebolts or lugs. Shackles must be used.
5. Before running the unit for the first time, the installation must be thoroughly checked and the procedure detailed in Section 3 of the manual.
6. The unit must not be run unless all protective guards supplied with the equipment are in position.
7. Before proceeding with maintenance on the unit. Or making adjustments to its connections and fittings. It must be stopped and isolated electrically and mechanically and visible warning notices displayed. Some units are on automatic standby duty, or isolators are remote from the unit. And extra care is then necessary to be sure that isolation is complete.
8. Before commencing repair or overhaul a preliminary check of available spares must be made, e.g. replacement set of O-rings, joints or jointing material.
9. On compressors when work is to be proceeded with on water and/ or air passages. The unit must be vented of all pressurized air and drained of cooling water.

PREFACE

The STC series marine sewage treatment plant is designed according to the requirements of MPRPOL73/78 and GB10833-1989 and the resolution MEPC.159 (55).

The plant has adopted the Biochemistry&Membrane Filtration Technology to tackle the sanitary sewage of shipping and platform. Thereby, it can prevent from that the port, coast waters and inland waters are polluted by sewage.

This plant use oxy-biotic bacteria to decompose the organic matter in sewage and membrane to filtrated the water. The flush water can be seawater or freshwater. The water after treatment is of no smell and color and no damage to person. So it can be used for ships widely because of its compact element and flexible design. When needed, it can be even separated by components to install.

MAIN TECHNICAL DATA● **CAPACITY**

Type	STC-1	STC-2	STC-3	STC-4	STC-5
Capacity(m ³ /d)	1.05	2.10	3.15	4.20	5.25
	STC-6	STC-8	STC-10	STC-15	STC-20
	6.30	8.40	10.50	15.75	21.00

● **SAILOR**

Type	STC-1	STC-2	STC-3	STC-4	STC-5
Sailor	15	30	45	60	75
	STC-6	STC-8	STC-10	STC-15	STC-20
	90	120	150	225	300

● **ORGANIC LOAD**

Type	STC-1	STC-2	STC-3	STC-4	STC-5
Organic Load(kg/d)	0.53	1.05	1.58	2.1	2.63
	STC-6	STC-8	STC-10	STC-15	STC-20
	3.15	4.2	5.25	7.88	10.5

● **EFFLUENT**

BOD ₅ (mg/L) :	≤25
SS (mg/L):	≤35
COD (mg/L):	≤125
PH	6~8.5
Coli form (coliform/100ml)	≤100
Cl ⁻ (mg/l):	<0.5

● **AMBIENCE CONDITION**

0~50°C

● **AIR CONDITION FOR BACKWASH**Q=0.3m³/min,P=0.4Mpa.

● **RELATIVE HUMIDITY**

≤95%

● **POWER SUPPLY**

380/440v 50/60HZ AC3- Ø

● **POWER**

Type	STC-1	STC-2	STC-3	STC-4	STC-5
Power(kw) 50/60HZ	5.87/ 7.37	5.87/ 7.37	6.05/ 7.55	6.05/ 7.55	6.6/ 8.1
	STC-6	STC-8	STC-10	STC-15	STC-20
	6.6/ 8.1	7.0/ 8.5	7.0/ 8.5	14.7/ 19.1	15.5/ 20.1

● **PIPE CONNECTION**

Items Type	Raw Sewage	Hospital Sewage	Air Vent	Overflow	Sea or Fresh Water	Drain	Backwash
STC-1	DN100	—	DN50	DN50	DN50	DN50	DN25
STC-2	DN150	DN150	DN50	DN50	DN50	DN50	DN25
STC-3	DN150	DN150	DN50	DN50	DN50	DN50	DN25
STC-4	DN150	DN150	DN50	DN50	DN50	DN50	DN25
STC-5	DN150	DN150	DN50	DN50	DN50	DN50	DN25
STC-6	DN150	DN150	DN50	DN50	DN50	DN50	DN25
STC-8	DN150	DN150	DN80	DN50	DN50	DN50	DN25
STC-10	DN150	DN150	DN80	DN50	DN50	DN50	DN25
STC-15	DN150	DN150	DN80	DN80	DN50	DN50	DN25
STC-20	DN150	DN150	DN80	DN80	DN50	DN50	DN25

SECTION 1: DESCRIPTION

GENERAL

Basically the Marine Sewage Treatment unit comprises a tank, divided into four watertight compartments: an Aeration Tank, a Settling Tank, Primary Treatment Tank and Treatment Tank. The incoming sewage enters the Aeration Tank, where it is digested by aerobic bacteria and microorganisms that are promoted in the sewage itself by the addition of atmospheric oxygen. From the Aeration Tank the sewage flows into the Settling Tank where the aerobic bacteria floc, known as activated sludge, is settled out producing a clear effluent which flows into the Primary Treatment Tank before being finally discharged.

NOTE: FOR DETAILS, VIEW THE SYSTEM INSTALLATION DRAWING OF STC SERICES MARINE SEWAGE TREATMENT PLANT.

DETAILED DESCRIPTION

AERATION TANK

In this compartment of the treatment unit, aerobic bacteria, those bodies requiring dissolved oxygen to exist and reduce the influent waste material which mainly comprises Carbon, Oxygen, Hydrogen, Nitrogen, and Sulfur into Carbon Dioxide, Water, and new bacteria cells. The Carbon Dioxide is emitted through the Vent System whilst the water together with the bacteria cells is displaced into the Settling Tank.

Air is supplied via a Rotary Compressor and distributed into the sewage through a number of fine bubble diffusers (Hereinafter called Air Diffuser) which are located at the bottom of the tank but are kept removable from the side Manhole for ease of maintenance.

This air provides the life giving oxygen to the aerobic organisms and also keeps the contents of the tank intimately mixed with the incoming raw sewage and the returned settled activated sludge and the float.

SETTLING TANK

In the Settling Tank the bacteria settle out and are returned to the Aeration Tank by the Airlift Tube, via a visual indicator pipe that enables a check to be made on the sludge return. The Settling Tank of the unit is of the hopper type. The sloping sides prevent the settled sludge from accumulating and direct it to the suction side of the air lift. The effluent enters the Primary Treatment Tank, A surface skimmer is provided to skim off and return surface debris back to the Aeration tank-a second airlift is used for this purpose.

PRIMARY TREATMENT TANK

The Clear water in the Settling Tank enters into the Primary Treatment Tank. A Float Switches has been equipped in the Tank which contains three Level Control Switch, Super High Level, High Level and low level. High Level controls the Circulating Pump to start and Low Level to stop and the Super High Level to be used to awake the High Level Alarm.

A Sample Cock also has been equipped.

TREATMENT TANK

The Treatment Tank to be used to store the Effluent temporarily. When comes to the high level, it shall be pumped overboard by Discharge Pump. A Float Switches has been equipped in the Tank which contains three Level Control Switch, Super High Level, High Level and low level. High Level controls the Discharge Pump to start and Low Level to stop and the Super High Level to be used to awake the High Level Alarm.

