

## 4. Incidental facilities

For smooth operation of the purifier, it is necessary that the following facilities are properly installed.

1. Oil heater
2. Sludge tank

Detailed information on the above-mentioned items is described below.

### 4.1 Oil heater

Install an oil heater that has the proper capacity suitable for the properties of the oil to treat.

If you have a plan for series operation, make sure that the oil heater capacity is large enough to assure that smooth operation can be performed by a single heater.

#### 4.1.1 Precautions for installation of oil heater

Oil heaters normally come in two types; the steam and electrical types. The precautions for installation of these oil heaters are described below.

1. It is desirable to install a thermometer near the heater inlet. (The heater outlet temperature can be monitored by using purifier inlet temperature of multi-monitor indication attached to the purifier.)
2. Install the heater near the purifier for ease of temperature monitoring.
3. Make heat insulation arrangements.
4. Set the safety valve setting pressure of the oil heater at 0.5MPa { $\approx 5.0\text{kgf/cm}^2$ }.
5. In the case of a steam type heater, mount an automatic temperature regulating valve and steam trap. The steam trap should be mounted at a lower position from the steam outlet.
6. Properly plan and install the heater and steam piping in such a way as to prevent occurrence of water hammer or air pocket.
7. For an electrical heater, mount an automatic temperature regulator (thermostat).
8. Use such an automatic temperature regulating valve or automatic temperature regulator (thermostat) as allows the temperature at the oil heater outlet to be adjusted within the range of  $\pm 5^\circ\text{C}$ .

#### NOTE

The change in the supply oil temperature causes the oil viscosity to change, which in turn changes the supply oil flow rate. Therefore, greater fluctuation of supply oil temperature causes the pressure at the purifier outlet to fluctuate greater, making the adjustment of the Leakage Monitor difficult.

There is the fear that the pressure fluctuation in operation fails the function of the detection device because the Leakage Monitor detects pressure decline at the purifier outlet.

## 4. 附带设备

要想使分油机正常运行，必须适当地配备下列附带设备。

1. 油加热器
2. 油泥箱

以下是其详细说明。

### 4.1 油加热器

请根据处理油的性状设置适当容量的油加热器。

并且，当有串联运行计划时，请将油加热器的容量设定为 1 台可正常运转的容量。

#### 4.1.1 设置油加热器的注意事项

油加热器通常分为蒸汽式和电气式。其设置注意事项如下所示。

1. 希望在加热器入口安装温度计。（对于加热器出口端的温度监视，可利用分油机附带的温度传感器“在多功能检测显示器上显示”。）
2. 请设置在分油机的近旁，以便监视温度。
3. 请采取保温措施。
4. 请将油加热器的安全阀设定压力设定为 0.5MPa { $\approx 5.0\text{kgf/cm}^2$ }。
5. 对于蒸汽式加热器，请安装自动温度调节阀及疏水器。请将疏水器安装在低于加热器蒸汽出口的位置。
6. 为了防止发生水击或气袋现象，请合理地进行加热器及蒸汽配管的规划和施工。
7. 对电气式加热器，请安装自动温度调节器（恒温器）。
8. 请安装能使油加热器的出口侧温度在设定温度  $\pm 5$  度范围内加以调整的自动温度调节阀或自动温度调节器。

#### 注

如果通油温度的变动过大，则会因粘度的改变引起通油量发生变化，分油机出口侧压力也随之变化，这样，就难以调整泄漏检测。

泄漏检测是用分油机出口侧压力下降进行检测的，因此，运转过程中的压力变动有可能损害检测器的功能。

## 4.2 Sludge tank

The sludge separated and deposited in the bowl of the purifier is discharged from the purifier at regular intervals. Therefore, a sludge tank is necessary for collection of the discharged sludge (substitute water and some oil simultaneously discharged) and heavy fluid (separated water). (Fig 5-1)

The construction of the sludge tank and installation precautions are described below.

