海水淡化设备使用说明

Instructions for use of seawater desalination equipment

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设备概述 *Equipments Introduction*

JHH-FSHB-10 海水淡化设备系采用国际最先进反渗透技术，经过优化系统设计而成，能将海水直接淡化成甘甜卫生可口的饮用水，淡化水质符合国家生活饮用水水质标准(GB5749-2006)。

JHH-FSHB-10 seawater desalination equipment adopts the world most advanced technology which is the "Reverse Osmosis Membrane isolation technology" and it is the most advanced technology widely recognized in the world today. Our unit is efficiently practical and converts seawater into ultra clean clear drinking water free from odors and bacteria borne disease and etc. The product water had meets the national drinking water quality standard (GB5749-2006).

设备充分考虑客户的要求进行设计生产，其中船用海水淡化设备根据船舶应用的特殊性而进行了专门的设计，其体积小、重量轻、占地省，安装方便、适应性强，可以在狭窄拥挤的船舱、甲板、船员舱、过道等空间安装。该设备操作简单维修方便，只要有海水、有电启动后可立即提供淡水。设备脱盐率高，性能稳定、安全可靠，设计新颖巧妙，避免了频繁的清洗，无环境污染。其机架采用不锈钢制作，防锈耐腐蚀。设备结构紧凑、性能可靠，操作、维护简便，所产淡水无需矿化，可直接生饮，是满足海水地区人员生活用水的理想设备.

Our unit has been specially designed to be compact in size to save space yet still maintaining the highest quality. Our operation control system is designed for operational convenience and functionally easy for all to operate beside this it is also for the convenience of maintaining the water maker.

系统组成 *The system component*

1．预处理系统 ***Pre-filtration System***

供水泵 *Feed Pump*

多介质过滤器 *Multi Medium Filter*

精密过滤器 *Precision Filter*

功能 ***Function***：

多介质过滤器采用多层粒径介质，能够有效地去除水中悬浮颗粒和细微颗粒物质。活性碳过滤器采用优质活性碳，能够去除水中余氯及微小颗粒。

Our Multi-Medium Filter system utilizes a high pressure vertical side shell depth with layered graded beds of filtration media. This system efficiently removes or reduces all suspended solid,minerals, metals, particulate and many others. This technology through the use of multiple layers of specially multi-grain quartz silica silica's and also activated carbon is used as media in a pressurized vessel to reduce the level of some SOCs (soluble organic compounds) like pesticides, dioxins and VOCs (volatile organic compounds like chloroform and petrochemicals.

2．反渗透系统 ***Reverse Osmosis Membrane system***

高压泵 *High pressure pump*

膜组件 *RO Membrane*

调压阀 *Pressure Control Valve*

清洗箱 *Rinse Tank*

功能 ***Function***：

主要将预处理处理过的原水进一步处理成淡水

RO membrane systems are typically used to reduce the levels of' total dissolved solids and suspended matter. The principal uses of reverse osmosis are for the reduction of high levels of nitrate, sulfate. sodium, bacteria and total dissolved solids.

设备参数 *Operating & Capability Parameter*

1. 操作参数 *Operating parameter*

反渗透操作压力 *Operating Pressure (MPa)*	＜6.5MPa
进水溶解性总固体含量 *Concentration NaCl(PPM)*	＜38000PPM
进水流量 *Inflow Flow(m'/h)*	2m³/h
供水压力 *Feed Water Pressure (MPa)*	0.1～0.3MPa
进水温度 *Operating Temperature (℃)*	5～45℃
进水 pH 值范围 *PH range* ——连续运行时 *Series run*	2～11
进水 pH 值范围 *PH range* ——短时间(30)清洗时 *Short-term 30'rinse*	1～12
进水余氯 *Feed water chlorine*	≤0.lmg/L
电源配置 *Power*	380V/6.6kw

2. 性能参数 *Capability parameter*

产水量 *Product Water Output (m/h)*	0.42T/h
产水率 *Recovery(%)*	25%
电导率 *Product Water (PPM)*	≤700PPM

设备操作与运转 *Operation Instructions & Procedures*

1. 注意事项*Important Instruction*

（1） 首先检查各个管路是否连接好，检查各个阀门的开关位置，将调压阀逆时针完全打开，机架面板上的选择开关置于中间停止位置，闭合总电源开关及各分项电源开关。*Start by inspecting all the conduit system and all the valves then switch on the charge system and proceed to off the power switch.*

（2） 多介质过滤器必须定时冲洗，具体操作参考过滤器控制阀的手册。

Multi Medium Filter should be rinsed in a regular time, please consult manual of filter valve.