A Sample Cock and Overflow Connection also have been equipped.

MEMBRANE SYSTEM

The liquid of Primary Treatment Tank will be pumped into Membrane System, the filtrate enters into the Treatment Tank but just a little, and more will enter into the Primary Treatment Tank or Aeration Tank.

The plant has the function, Backwash which is controlled automatically, for defaults, every 30minutes the Backwash Function shall be open and launch for 3 seconds (The 30minutes and 3seconds can be set by manual).

DISCHARGE PUMP

One set, automatic or manual control. When automatically running, it's controlled by a float switches with three Level Control Switches inner the Treatment Tank. High level starts the pump and low level to stop.

NOTE: ACCORDING TO THE BUYER REQUIREMENTS ONE OR DUAL SET PUMP CAN BE OPTIONAL.

AIR COMPRESSOR

Two sets, one for use one for spare, Manual Control. Normal Pressure: 0.015~0.054Mpa.

CIRCULATING PUMP

One set, automatic or manual control. When automatically running, it's controlled by Float Switches with three Level Control Switches inner the primary treatment tank. High level starts pump and low level to stop. Normal hydraulic pressure of outlet: 0.1Mpa.

MACERATOR

The macerator is a separate electric motor driven unit situated in the sewage inlet circuit of the sewage treatment tank. The purpose of the unit is to break up the incoming solids and accelerate subsequent digestion.

NOTE: NO SUPPLY FOR DEault, IT'S OPTIONAL.

ELECTRICAL CONTROL

GENERAL

Manual switches on the control panel operate the rotary Air Compressor motors.

For Discharge Pump and Circulating Pump, it's controlled by level switches fitted in the Primary Treatment Tank and Treatment Tank with an overriding Manual/AUTO switch on the control panel.

Function of Backwash:

Every 30 minutes the function to be active and shall run for 3 seconds.

FLOAT SWITCHES

There are three pole level switches mounted on tank and wired to the control panel. The two lower level switches operate the Discharge Pump(s) and Circulating Pump, and the upper operates the high-level alarm circuit should the level rise above normal.

SOLENOID VALVES

Solenoid Valve of Backwash Control

Every 30 minutes Membrane will have a backwash last for 3 seconds. It's controlled by two solenoid valves, V1 and V2. Compress Air, 0.40MPa can press into the Backwash Valve. The state of down backwash valve is Normal Close and the up backwash valve is Normal Open. Shut valve of the effluent outlet and open the valve of water of backwash inlet, then the backwash run for 3 seconds.

When the function finished, normal state of valve is resumable.

-V1: Backwash inlet: two-position-two-open solenoid valve, Normal-CLOSE;

-V2: Backwash outlet: two-position-two-open solenoid valve, Normal-OPEN;

Solenoid Valve of Concentrated Water Return

A Normal-Close Solenoid Valve has been equipped to control the Concentrated Water to back to the Aeration Tank.

To Primary Treatment Tank, the pipe type is Through-Type. Normal working the plant is, the Solenoid Valve to be always CLOSE then the Concentrated Water will return to the Primary Treatment Tank. Only after 24:00 o'clock everyday and the Circulating Pump run in first time, the Solenoid Valve of Concentrated Water Return will set OPEN and the Effluent control valve to be set CLOSE, the water will drain to Primary Treatment Tank and Aeration Tank. If the level of Primary Treatment tank is situated Low Level, the valves will be reset and the related electrical elements also.

-V3: Valve: Two-position-two-open solenoid, Normal-CLOSE.

OPERATION

Discharge Pump

● **While the switch 'Discharge Mode' locates at 'Auto' Position:**

When the liquid level of the Treatment Tank reached the HIGH LEVEL, the Discharge Pump will run always until the level drop to LOW LEVEL.

Sometime, may the HIGH LEVEL Switch is broken-down; the liquid level to be ascending all time and the SUPER-HIGH LEVEL Alarm will be awaked.

● **While the switch 'Discharge Mode' locates at 'Manual' Position:**

Start the Discharge Pump in Manual Mode, run and drain empty then shutdown the Pump in Manual Mode also.

NOTE:BEFORE OPERATING, CONFIRM THAT ALL RELATED GATE VALVE TO BE OPEN.

Circulating Pump

● **While the switch 'Circulating Pump' locates at 'Auto' Position:**

When the liquid level of the Primary Treatment Tank reached the HIGH LEVEL, the Circulating Pump will run always until the level drop to LOW LEVEL.

Sometime, may the HIGH LEVEL Switch is broken-down; the liquid level to be ascending all time and the SUPER-HIGH LEVEL Alarm will be awaked.

● **While the switch 'Discharge Mode' locates at 'Manual' Position:**

Start the Circulating Pump in Manual Mode, run and drain empty then shutdown the Pump in Manual Mode also.

Air Compressor

Dual set have been installed when deliver. The method of switch the Air Compressor show as follows (Sample as exchange the compressor from 1# to 2#): Switch the knob 'Air Compressor' in the El.Control Panel from '1# pump' to 'OFF';

Shutdown the stop valve, 12#, opens the valve 13#;

Switch the knob 'Air Compressor' from 'OFF' to '2#pump', the 2# Air Compressor run and the reading of the Pressure gauge should between 0.015 MPa and 0.054MPa;

NOTE: EVERY 30 DAYS THE OPERATION, SWITCH THE AIR COMPRESSOR SHOULD BE DONE NOT LESS THAN ONE TIME.

Backwash

Switch the knob 'Backwash Mode' to 'Auto' position. Every 30minutes, the function will be awaked and hold for 3seconds (The 30minutes and 3 seconds can be reset by user).

Switch the knob 'Backwash Mode' to 'Manual' position, the Backwash shall be executed instantly till the knob is reset to the 'OFF' position.

NOTE: THE PRESSURE OF THE BACKWASH SHOULD BE SET IN 0.4MPa.

SECTION 2: INSTALLATION

GENERAL

The unit should be installed in a position where it is as level as possible when the ship or rig is in its normal position. Bolt holes are provided in the base plate of the unit for fixing. It is recommended that the marine sewage treatment plant should be installed with the longest side in a fore and aft direction to minimize the effect of rolling motion. The maximum angle of roll or pitch at which the unit will function satisfactorily is 22.5° either side of the vertical.

To facilitate periodic maintenance for use in an emergency, a direct overboard bypass of the unit must be provided.

The Galley water with no solid waste can be led into the Sewage Treatment Plant via the Soil pipe after pretreated by Grease Trap. If the Macerator is needed it can be supplied by maker.