1. It is desirable that separate tanks be used for fuel oil and lubricant.
2. The construction should be of the totally enclosed type. Make sure that an air purge piping (100A or more) leading to the outside of the ship is always mounted.
3. When you lay the air purge piping, avoid level piping, bends that may ruin exhaust effects. Avoid centralized piping with the air purge piping of the fuel tank. Make sure that the air purge piping is independent. Design the outlet of the air purge piping so that the exhaust effects may not be adversely affected by the wind direction.

### NOTE

1. If an open type construction is employed, the oil gas will be let out into the engine room, and deterioration of the work environment and corrosion and rust formation of neighboring equipment might result.
  2. If the air purge piping is laid in such a way as to ruin exhaust effect, the reduced life of bearing, premature deterioration of gear oil, and rust formation of the drive section could result.
4. Determine the capacity of a sludge tank on the basis of the sludge and heavy fluid discharged by the purifier, etc with due consideration to the sludge discharge intervals and the spacing for sludge transfer, while referring to Table 4-1, Table 4-2, Table 4-3.

In consideration of the sludge discharge intervals that vary with the properties of the raw fluid and the oil supply rate, the following sludge tank capacities are recommended.

SJ10G/GH through SJ30G/GH: 0.5m<sup>3</sup> or more per unit  
SJ50G/GH through SJ150G/GH: 1.0m<sup>3</sup> or more per unit

5. Make sure that a high fluid level alarm device is mounted for a sludge tank.
6. A sludge tank should be constructed such that it can be heated.

## 4.2 油泥箱

分油机回转体内分离并堆积的油泥将定期地被排出机外。

因此，需要一个能够存放所排出油泥（同时排出置换水和少量油）和重液（分离水）油泥箱（Fig 5-1）。油泥箱的结构以及设置上的注意事项如下所述：

1. 希望燃油用油泥箱和润滑油用油泥箱各自单独设置。
2. 请采用密闭形结构。但必须设置通往船外的排气配管（100A 以上）。
3. 空气排放配管应采用**独立配管**形式，避免采用有损排气效果的水平配管、弯曲，并且请不要采用与燃料柜的排气等共用的联合配管方式。另外，在结构上，排气配管的出口应不会因风向等因素影响排气效果。

### 注

1. 如果采用开放式结构，油气将会排到机仓的外部，有可能造成作业环境的恶化或邻近设备的腐蚀、生锈等。
  2. 影响排气效果的那种排气配管，有可能降低轴承的寿命，造成齿轮油的过早老化及驱动部的生锈等。
4. 对于油泥箱的容量，请以分油机所排出的油泥及重液等的量为基准，考虑油泥的排出间隔及油泥的移动运送间隔，并参考 Table 4-1, Table 4-2 及 Table 4-3 进行确定。

并且，考虑到油泥的排出间隔会随着原液的性状及通油量的不同而发生改变，特推荐油泥箱容量如下：

SJ10G/GH～SJ30G/GH: 每台 0.5m<sup>3</sup>以上  
SJ50G/GH～SJ150G/GH: 每台 1.0m<sup>3</sup>以上

5. 请务必在油泥箱上安装**高液面报警装置**。
6. 油泥箱请采用可进行加温的结构。

Table 4-1 GBC-1/ GBC-2 / GAP-11 / Manual Type

Model			SJ10G	SJ20G	SJ30G	SJ50G SJ60G	SJ70G	SJ100G SJ120G	SJ150G
Quantity of water  使用水量	Sealing water 封水量	L/time	1.2	1.3	1.6	3.5	4.0	8.4	8.0
	Replacement water 置换水量	L/time	0.6	1.0	1.6	2.8	3.7	7.8	9.5
	Washing water 清洗水量	L/time	1.6	1.8	2.5	5.2	6.1	12.8	14.2
	Operating water for opening bowl 高压工作水量	L/time	1.5				2.5		
	Operating water for closing bowl 低压工作水量	L/Day	24						
Quantity of sludge {sludge, water and oil} 油泥排出量（油泥，水，油）		L/time	2.0	2.5	3.5	7.5	8.5	17.5	20.5
Quantity of separating water 分离水量		L/h	Feed rate: 通液量（L/h）×1/1000						