（3） 初次使用反渗透主机时，应在最初 25-48 小时的运转中按制水流量0.42 m/h 时确定的运行压力为操作压力，水温以 25C为参考，以后运转即以该压力为标准进行调节。

When using the equipment, at the first time, the operating pressure should be run as product water flow to 0.42m³/h, temperature 25 ℃ and operates it for a duration period of 25 - 48 hours. After that adjust it accordingly to the required operational pressure.

（4） 该制水流量 0.42mh 是基于水温 25C时设计的，而温度每升(降)1C，产水量则相应增(减)3%左右，因此在操作压力一定时，由于温度变化引起制水量的改变是完全正常的，请注意调节，但不管何时操作压力不能超过 6.5MPa。

The product water output capacity of 0.42m³/h is designed according to 25 ℃. If the product water temperature goes up or down by difference of' 1 degree, this indicates the product water output capacity has either drop or rise with a total of 3%.This is the result of the operating pressure exceeding the required pressure, it is normal that the product water temperature increases. Again, it is still very important that attention to this is a must and therefore regular proper supervision is required to ensure it is regulate within the 6.5MPa.

（5） 反渗透主机的压力升降是一个缓慢的操作过程，切忌求快，否则会影响设备性能,降低膜元件的使用寿命。

In the course of turning up the pressure for the RO membrane system, make sure that it is done in a very slow and gradual increase manner. If the increase is done in a fast

manner,it will affect the performance quality so strictly adhered to the instruction provided.

（6） 主机停机时间在 48H 以上时，要加注保护液。

If the equipment operation is not in use for a period of more than 48 hours, protective chemical must be added as a protection so to keep the equipment operational performance in peak condition and the long life of the equipment.

2. 操作程序 ***Operating Features, Process & Procedures***

（1） 准备工作 *Opening of valve Procedure：*

将压力调节阀手轮逆时针旋至完全打开。注意检查各个阀门的状态，将三通阀1手柄放平，置于浓水排放口。

The first compulsory step is to open the Pressure Control Valve then proceeds to open 1" valve to Condense Water Outlet.

（2） 开机 *Operation:*

开机时，将控制面板上的“系统”开关置于“自动”位置，将其他各开关置于“自动位，将“操作”开关置于“制水”位置，系统自动打开进水阀，15S 后启动供水泵，当进水压力超过 0.05MPa 后，启动高压泵，无压运行 10 分钟左右，将乐力调节阀手轮顺时针缓慢转动升压(约 5 分钟左右)，使淡水流量计读数为 0.42m/ h(7L/min)左右，淡水会首先进入并充满清洗箱，然后自动关闭纯水阀，将淡水注入纯水箱，注意初次调节压力调节阀时观察流量计及电导率仪。

Begin by switching to"System"and park position to"Auto", all switch park position to"Auto", by switching to"Operation"and park position to "Product"The system will open the inflow valve, 15 seconds follow by, the feed pump starts up, and the high pressure pump begin to start up once the inlet pressure exceed 0.05Mpa.Operate at no pressure for about 10 minutes. Clockwise laggardly turn the Pressure control valve let the flux hoist reaches 0.42m³/H (7L/min) which normally takes about 5 minutes. The Product Water starts filling up the rinsc tank. Then the system will automatically close product valve and the Product water will then proceed to fill up the tank in the ship.lt is very important to conduct close monitoring on the piezometer of the RO Membrane System at cvery moment to prevent any pressure fluctuation.

（3） 停机 *Stop device:*

当系统长时间停机，先将压力调节阀按逆时针方向缓慢转动，用 5 分钟左右的时间将压力降为零，然后无压运行数分种，将“操作”开关置于中间停止位置。

When system will stop long time(stop exceed two day), it is very important to turn the Pressure control valve counter-clockwise then proceed cautiously and slowly to turn the pressure down gradually for about 5 minutes and patiently wait for 10 minutes after, Then park position to middle of the“Operation”switch.