NOTE: WELDING MUST NOT BE CARRIED OUT ON THE TANK SURFACES OR THE INTERNAL COATING WILL BE DESTROYED;

IN THE INSIDE OF THE EL.CONTROL BOX, THE WIRING MARK HAS BEEN INDICATED CLEARLY AND THE ELECTRICAL DRAWINGS ALSO HAVE BEEN ATTACHED BACK OF THE CONTROL PANEL;

THE SYSTEM DRAWING, PLEASE VIEW THE ATTACHED DRAWING B;

The pipelines should be installed by shipyard show as follows:

- a. Raw Sewage
- b. Hospital Sewage Inlet
- c. Air Vent
- d. Discharge Pump Outlet and Sea/Fresh water Inlet
- e. Emergency Overflow
- f. Backwash(Compress Air In)
- g. Circulating pipe for Tank wash (View the fig. 1)*

TYPE INSTALLATION

SOIL MAIN

These are for handling the waste from Water Closets, Urinals and all Hospital waste water as required by health codes. Inputs from this source not exceed 70 liters/person/day. For the purpose of maintain easily and under the state of the EMERGENCY overboard by-pass line must be fitted.

A Luzhou Transfer Unit can be fitted if the final soil pipe position is below the sewage treatment plant. If so please ensure that peak pumping flows or periods don't exceed the peak handling capability of the Sewage Treatment Plant. On Gravity sewage collection system, a Macerator is recommended with units sized above 150 crews and on passenger vessels and ferries.

SOIL WATER GRAVITY PIPELINE FALLS

This should be a minimum of 10mm per 300mm run in the direction of flow, after allowing for the worst trim conditions Non-Return Valves or Valves which could cause a flow build-up should not be fitted.

AIR VENT

It is important that no liquid pockets can form to impede the free run of the gasses. A flame trap is not required.

EMERGENCY OVERFLOW

This can only be effective when the tank overflows. Connection must be 1.5m above maximum sea water levels to ensure that the Non-Return Valves can be lifted and flow take place. If the available is less than this a back-up will occur in the system until the required head is available. If emergency overflow connection is below maximum water level then connect to bilge including a "U" trap of 200mm to prevent venting into the compartment.

THE DISCHARGE PUMP

A dual pump set can be supplied (According to Buyers). Only a single pump has been equipped as default.

THE AIR COMPRESSOR

When the sewage plant is offered, the dual air compressors have been installed. One for using and one for spare.

SIPHON PREVENTION

If the top of the sewage treatment tank is above minimum sea water level, then the pump discharge pipeline must be looped above the top of the tank and a connection taken from the top of the loop to a point in the air vent line above the discharge head of the pump or use a SHIPON BREAK VALVE as addition. The reason of the Cavity Noise of the pump may result by the Low discharge head, if so a throttle plate can be installed in Discharge Pipe.

GREY WATER MAIN

Grey Water (showers, laundry and other solid free waters but not Galley sinks water) can discharge overboard directly after disinfection. A UV-Sterilizer can be supplied by LUZHOU.

NOTE: WATER TRAPS ARE NECESSARY ON ALL SINKS, SHOWERS ETC. TO PREVENT ORDORS.

GALLEY WASTE MAIN

This should be treated comply with the IMO resolution; normally drain it overboard directly via a 25mm screen. If it is intended to connect into soil inlet of the sewage treatment plant, LUZHOU must be consulted, as Size or Type of the plant may be affected and a grease trap (De-greasing) must be fitted.

NOTE: THE GALLEY WATER, SHOULD PASS THROUGH A DE-GREASING UNIT AND SOLIDS SHOULD NOT BE PRESENT. GREY OR GALLEY WASTE WATER SHOULD NOT BE LED INTO THE AREATION OF THE PLANT.

MEMBRANE SEPARATE SYSTEM

Pretreated water (in Primary Treatment Tank) is circulated under the function of MEMBRANE SYSTEM, and the concentrated water will return to the Primary Treatment Tank or Aeration Tank in a setting period but the filtrate, accordance with the IMO 159(55) latest regulations, will be collected into the Treatment Tank and pumped overboard in AUTO or MANUAL mode. The function, BACKWASH is provided to clean the system with the compress air, 0.4Mpa under the controlling of El-Control Box.

VACUUM SEWAGE SYSTEM(OPTIONAL)

The concentrated soil from the system must be diluted to approximate 70 liters per person per day. Dilution can be with grey water and mixed in or prior to the treatment unit, at a consistent rate to prevent shock loading.

NOTE: CARBON DIOXIDE IS FORMED DURING THE AEROBIC PROCESS OF WASTE TREATMENT. THIS GAS HAS NO ODOR, IS NON-TOXIC, NON-INFLAMMABLE AND IS RELEASED TO ATMOSPHERE WITH EXCESS AIR WHICH IS NOT USED IN THE STABILIZATION PROCESS.