Table 4-2 GSH-1

Model			SJ10GH	SJ20GH	SJ30GH	SJ50GH SJ60GH	SJ70GH	SJ100GH SJ120GH	SJ150GH
Quantity of water  使用水量	Regulating water 调整水量	L/time	0.1	0.2	0.3	0.5	0.5	1.3	1.6
	Replacement water 置换水量	L/time	1.3	1.4	1.9	4.1	5.2	10.2	11.0
	Replacement water (Partial) 置换水量（部分）	L/time	0.3	0.3	0.3	0.7	1.2	1.7	1.7
	Washing water 清洗水量	L/time	1.6	1.8	2.5	5.2	6.1	12.8	14.2
	Operating water for opening bowl 高压工作水量	L/time	1.5				2.5		
	Operating water for closing bowl 低压工作水量	L/Day	24						
Quantity of sludge (Total) {sludge, water and oil} 油泥排出量（油泥、水、油）		L/time	2.0	2.5	3.5	7.5	8.5	17.5	20.5
Quantity of separating water (Partial) {sludge, water} 分离水排出量（部分） {油泥、水}		L/time	0.8~1.2	0.9~1.4	1.4~2.1	2.8~4.3	3.4~5.0	6.9~ 10.3	7.7~ 11.5

**NOTE**

No regulating/replacement water needs to be fed into a fuel oil purifier.

**注**

燃油分油机不供给调整水和清洗水。

Table 4-3

		Fuel oil purifier 燃油分油机		Lubricating oil purifier 润滑油分油机	
		Fuel oil A A 重油	Fuel oil C C 重油 (380 mm <sup>2</sup> /s at 50°C)	Cross-head engine 十字头形发动机	Trunk-piston engine 筒状活塞发动机
		nor. 标准	nor. 标准	nor. 标准	nor. 标准
Number of times of total discharge 油泥排出次数	times/Day	12	24	12	24
Number of times of washing 清洗次数	times/Day	—	—	2	4

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## 5. Piping Procedures

The purifier requires "oil system" and "water system" pipings as well as "air system" piping for operation of the auxiliaries.

The respective piping procedures are described below.

Refer to the flow diagram and use care to prevent errors in laying the pipings.

The procedures for steam and air pipings for use of a steam type heater are omitted.

※ It becomes the cause of the damage of a flexible tube, to install with small bending radius or with the form that was distorted. When it needs to bend a flexible tube, install with bigger bending radius than Table 5-1 and install it just as distortion is nonexistent.

Table 5-1

Flexible pipe minimum bending radius (at pipe center)  
(unit : mm)

For oil			For water
25A	40A	50A	R50
R45	R90	R150	

### 5.1 Oil system

The oil system requires the following pipings.

For the piping diameters and joints, refer to 9. section "DIMENSION DRAWING".

1. Pump inlet piping
2. Pump outlet piping
3. Purifier inlet piping
4. Return piping
5. Purifier outlet piping
6. Sludge outlet piping

#### 5.1.1 Pump inlet piping

For piping from the settling tank or sump tank to the suction gear pump attached to this purifier, proceed as described below.

1. When the tank is located at a position lower than the purifier, mount a foot valve or check valve.  
The suction lift of the gear pump is -4m. In consideration of the piping resistance, however, plan an installation height of the purifier.
2. For protection of the gear pump, use a 60 to 100-mesh strainer.  
Note that some oil heaters require use of a strainer having more than 100 meshes.



#### CAUTION

If poor flushing is done after installation of piping, a foreign object caused by the gear pump might cut the "safety joint" provided for protection of the pump or might damage the seat surfaces of the valves.