（4） 冲洗 Flush:(非常重要)

每次停机时，如果短时停机，将“操作”开关置于“清洗”位置，系统打开清洗阀,白动高压泵，利用清洗箱内的淡水将海水冲洗出来，以保护高压泵及膜组件在短时间停机时不受海水腐蚀。如果长时间停机，则参考保护液使用和步骤。

Stop the system at a timc, if stop the a little, by switching to “Operation”and park position to“Rinse”, the system open the rinse valve, startup the high pressure pump, the seawater in the Reverse Saturation System will be replaced by product water in the Rinse Trunk. That may protect Membrane Subassembly and High Pressure Pump;if stop a long time, please consult Use and Operate of Safeguard Liquid.

（5） 保护 *Safe guard feature (Pressure control):*

设备备有压力开关、安全阀及产水不合格报警排放

This equipment is equipped with a pressure switch, safe valve, and the product water alarm signal function of drain.

当进水压力低于 0.05MPa 时，低压开关断开，设备报警并自动停止，防止高压泵无水运行，只有按“低压复位”按钮后，设备才能重新启动运行:

When the pressure of inlet falls below 0.05MPa, the pressure switch will cut off automatically and alarm in order to prevent the high pressure pump from operating without water. After that, the system can't rerun until pressing the“low Pressure Reset”button.

当系统操作压力超过 6.5MPa 时，安全打开卸压，将压力下降到 6.5MPa 以下，保护膜系统:

When the operating pressure of system exceeds 6.5MPa, the Safe valve will open, the pressure of system will drop.

设备配有水质不合格报警排放的功能，当产水电导率大于 700PPM 时，系统自动报警并打开纯水阀(电动三通阀)排放口，将不合格水排放出去，当产水电导率小于700PPM时，系统关闭纯水阀，将合格水引入纯水箱。

It equips with the alarm signal function of drain. The system will give an alarm automatically and open the Product valve(automatic three conduit valve) and drain the unqualified water out if the conductive rate of product water more than 700PPM.The system will close the Product valve and pure the qualified water into pure tank when the conductive rate of product water less than 700PPM.

（6） 手动控制 *Manual control:*

当系统开关置于“手动”位置时，各泵及阀均可直接启动，手动控制时，要先将进水阀开关置于“手动”位置，打开进水阀，再将供水泵开关置于“手动”位置，启动供水泵，然后再将高压泵开关置于“手动”位置，启动高压泵，调节调压阀手柄，将压力上升到运行压力:关机时，要先将调压阀打开，将压力降低为零，再关闭高压泵关闭供水泵，关闭进水阀。

When switching to “System and park position to "Manual, each pump and valve can start up directly.First, switching the inflow valve and park position to "Manual", open the inflow valve;Secondly, switching the feed pump and park position to “Manual”,start up feed pump;Switching the High-pressure pump and park position to “Manual, start up High-pressure pump; adjust the handle of the Pressure control Valve and let operating pressure rise to the defined value.When stopping the device, first turning the pressure down to no pressure, then stop the high pressure pump and feed pump, close the inflow valve.