DISCHARGE PIPE ARRANGEMENT

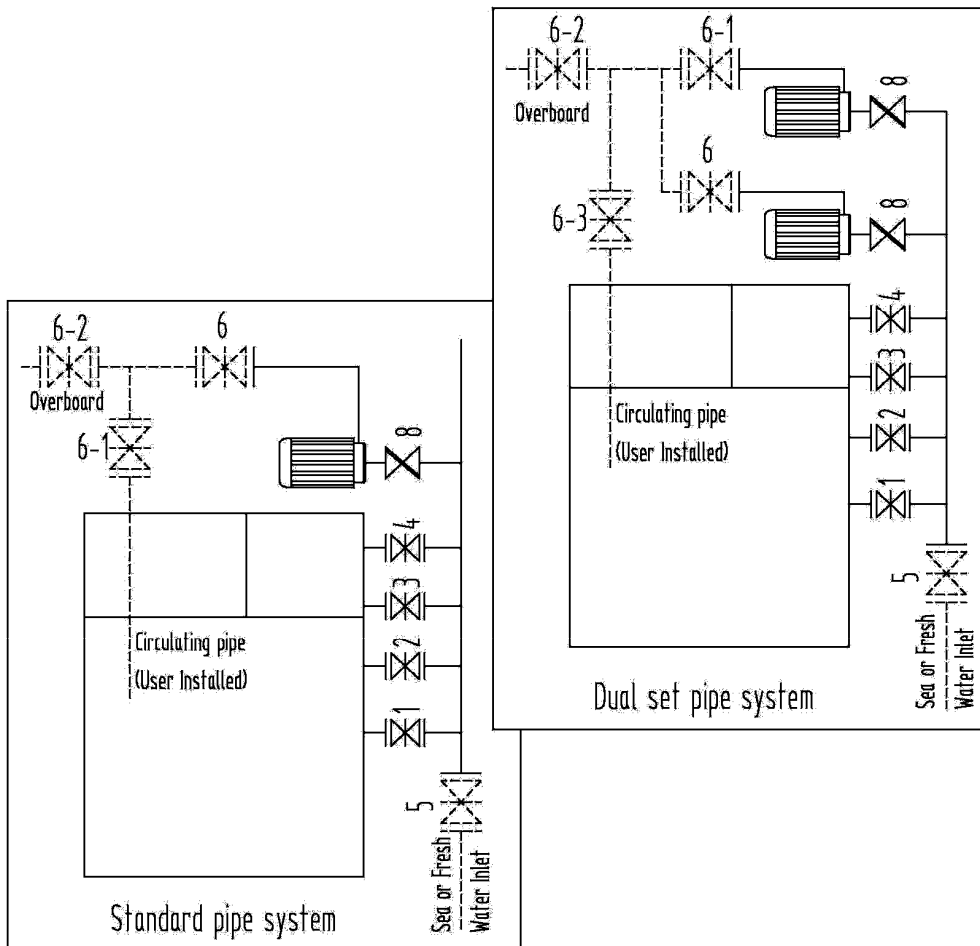


FIG.1

SECTION 3: OPERATION

PREPARATION OF UNIT FOR INITIAL OPERATION

- A. Checking the wiring in the inside of the El-Control Box according to the Electrical drawings, and set the Switches in the panel to OFF or STOP position. If nothing is wrong, power on.
- B. Ensure that all valves in the air supply lines are open except the delivery valve of the standby Air Compressor. Switch the service compressor on and check for correct rotation by placing a hand over the inlet. Suction effect indicates correct rotation. When operating correctly the reading on the pressure gauge should be between 0.015 and 0.054Mpa.
- C. Close the Valve 1,2,3,5 and open the valves 4,6,7,8,9,10,11
- D. Switch the knob 'Discharge Mode' to 'Auto' position and the 'Discharge Pump' to be 'ON' position(For a dual set discharge pump sewage system it's to be '1#pump' or '2#pump' position)
- E. Switch the knob 'Circulating Pump' and 'Backwash' to 'Auto' position.
- F. Check that liquid is flowing through the visual indicator pipe in the sludge return line. The airflow to the sludge return airlift is controlled by the plug cock, which is set during manufacture and should not need to be altered.

DESLUDGING TO AND INCINERATE (FIG.2)

In order to ensure that the plant run normally and effluent is eligible, the sludge produced in the STC series marine should be discharged in time.

The valve 2# is used for discharging sludge. Close valves 1#, 3#, 4#, 5# open valve 2#, start the discharge pump in MANUAL mode to discharge the sludge to incinerate once a day (Form 1). When it is finished, reset the valves.

The sludge produced in the plant can be incinerated by incinerator. Because of containing 99% water in the sludge, so it need more fuel. If it's a mixture contain waste oil and a little sludge, then can be incinerated without any fuel.

When removing sludge daily in the quantity shown for the marine sewage treatment unit, the suspended solids reading for the aeration tank should remain constant and should be checked approximately twice a week. If the suspended solids are increasing, then the quantity of sludge removed should be increased a little until a constant reading is obtained. Alternatively, if the suspended solids are decreasing, the sludge quantity should be reduced.

Discharge pump of the plant or a single pump can be used to desludge to incinerator tank but, due to the large capacity of the pump, care must be taken not to overfill the sludge tank.

TYPE	DESLUDGE(L/d)
STC1	35
STC2	71
STC3	102
STC4	135
STC5	167
STC6	202
STC8	267
STC10	331
STC15	492
STC20	648

Form 1: DESLUDGE

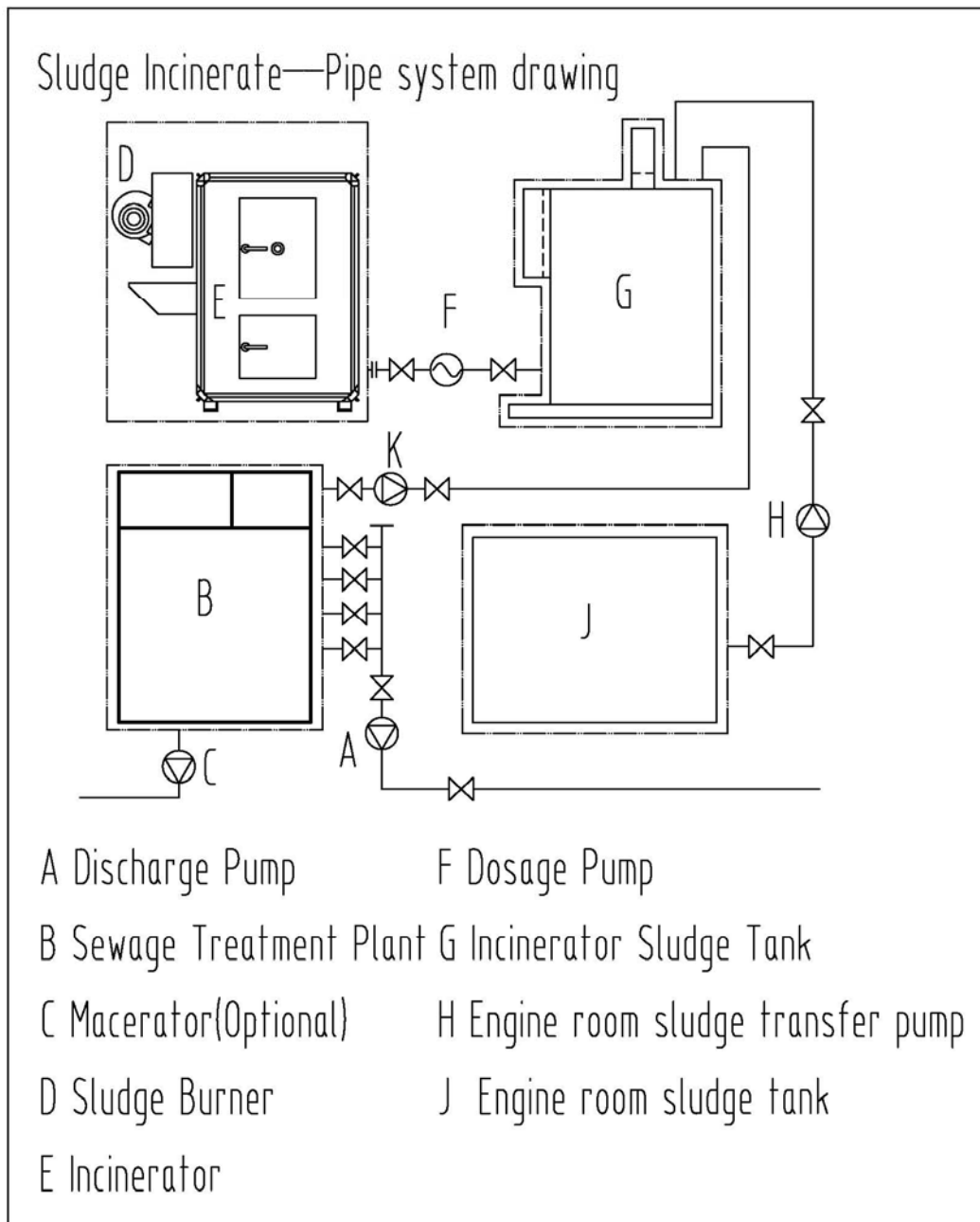


FIG.2

DRAIN AND WASHING

- A. Never leave the marine sewage treatment unit full of sewage without the air compressors running.
- B. To complete shut-down, drain and clean as shown and leave empty, or alternatively refill with clean water ready for use.
- C. Never enter any sewage tank unless it is thoroughly cleaned out or breathing apparatus is worn.
- D. During the running, no any dry run the discharge pump long is allowed.
- E. Close the valves of the raw sewage and grey water inlet. Ensure that the connected appliances are not used.
- F. Select the discharge pump control button to OFF.
- G. Open valve numbers 2, 6 and 8.
- H. Close valve numbers 1, 3, 4 and 5.
- I. Select HAND on the control panel switch to operate the discharge pump.
- J. Pump or drain the Aeration Tank contents overboard.
- K. Open the valve 1 and empty the Settling Tank.
- L. Close valves 1, 3, 4 and 6 and open valve 2, refill the plant through valve 5 taking caring not to over pressurize the Tank.
- M. Where a recirculation line has been fitted, Chlorinate the plant before entering the tank, close valves 2, 4 and 5 and open valves 1,3,6 and 8. Start discharge pump and circulate the tank contents for approx an hour. After the circulation is finished empty the plant.
- N. To clean the Treatment Plant by Manual.
- O. Inspect the internal coating and recoat as necessary with high grade epoxy tar paint.
- P. Inspect the filtration net periodically. This can be cleaned in situation with a hose or removed from the tank to clean.