## 5. 配管要领

分油机的配管中，必须有“油系统”，“水系统”及用于操作的附属设备“空气系统”的配管。

以下列出了其各自的配管要领，请参照流程图正确无误地进行施工。

另外，有关使用蒸汽式加热器时的蒸汽及空气配管此处略去。

※ 分油机所附带的金属软管，如果以小弯曲半径或在变形状态下安装，则会造成金属软管的破损。因此，需要弯曲时，请选用大于 Table 5-1 所列值的弯曲半径，并且安装时应避免扭转。

Table 5-1

金属软管的最小弯曲半径（管中心）（单位 mm）

油用			水用
25A	40A	50A	R50
R45	R90	R150	

### 5.1 油系统

油系统需要设置下述配管。

有关配管口径及连接部，请参照第 8 项（尺寸）。

1. 泵入口配管
2. 泵出口配管
3. 分油机入口配管
4. 回流配管
5. 分油机出口配管
6. 油泥出口配管

#### 5.1.1 泵入口配管

从沉淀柜或贮油柜到分油机附带的吸入用齿轮泵之间的配管要领如下所述：

1. 油柜位于分油机下方时，请安装背压阀或止回阀。  
齿轮泵的吸入扬程为 -4m，请考虑配管阻力来设计分油机的设置高度。
2. 为了保护齿轮泵，请设置 60~100 目的过滤器。但是，因所使用的油加热器不同，有时要求选用 100 目以上的过滤器，请注意。



#### 注意

如果配管施工后冲洗不良，会因异物啮入齿轮泵而切断安全接头或造成各阀阀座面的损伤。

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3. Mount a compound gauge ( $-0.1\text{MPa} \sim +0.4\text{MPa}$ ) in the piping between the strainer and gear pump.
  4. When a gate valve is to be provided, install it in such a way that the spindle will be level to prevent accumulation of air.
  5. Use a reducer to eliminate the necessity of reducing the pipe diameter abruptly at the pump inlet & outlet piping.
  6. Arrange the purifier on the same floor as the settling tank whenever possible.  
When the purifier cannot be installed on the same floor, install the purifier at a height where the oil seal function of the gear pump attached to the purifier is not ruined.  
(If the height from settling tank to purifier exceeds 8m, the oil seal often leak, depending on the density, temperature, etc. of the oil to treat.)
  7. Make heat insulation and steam trace arrangements as necessary.

#### NOTE

If the settling tank is too high, or if the steam valve malfunctions, the pressure in the piping will rise, and leaks from the oil seal of the gear pump might result.

3. 请在过滤器和齿轮泵之间的配管中安装复合真空压力表 ( $-0.1\text{MPa} \sim +0.4\text{MPa}$ )。
4. 设置闸阀时, 请将主轴水平安装, 使其不形成气泡。
5. 在泵的入口, 出口侧的配管中, 请使用异径管接头, 避免急剧地缩小口径。
6. 请尽可能地将分油机和沉淀柜设置在同一层面。如不能设置在同一层面, 请采用不致影响分油机附属的齿轮泵的油封功能的适当高度。  
(虽因被处理油的密度, 温度等不同而异, 但如果沉淀柜和分油机的高度差越过 8m 时, 有时会从油封处漏油。)
7. 请根据需要进行保温, 蒸汽伴形管的施工。

#### 注

当沉淀柜过高或蒸汽用阀出现工作不良时, 有可能引起配管内压上升使齿轮泵的油封处漏油。

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### 5.1.2 Pump outlet piping

For piping from the delivery pipe of the suction gear pump to the inlet of the oil heater, proceed as described below.

1. Mount a pressure gauge for pump maintenance in the piping.
2. Make heat insulation and steam trace arrangements as necessary.

When the gear pump attached to the purifier is not to be used but a separately installed pump is to be used, select an appropriate pump with due consideration to the following points.

1. Select a pump that provides the following suction and delivery pressure or equivalent or better performance and that is suitable for the purpose of rigging.  
Suction pressure : - 4m  
Delivery pressure : 20m
2. Select a constant capacity type pump free from delivery pressure pulsations.
3. Provide valves (15A or thereabouts) at points near flanges of pump inlet and outlet, so that the oil can be removed from inside the piping at the time of taking away the pump.