设备问题及对策 *Trouble Shooting & Counter Measure*

	问题 *Problems*	对 策 *Counter Measure*
1	硕组件数量减少 *Membrane subassembly capacity decreases*	按照设计的膜组件数量运行 *This is according to design of amount of membrane subassembly run*
2	低压运转 *Low pressure running*	按照设计的标准压力运转 *Perform according to design standard pressure run*
3	发生膜组件的压密 *High pressure running*	当在大大超过基准压力的条件下运转时，就会发生膜组件的压密，必须更换膜组件 *If the osmotic pressure goes up, reduce the water permeation, graveness can separate out the salinity on the surface of the membrane. This has to be done accordingly to the design for standard pressure run.When running at optimum rate and exceeding the standard pressurc, compaction of Membrane Subassembly may occur and in event of this, Membrane Subassembly replacement is a must.*
4	运转温度的降低 *Operating temperature*	按照设计的温度25℃运转 *Run according to design temperature 25℃*
5	金属氧化物和污染物附着在膜表面上 *Metal oxide and Contamination to the surface of the membrane*	每次制水完毕后用纯水进行低压冲洗 *Perform low pressure ninsing every day*
6	在较高的产水率条件下运转 *Operate in higher recovery*	当在较高产水率条件下运转时，浓水量将减少，这样膜组件内水的浓缩倍率就上升，结果造成给水水质严重下降，由于这种给水的渗透压上升，导致透水量的减少严重时，将在膜表面上析出盐垢，必须按设计产水率产水。 *When operating in higher recovery, the waste water output will decreasc, then the concentration rate in the membrane subassembly will rise, as a result the product water quality will decrease too. Because of the rising osmosis rate of feed water , the amount of the infiltration water will reduce, when the situation is serious, the surface of the membrane will permeate salt. Operation should be run according to the design recovery.*
7	反渗透设备乐差上升 *Rise in Reverse saturation device pressure gap*	改进预处理设备的运行管理，用药品清洗膜组件 *Change the run of Pre-filtration System and perform the rinsing exercise of the Membrane Subassembly used*

8	油分混入 *Interfuse oil*	注意油绝对不能进入给水，否则需更换膜组件 *Feed water not on your life interfuse oil, otherwise change Membrane Subassembly*
9	原水总溶解固体物增加 *Feed water muddy*	按照原水水质复核 *Check according to feed water quality*
10	低压力运转 *Low pressure running*	按照设计基准压力运行 *Run according to design standard pressure*
11	震组件的破损 *Dilapidation of Membrane Subassembly*	更换膜组件 *Replace Membrane Subassembly*
12	膜组件“盐水密封”的短路 *Saturation of"brine pressurize" in Membrane Subassembly*	造成膜表面上浓度扩散，使水质恶化，更换膜组件 *Work pervasion of brine consistenee on surface of Membrane,that is worsen water quality.Replace"brine pressurize"in Membrane Subassembly*
13	“0”形环漏泄（在内接头内） *Saturation of"O"loop*	更换“0”形环 *Replace "O"loop*
14	产水率升高 *Rise of recovery*	产水率应保持在设计规定值以下 *Recovery can be keep under the design prescribe numerical value.*
15	膜组件安装时插入方向相反 *When installs Membrane Subassembly, direction reverse*	重新安装膜组件 *Re Install again the Membranc Subassembly correctly*
16	溶剂的混入 *Interfuse organic menstruum/solvent*	苯、甲苯等有机溶剂会溶解膜，因此必须注意不能混入有机溶剂，否则需更换旗组件。 *Benzene and tolucne organic menstruum may dissolve Membrane so do not interfuse organic menstruum，In event of this happening, the Membrane Subassembly then replacement is compulsory.*

设备系统的清洗 *Rinsing of Reverse Osmosis system*

需要强调的是对于一个正确设计和操作的反渗透系统来说频繁的清洗是不需要的，这是因为FT30膜在正常使用下，膜的结垢是有限的。清洗要与 pH 值及温度结合，方能更有效的完成。

Rinsing of the reverse osmosis system is not necessary if the right design and operation is being applied.This is because a good reverse osmosis system depends on a few combinations like good membrane FT30.control PH and Temperature.

1. 清洗的必要性 *Rinsing Exercise*

正常操作时，反渗透的膜元件能被矿物质、生物物质、胶粒和不溶性有机物污染，随着这些污物在膜表面的不断积沉会引起水通量的降低或脱盐率的下降或两者都降低。

During operation, minerals, micro organism, colloidal granule can pollute the memmbrane, and with this subsiding continually on the surface of Membrane, the Water Flow or stabilize Salt Rejection rate will drop.

不管何时，按照参考条件(在最初 25-48 小时的运转中确定的流量和压力)，只要水通量（淡水产量）下降 10%，纯水中盐分含量有明显增加，就应该对元件进行清洗。

According to required condition, start by confirming rate of flow and pressure for duration of 25 - 48 hours and when and if the water flux (Product Water Output) drops by 10%, it is confirm that the salinity content in the product water has increases. If this occurred then rinsing exercise for the membrane subassembly has to be executed.