NOTE: WHEN THE DISCHARGE PUMP IS WORKING, BE SURE THAT ALL THE RELATE VALVE MUST BE OPEN.

SECTION 4: MAINTENANCE

GENERAL

In order to making the Plant used easily and reduce the probability of the plant malfunction taking place, the buyer should do according to the follow lists strictly.

REQUIREMENTS

WEEKLY

- Check that the air supply pressure gauge reading is between 0.015 and 0.054Mpa.
- The pressure gauge reading of Membrane Module is 0.1Mpa.
- The pressure gauge reading of BACKWASH compress air is 0.4Mpa.
- Check the Activated sludge whether it's being returned through the transparent pipe on top of tank.

MONTHLY

- Change over from the duty to the standby air compressors. Ensure that the delivery valve is open before operating change over switch and then close delivery valve on unit not running.
- Check the contents of the Aeration Tank for quantity of suspended solids using the graduated cylinder supplied. Fill the cylinder to 100m. I. Level and allow standing for 30 minutes. If the level of the settled sludge is above the 60m. I. Level, the unit must be partially de-slugged.

EVERY SIX MONTHS

- Examine filter cartridges fitted to the Air Compressors and replace if dirty. (These may be cleaned with Toluene or a similar solvent in an emergency). Check the functioning of the Non-return valves fitted to the Air Compressor discharge line.

ANNUALLY

- Drain and clean all Tanks of the unit and inspect the discharge pumps and air blowers for wear. If air pressure rises above 0.054Mpa at any time check both filter cartridges and aerators and replace as necessary.

PUMPS MAINTENANCE

Maintenance for all pumps, refer to the profession Instruction Manuals for pumps which delivery together with the plant when graduated.

REPLACEMENT OF AIR DIFFUSER

Take down the air diffuser which is made of micro-pore ceramics should be careful otherwise the diffuser may be spoiled. Please clean or replaced the air diffusers and filter cartridges if the air pressure rises above 0.054 MPa. Remove the homologous manhole end cover and disconnect running union. Lift out diffuser assembly complete. Remove end cap, nut and washers and withdraw ceramic element. Fit a new element and taking care that the position of rubber washers of double-ended. Then screw down the nut and install the end cap and manhole end cover.

MAINTENANCE FOR MEMBRANE MODULE

- Don't hit the shell of membrane when the plant is running. Otherwise, may spoil the membrane components.
- Should keep the membrane cleanly if the plant will not be used long.
- If the flux and the quality of effluent are unusual then the membrane components may be spoiled, change or service.
- **WASHING**
 - * Shut-down the Valves of Raw sewage, Hospital Sewage inlet and etc. Then clean and drains empty the Primary Treatment Tank.
 - * Infusing clean water, 200L into the Primary Treatment Tank then start the circulating pump and cycle the liquid for 10 minutes then stop and empty.
 - * Infusing the solution NaOH / 1%, 200L into the Primary Treatment Tank then start the circulating pump and cycle the liquid for 15 minutes then stop and empty.
 - * Infusing clean water, 200L into the Primary Treatment Tank then start the circulating pump and cycle the liquid for 10 minutes then stop and empty.
 - * Infusing the solution HOCCOOH·2H₂O / 1%, 200L into the Primary Treatment Tank, start the circulating pump and cycle the liquid for 15 minutes then stop and empty.
- * Infusing clean water, 200L into the Primary Treatment Tank then start the circulating pump and cycle the liquid for 10 minutes then stop and empty.

MALFUNCTION ANALYSIS&ELIMINATION

Malfunction	Analysis	Solve Way
Can't work normally And Capacity is low	<ol style="list-style-type: none"> 1. Pipe block 2. Pipe not seal 3. Valves not seal 4. Membrane pollution 	<p>Eliminate block</p> <p>Ensure pipe seal</p> <p>Check the valves or clean</p> <p>Clean or change</p>
Final water not eligible	<ol style="list-style-type: none"> 1. Membrane malfunction 	Change
Pump not work	<ol style="list-style-type: none"> 1. Electrical trouble 2. Pump mangled 	<p>Check electrical circuit</p> <p>View the pump instruction Manual</p>

SECTION 5: TRANSPORT AND STORAGE

HOISTING&TRANSPORT NOTION

- The transport tools to the plant with no especial requirement. But when lift the plant, crack and hit are not allowed and should keep the package box better.
- Transport and stockpile must be complied with the prompt, insolate, drench, convert and roll are not allowed.

STOCKPILE REQUIREMENTS

- For temporary storage, the plant should be placed in storeroom, if in the open air, felt cover is needed.
- The plant should be stored in a clean, dry and ventilation storeroom.
- The storage should be in a package mode.

PACKAGE OPEN AND LIFTING

- Open the box from side plate and top plate lightly to avoid the plant being damaged
- Dismantle the bolts on the bottom plate and then lift the plant.

CHECKING

- Checked if any damnification and also accord with the requirements of purchase order have.
- Check if the document, attachment, spare parts are accord with the Spare List.

SECTION 6: SPARE LIST AND SERVICES**SPARES LIST**

● Spares for Air Compressor

No.	Name	Type	Quantity
1	Vane		1set

● Spares for Discharging Pump

No.	Name	Type	Quantity
1	O-seal	32×3.5 GB1235-76	1 pc
2	O-seal	130×3.1 GB1235-76	1 pc
3	Mechanical seal	MN108-40 GB6556-86	1 pc
4	Ball bearing of Motor	6205	1 pc

● Spares for Electrical Control Box

No.	Name	Type	Qty.
1	AC Contactor	LC1-D09M7C	1pc
2	Mid-Relay	CAD-32M7C	1pc
3	Indicator	AD16-22D/W31 TH	1pc
4	Indicator	AD16-22D/G31 TH	1pc
5	Flash Buzzer	AD16-22SM/R31 TH	1pc

● List of tools and auxiliaries

No.	Name	Type	Quantity
1	Measuring Glass 100ml		1 pc
2	Acid-resistant allelic-fast Gloves		1 pair
*3	Check Valve	H11T-16 DN25	1 pc
*4	Solenoid Valve	DN25 ZS-25B(NC)	1 pc

NOTE:

THE AUXILIARIES MARKED WITH ‘*’ TO BE INSTALLED BY SHIPYARD, NEVER DEFINED AS SPARE PARTS.