#### NOTE

If a type of pump whose pump delivery pressure pulsates is used, the purifier outlet pressure will also vary, ruining the function of the "Leakage detection". Therefore, be sure to select a constant capacity type pump free from delivery pressure pulsations.  
(within  $\pm 0.01\text{MPa}$ )

### 5.1.2 泵出口配管

以下是从吸入用齿轮泵的吐出管到油加热器入口之间的配管要领。

1. 请在配管中安装压力表，以备维护泵时使用。
2. 请根据需要进行保温，蒸汽伴形管的施工。

并且，不使用分油机附属的齿轮泵而用另外设置的泵时，请留意下述内容，选定适当的泵。

1. 请选用吸入，吐出压力与下述要求相同或者更高性能，并与船内装备目的相符的泵。

吸入压力：- 4m

吐出压力：20m

2. 请选用吐出压力脉动小的容积型泵。
3. 在拆卸泵时，为排出配管内的油，请在泵的入口和出口的法兰盘近旁分别设置排放阀（15A左右）。

#### 注

如果使用泵的吐出压力脉动变化的泵，分油机的出口压力也随之发生变动，从而影响“泄漏检测”的功能，因此，请务必选定吐出压力不发生脉动变化的容积型泵（ $\pm 0.01\text{MPa}$  以内）。



### 5.1.3 Purifier inlet piping

For piping from the outlet of the oil heater to the raw fluid inlet pipe of the purifier, proceed as described below.

1. The purifier has a flow meter which indicates a flow rate converted from the fluid pressure. For accurate monitoring of the flow rate, mount a volume or area type flow meter separately in the piping.
2. When the quantity of oil that is passed through the purifier is to be reduced, adjustments must be made not only by a return piping bypass valve but also a purifier inlet valve. Make sure that an inlet valve is always installed.

#### NOTE

The three-way raw fluid valve has no function to allow adjustment of the quantity of oil that is passed through the purifier. Therefore, make sure that an inlet valve is provided.

3. Make heat insulation arrangements.
  4. Provide a valve (15A or thereabouts) at a point just before the flexible pipe so that the oil can be removed from inside the piping at the time of an overhaul.
- Refer to 5.4 Flow diagram

### 5.1.4 Return piping

Install a return piping to the oil tank for adjustment of the quantity of oil that is passed through the purifier and also for changeover of the three-way raw fluid valve.

#### NOTE

In the case of fuel oil, return it to the settling tank. In the case of lubricant, return it to the feed liquid tank (generally, sump tank).  
If the return piping is connected to the purifier inlet side (gear pump inlet side), the pump inlet side pressure will increase, and leaks from the oil seal of the gear pump or damage to itself could result.  
In the case of bypass purifying of lubricant, the return piping may be connected to the purified oil outlet side. (Refer to 5.4. Flow diagram.)

Follow the piping procedures described below.

1. Lay piping from the circulation side of the three-way raw fluid valve and the pump outlet side to the oil tank.
2. Provide a flow rate adjustment valve.
3. Provide a check valve to prevent counter flow from the oil tank.

### 5.1.3 分油机入口配管

以下是从油加热器的出口到分油机的原液入口连接管之间的配管要领。

1. 在分油机的入口侧安装了压力传感器，由多功能检测显示器显示流量，但它是将液压换算成流量所得后的值，要想进行正确的流量监视，请在配管中另外设置容积式或者面积式装置。
2. 在减少通油量的调节时，除了使用回流配管的旁通阀外，还必须通过分油机的入口阀进行调节，因此，请务必设置入口阀。

#### 注

三通原液阀不具备调节通油量的功能，因此，请设置入口阀。

3. 请采取保温措施。
4. 为了在拆解时排放掉配管内的油，请在金属软管的稍前一些位置设置排放阀（15A 左右）。参照流程图 5.4。

### 5.1.4 回流配管

请设置向油箱的回流配管，用以调节通油量及切换三通原液阀。

#### 注

用于燃油时，请回流到沉淀柜；润滑油时，则回流到原液槽（一般为贮油槽）。  
如果将回流配管连接到分油机的入口侧（齿轮泵入口侧），会出现泵入口侧的压力增高，从而造成齿轮泵的油封处漏油或者设备本身的损伤。  
但在润滑油的旁通回路分油时，也可以连接到净化油出口侧。（参照 5.4 流程图）

以下是配管要领。

1. 请从三通原液阀的循环侧及泵出口侧向油箱进行配管。
2. 请设置用于调节流量的阀。
3. 为了防止从油箱逆流，请设置止回阀。

### 5.1.5 Purifier outlet piping

For piping from the purified oil outlet pipe to the service tank, proceed as described below.