应该注意的是如果原水温度降低水通量也会下降，这是正常的，并不说明膜被污染，预处理、压力控制及泵方面的故障都能引起产品水通量的降低或盐份透过增加，因此应该注意到这些引起的原因，那么元件可能就不用清洗。

Another occurrence is when the temperature decreases in the feed water, it cause the declinein the water flux too. Many reason like malfunction of the pre-filtration system, pressure.pump and etc are contribution factors to the decline in the water flux and increase of thcsalinity content so to help avoid the rinsing exercise, close monitoringand attention to allthese contributing factors is very important.

2. 安全措施 *Safety precautions & others*

(1) 使用下面段落里指出的任何化学物质时，应接受以下的安全操作经验，同药品销售商询求有关安全、处理和操作的更详尽的资料。

Using the chemicals in this process, it is important that experience and safety in handing and disposal of this chemical. Adhered to operation instructions, safety rules and disposal act at all time

(2) 准备清洗液时，应确信对元件进行循环清洗前所有化学物质都已溶解完全，搅拌均匀。

When preparing of this rinsing chemicals solution, it is yery important that all the ingredient chemicals is properly agitated and make sure it is dissolve into solution form before application.Then rinse it thoroughly and uniformly to all parts of the subassembly.

(3) 注意，化学清洗后要用高质量的不含游离氯的水(最低温度 20℃)冲洗元件，这里推荐使用反渗透产品水，但用无锈蚀管路系统提供的预过滤的原水也可使用。

After rinsing the subassembly in the chemical solution, the next step is to clean it With product water (free from chlorine) and do not uses water with chorine in it.This is very important because chlorine will damage the membrane. We highly recommend the use of the reverse osmosis product water or the water after passing through pre-filtration system.

(4) 在重新开始按正常操作压力和流量运转前，最初应无压冲洗元件里面大量的清洗溶液，虽然采取这一措施，化学清洗物质还是会随着清洗的进行进入到透过液(纯水)里,因此运转开始后要先排放，直到水质合格。

Then start back the opcration and make sure the operating pressure and flow rates are properly regulated to the correct requirement then start flushing out the rinse liquid with no pressure.This measure is to prevent the rinse liquid entering back into the product water. After this make sure the product water stay at least 30'or till it the water is limpidity.

(5) 在清洗液循环期间，温度有如下限制:

PH 值为 2-10 时应低于 40℃，

PH 值为 10-11 时应低于 35℃，

PH 值为 11-12 时应低于 30℃，

勿使清洗液温度低于 15℃，否则清洗速度太慢

During the rinsing, the rinsing liquid temperature limits are as follows.

PH level: 2-10 = Temperature should not exceed 40 degrees ℃

PH level: 10-11 = Temperature should not exceed 35 degrees ℃

PH lcvel: 11-12 = Temperature should not exceed 15 degrees ℃

Do not let the temperature of Rinse Liquid goes below 15 degrees C; otherwise the rinse speed would be very slow.

3. 反渗透系统的清洗程序 Rinse procedure of RO System

(1) 冲洗 *Flush*

将三通阀1手柄放平，指向浓水排放口，完全打开调压阀，将“操作“开关置于“清洗”位，系统自动打开清洗阀，启动高压泵，冲洗系统，待清洗箱液位下降到中位时，将“高压泵”开关置于中位停止。

Open 1st valve to Condense Water Outlet, After that completely open the Pressure control valve and switching to "Operation" and park position to "Rinse", startup the high pressure pump, flush the pipe, when the water line to middle for rinse tank, by switch to"High pressure pump"and park position to middle, stop the high pressure pump.

(2) 配制清洗液 *Mixing Rinse Liquid*

将药品溶解完全，然后倒入清洗箱内，按 20L (清洗箱容积)配制。

Use product water completely dissolves the chemicals, and pours it into the rinse tank, and then fill up 20 liters of Product Water (Capacity of Rinse Tank).