TOOLS AND AUXILIARIES LAY IN THE SPARE BOX.

GUARANTEE

The guarantee term is 18 months after delivered or 12 months after used.

SERVICES ADDRESSER WORLDWIDE

1 Germany

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5 Great Britain

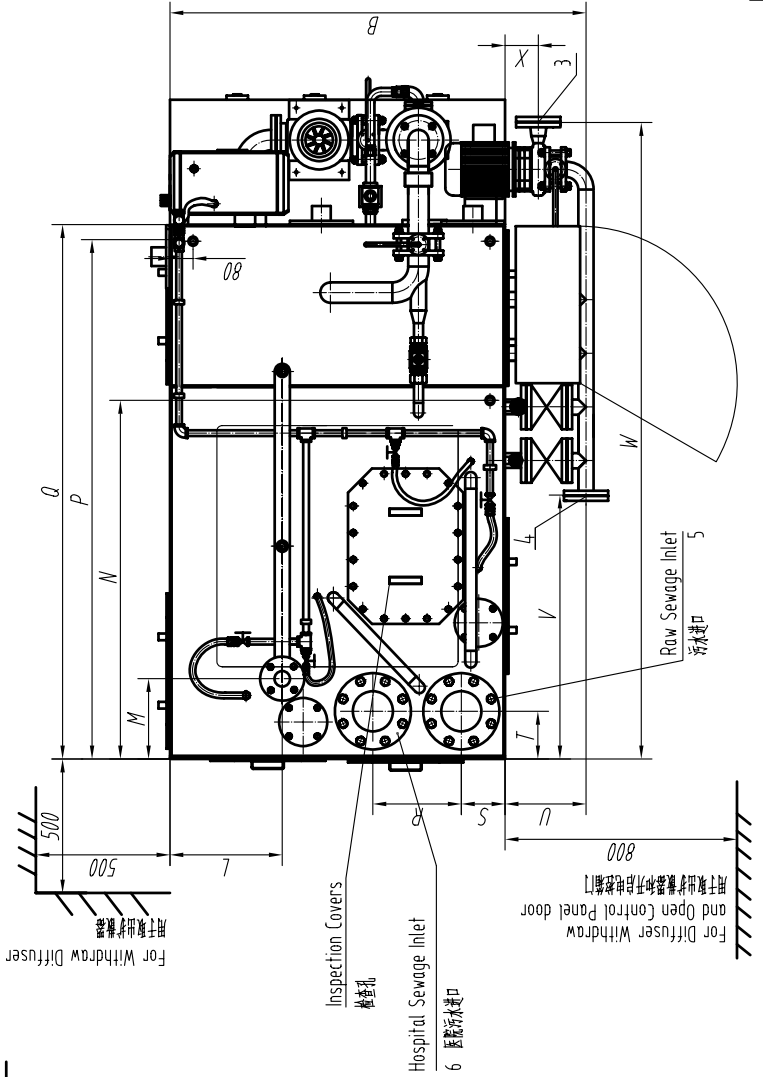
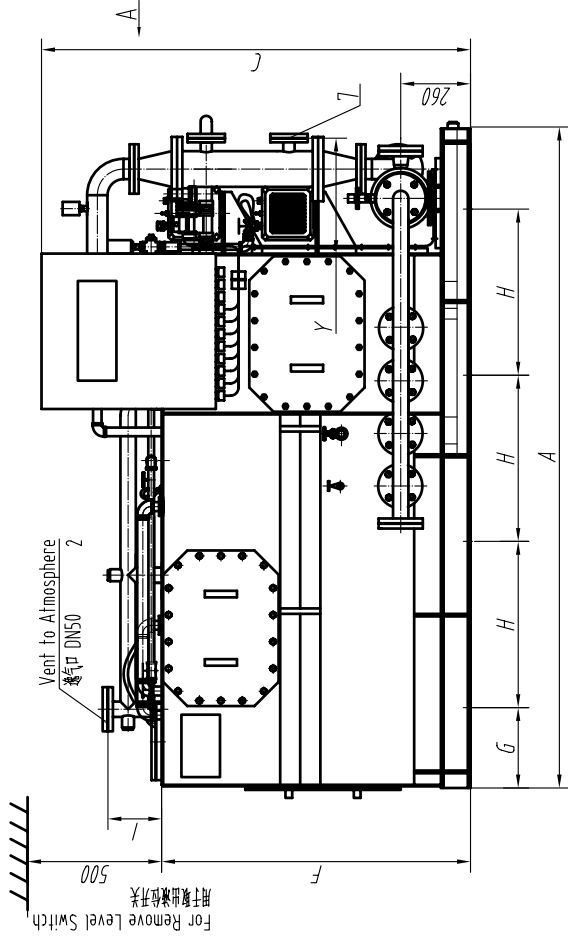
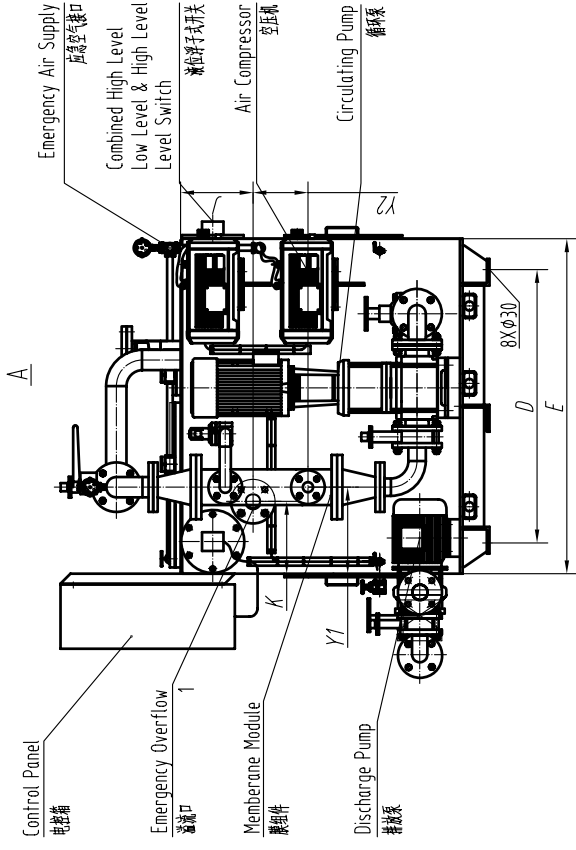
HATLAPA Marine Equipment Ltd.,
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6 Korea