(3) 无压大循环 *Rinsing without pressure*

将三通阀1手柄逆时针旋转 90 度，指向清洗循环口，将"高压泵"开关置于"自动位，启动高压泵，原管线里的原水被置换出来后，清洗液会在浓水管里出现，然后将清洗液循环至清洗箱，保持温度稳定，循环 30 分钟。

Open the 1st valve to rinse cycle. By switching to "High pressure pump" and park position to "Auto", Keep temperature consistent and do the rinse for about 30 minute

(4) 浸泡*Marinate*

将“高压泵”开关置于中间停止位置，关闭高压泵，静置，有一小时的静置时间即

可，污染严重的，可延长至于10～15小时，静置期间亦可间断1小时循环10 分钟，以提高清洗效果。

Switching to "High pressure pump" and park position to middle, Close High pressure pump and hold it for an hour. If it is badly polluted then you may extend it to 10-15 hours. During this period of time, it will circulate rinse for 10 minutes every hour. This format of rinsing is an advance stage of rinsing efficiency.

(5) 冲洗 *Flush*

将三通阀1手柄放平，指向浓水排放口，将"高压泵"开关置于"自动"位，再次启动高压泵，直到清洗箱液位到最低自动停止，打开清洗箱排水阀。将系统开关至于停止位置，按开机程序操作，系统重新开始制水《调压阀保持完全打开)，无压运行5分钟后关机。

Open 1st valve to Condense Water Outlet, startup the high pressure pump and observe Water Line Marker, stop device at lowest water line marker.According to the operating procedure, open the device and with no pressure and operate it for 10 minute then rinse the rinse tank.

注意*Important Notice*

1、 清洗时，必须将调压阀完全打开。

When the system is rinsing, make sure the Pressure control Valve is completely open.

2、 清洗时，各开关必须置于"自动"位置。

When the system is rinsing, all switch park position to "Auto".

3、 清洗完毕后，重新按系统开机顺序运行,开机前半小时产水必须排放。

When the system is operating, you must discharge the Product Water for the first halfhour.

设备的维护及保养 *Equipment maintenance and Others*

1. 管路系统 *Pipeline System*

如出现渗漏，应及时处理，上紧夹环或重编生料带，但要注意清理新带入管路内部的杂质，否则会损伤高压泵。

If there is any appearing leakage, immediate attention is required. First by tightening the screws or wrap round with a hermetic film then discharge out any sundries of granule in the pipeline immediately.

2. 预处理系统 *Pre-filtration System*

1) 多介质过滤器 *Multi medium filters*

手动一阀控制，开机前反冲清洗。

Valve controller rinsed in a running time

2) 精密过滤器和保安过滤器 *Precision Filter and Protect Filter*

若滤筒渗漏，则拧松蝶栓更换密封垫。

Prevent any lcakage of the filtration tank, replace and rinse Filter-Core in time

滤芯的更换 *Filter-core jam*

波芯经过一段时间的使用后，其表面会有杂质悬浮物附着，会降低过滤速度及出水流量，低压表压力将趋近零，此时必须更换滤芯。否则，会自动停机。处理办法，关停装置，将滤筒打开，换上合适滤芯。

Filter-Core has a long life span. When the surface of the Filter-Core is jam, filtrate flux will drop. Situation like this happen, operate the high Pressure Pump, then goes to indicator of the low pressure manometer. When indicator shows 0.05MPa, you must stop the device and replace the Filter-Core. (Use plastic spanner to avoid damage to the filter core).

3. 高压泵的维护 *Maintenance of High pressure Pump*

1）不得使高压泵处于真空或半真空状态下工作。

Do not let the pump idling

2）不得使颗粒状杂质进入高压泵。

Do not let sundries of granule enter the High Pressure Pump.

3）不得使高压泵运转压力超过 6.5MPa。

Do not let the operating pressure of the High Pressure Pump exceed 6.5MPa.

4）加注润滑油 *Adding Hydraulic Oil*

柱塞泵润潜油需使用 ISO68 级特别的液压油，请参照以下品名选择用油:

An ISO68 Grade Special Hydraulic Oil is required. For additional information concerning the specifications of the oil, please reference the following oil data sheet:

SHELL TELLUS T-68 壳牌得力士T68 润滑油

●推荐特别订制的专用润滑油JD-68#

5）重要的操作条件:加油到曲轴箱直到油标尺第二线间，不要加满

Important operation: Add oil to the second tank gauge of the crankcase, don't refilling it.