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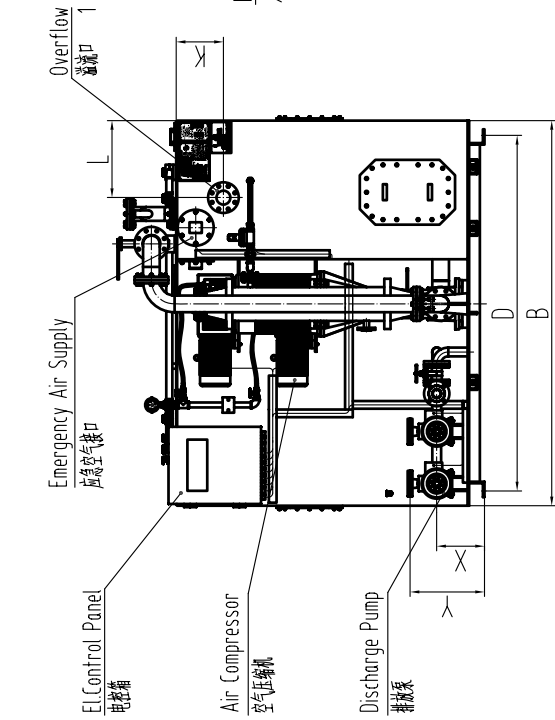
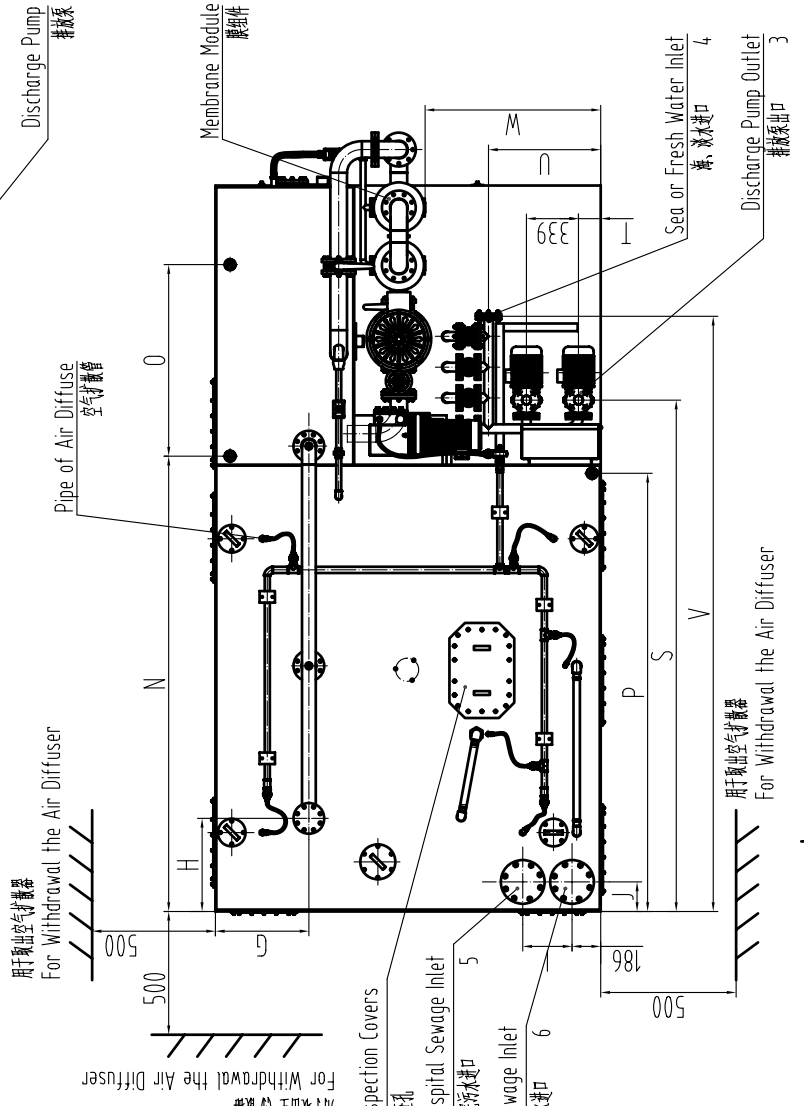
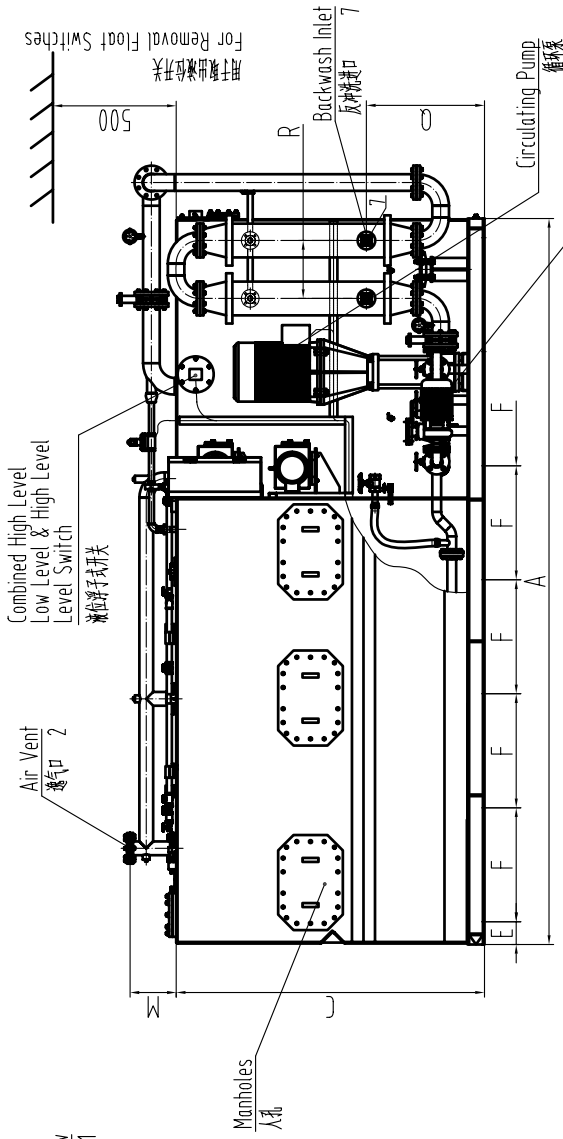
7 China

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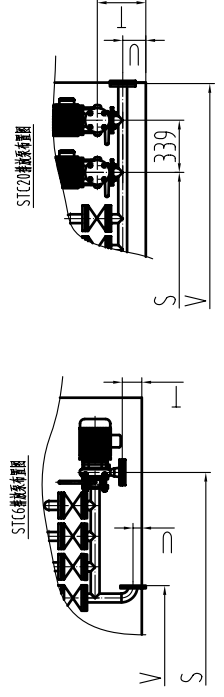