注意 *Important Notice*

经常检查高乐泵及减速器内的润滑油。

Check lubricant in high pressure pump and reducer regularly.

在工作 50小时后更换一次润滑油，并在以后的使用中每 500小时或每三个月更换一次。

Replace lubricant after operating 50 hours, and replace it every 500 hours or 3 months in the late use.

4. 膜元件的保护 ***Membrane Subassemblv***

如果装置必须关闭 48 小时至一星期，膜元件内需充入保护液 JHH-BH。

If the operation is stop for 48 hours and more then the membrane subasscmbly must be filled up with suficient of safeguard liquid JHH-BH.

5. 保护液的使用和步骤 ***Use and Operate of Safeguard Liquid***

操作步骤:按清洗程序的前三步操作，循环 30-40S 后，然后，将三通阀1手柄放平指向浓水排放口，清洗箱液位到达最低位白动关机停泵，打开清洗箱排水阀，将剩余的溶液排除即可。

Operating step: According to the former three Rinse procedures, cycle for 30-40 seconds，then Open 1st valve to Condense Water Outlet, The stop device shall be activated once it reaches the lowest water marked line. Open drain valve box, cleaning out the rest of the solution.

注意 *Important Notice*

当下次制水时，前半小时内的产水必须排放。

When next afresh operate device, according to operate procedure, you must discard Product Water of first half an hour.

过滤器控制阀的设置及操作

Setting and Operation filter control valve

多介质过滤器 *Multi-medium filter*

多介质过滤器主要用于去除水中的悬浮物等大颗粒物质，其内配有先进的布水器，内装介质为精制多粒径石英砂等，设备采用手动控制阀，手动控制反冲清洗功能，能最大限度地洗除介质上及床层中的污垢，提高出水水质、延长工作周期。

Our Multi-Medium Filter system utilizes a high pressure vertical side shell depth with layered graded beds of filtration media. This system efficiently removes or reduces all suspended solid.minerals, metals, particulate and many others. This technology uses medium of multiple layers specially refined multi-grain quartz silica's. The equipment adopts hand controller and the function of recoiling and cleaning. The hand-controller can eliminate the medium and dirt to the extreme. It can improve the quality of the water and lengthen the work cycle.

过滤器技术参数 Parameter

1、材质 *Material*:	玻璃钢 FRP
2、罐体尺寸 *Dimension*:	350mm(直径 Diameter) 1400mm(高 Height)
3、进水口接口管径 *Dimension of water inlet tie in*:	1″ (Diameter)
4、单罐过滤能力 *Percolate flow*:	2.5m³/h
5、操作压力 *Opcrational pressure*:	0.3MPa
6、进水浊度 *Turbidity of inlet water*:	<20NTU
7、出水浊度 *Turbidity of product water*:	<5NTU

手动控制阀门操作 *operation ofMulti-way valve*

操作 *Operation*:

每次开机前将“供水泵”开关置于“手动”位置，转动阀门手柄到“反洗”位置，反洗 10 分钟，再转动手柄到“正洗”位置，冲洗 10 分钟，然后转动至工作位置即可。

Each time before start-up, place the "Feed pump" switches to "manual" position, manually rotate the handle to "Backwash" position. After backwashing for 10 minutes, rotate the handle to "Rinse", rinsing for 10 minutes, then rotate to the "service" position.

反冲洗:扳动手动多路阀的手柄，听见“塔”声后，阀门到位，手柄指向“反冲洗”位置，过滤器开始反冲洗。

BACKWASH: *Pull the handle of Multi-way Valve, after hearing sound "TA", the valve in place, and the handle aims to the "BACK WASH" position. The process of backwash will be started.*

运行:将多路阀手柄扳动到“运行”位置，听见“塔”声后，阀门到位，过滤器开始正常的过滤运行。

FILTER: *Pull the handle of Multi-way Valve on "FILTER" position, after hearing sound"TA", the valve in place, the process of filter will be operated*

正冲洗:扳动手动多路阀的手柄，听见“塔”声后，阀门到位，手柄指向“正冲洗”位置，过滤器开始正冲洗。

RINSE: *Pull the handle of Multi-way Valve, after hearing sound "TA", the valve in place.and the handle aims to the "RINSE" position. The process of backwash will be started.*