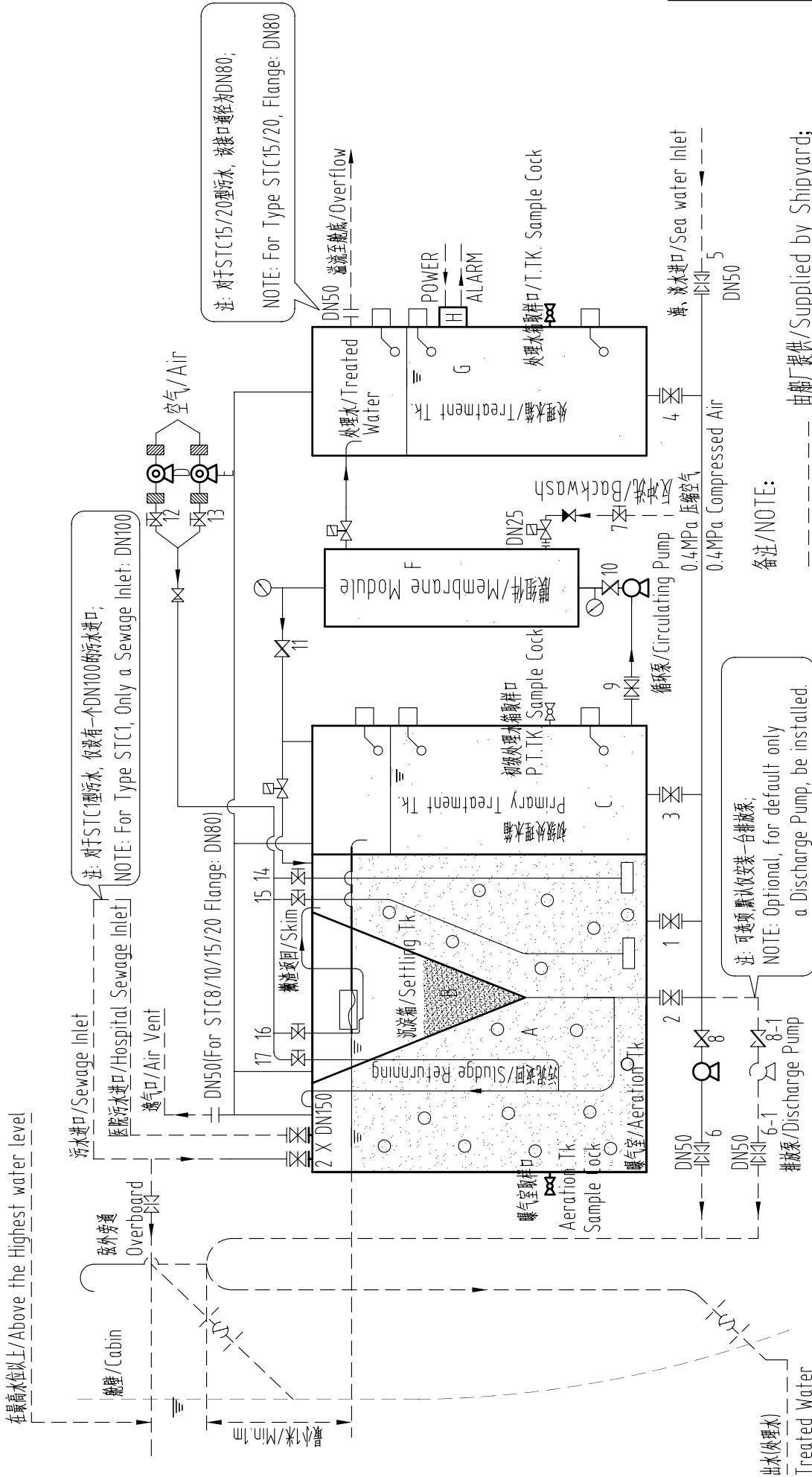
序号/No.	规格法兰/Commiting For	数量/Qty.	法兰规格/Flange	备注/Remark
1	溢流口 / Overflow	1	DN50	The Counter Flanges shall be supplied by Maker 由供货厂家提供法兰
2	透气口 / Air Vent	1	DN50	
3	排放泵出口 / Discharge Pump Outlet	1	DN50	
4	海(淡)水进口 / Sea or Fresh Water Inlet	1	DN50	
5	污水进口 / Raw Sewage Inlet	1	DN150	
6	医院污水进口 / Hospital Sewage Inlet	1	DN150	
7	反冲液进口 / Backwash Inlet	1	DN25	

型号/TYPE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
STC1	1960	1486	1680	920	120	1150	288	458	200	270	350	256	125	952	1284	1420
STC2	2460	1552	1600	1020	1250	1152	300	620	200	270	270	419	194	1344	1554	1938
STC3	2460	1552	2050	1020	1250	1600	300	620	200	270	270	419	294	1344	1554	1938
STC4	2685	1696	2110	1170	1400	1600	332	664	200	270	300	406	413	1569	1784	2053
	Q	R	S	T	U	V	W	X	Y	Y1	Y2					
	1500	190	136	125	295	478	1864	95	420	323	220					
	1994	330	163	178	302	985	2375	124	430	323	205					
	1994	330	163	178	302	985	2375	124	445	323	654					
	2220	330	186	193	302	1214	1214	124	430	330	620					



序号/No	规格/Type	数量/Qty	法兰/Flange	备注/Remark												
1	溢流口/Overflow	1	DN50	STC5/20: DN80												
2	透气口/Air Vent	1	DN80	STC5/6: DN50												
3	排放出口/Discharge Pump Outlet	1	DN50	STC5/20: 01ty-2												
4	海水/淡水/Sea or Fresh Water Inlet	1	DN50													
5	医院污水进口/Hospital Sewage Inlet	1	DN150													
6	污水进口/Sewage Inlet	1	DN50													
7	反冲接口/Backwash Inlet	2	DN25	STC10: 01ty-3												
膜组件/Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
STC5	5250	3500	1600	1370	350	700	472	474	350	186	300	90	200	206	1292	
STC6	6300	3500	1600	1700	350	700	406	474	350	186	256	120	200	200	1338	
STC8	8400	3800	1800	1700	380	760	526	524	350	186	306	376	300	2350	1388	
STC10	10500	4700	2000	1700	500	1200	600	719	350	186	306	226	300	2754	1282	
STC15	15750	4712	2500	2000	2308	147	740	606	604	320	192	306	500	300	2955	1243
STC20	21000	5494	2500	2000	2308	233	770	390	630	280	186	389	712	300	3875	1160
膜组件/Type	P	Q	R	S	T	U	V	W	X	Y						
STC5	5250	1994	680	270	2338	89	2900	335	700	310	460					
STC6	6300	1994	680	270	305	127	57	12250	686	270	270					
STC8	8400	2244	680	270	2588	100	347	3150	710	310	460					
STC10	10500	2628	680	270	2988	100	350	3828	710	310	460					
STC15	15750	2844	766	376	3379	144	728	850	1140	310	460					
STC20	21000	3764	766	376	4904	315	5480	150	738	310	460					





由船厂提供/Supplied by Shipyard;
由绿洲提供/Supplied by Luzhou Company;

泵/Pumps	过滤器/Filter	蝶阀/Butterfly Valves
气泵/Air Compressor	压力表/Pressure Gauge	截止阀/Stop Valves
撇渣器/Skimmer	闸阀/Gate Valves	电磁阀/Solenoid Valves
扩散器/Air Diffuser	止回阀/Non-return Valves	考克/Cock
浮子开关/Floating Switches	防浪阀/Breakwater Valves	