1. Provide a check valve in the piping to prevent counter flow of oil by the head of the tank that may occur when the purifier is stopped.
2. Make heat insulation arrangements.
3. The delivery pressure of the centripetal pump of the purifier is 20m maximum, but the piping resistance should be taken into consideration when determining the installation position of the purifier.

#### NOTE

The Leakage Monitor device detects the pressure decline at the exit of the purifier by the oil leakage that occurred with the purifier. Accordingly, the valve lift of the outlet valve must be adjusted so that the exit pressure of the purifier is kept highly 0.05MPa more than the head of outlet piping, during normal operation. Accordingly, design to become 15m or less even if biggest, at the height between the oil tank and the purifier.

4. When the purified oil outlet line joins with the other outlet lines before delivered to the service tank, please decide size in consideration of the speed of a running fluid, plumbing resistance that the plumbing aperture subsequent etc., to join uses 1 rank big pipe.

### 5.1.6 Sludge outlet piping

For piping from the sludge outlet of the purifier proper to the sludge tank, proceed as described below. (Refer to Fig 5-1)

1. To facilitate flow of sludge, tilt the piping more than 60°, while making sure that the piping has no level portion.
2. To maintain sound exhaust efficiency in the purifier frame, make sure that the end of the sludge outlet piping in the sludge tank is never immersed in the fluid when installing the piping.

#### NOTE

If the sludge outlet piping is blocked by sludge or its end immersed in the fluid, rust formation on the shaft or bearing or premature deterioration of the gear oil could result.

### 5.1.5 分油机出口配管

以下是从分油机的净化油出口管到供油柜之间的配管要领。

1. 请在配管中设置止回阀，防止当分油机停止时因油箱的落差引起的油逆流。
2. 请采取保温措施。
3. 分油机的向心泵吐出压力最大为 20m，请考虑配管阻力确定分油机的设置位置。

#### 注

泄漏检测器是一种对由于分油机漏油引起的分油机出口压力降低进行检测的装置。因此，要调整出口阀的开度，使其在正常运转情况下，分油机的出口压力比管路压力（落差）高 0.05MPa。向心泵最大的吐出压力为 20m，因此，请将油柜和分油机之间的高度差设计为最大不越过 15m。

4. 当与另外的分油机的出口配管合流返回到油箱时，请考虑流速，配管阻力后确定尺寸，如合流以后的配管口径使用尺寸大 1 号的管子等。

### 5.1.6 油泥出口配管

以下为从本体的油泥出口到油泥箱之间的配管要领。（参照 Fig 5-1）

1. 为了使油泥通畅地排出，配管时，请避免使用水平位置，采用从水平位置倾斜 60 度以上的配置。
2. 为了正常地保证分油机机架内的排气效率，施工时，请不要使油泥箱内的油泥出口配管的前端没入液中。

#### 注

如果因油泥出口配管被油泥堵塞或其前端没入液中而影响排气效率，有可能造成轴或轴承生锈，齿轮油的过早老化。

3. To prevent counter flow of sludge vapor from the stopped purifier, make sure that a butterfly valve is provided.  
(The butterfly valve is optionally available from Mitsubishi Kakoki.)

3. 为了防止油泥的混合废气向停止后的分油机回流，请务必安装蝶阀。  
(本公司作为选购件备有蝶阀。)

#### NOTE

Particularly when the sludge tank is shared by two or more purifiers, if sludge is discharged from a purifier in operation, the vapor in the sludge tank may be forced up against the stopped purifier(s), and rust formation on the shaft and bearing might result.

#### 注

特别是当 2 台以上分油机共用油泥箱时，运转中的分油机进行油泥排出时，油泥箱内的废气就会喷向停止的分油机，有可能引起轴及轴承部生锈。

4. A steam blow-in port should preferably be provided behind the butterfly valve for convenient cleaning of the inside of the sludge piping.

4. 为了便于清扫油泥配管的内部，在蝶阀后面事先设置蒸汽吹入口则操作更方便。

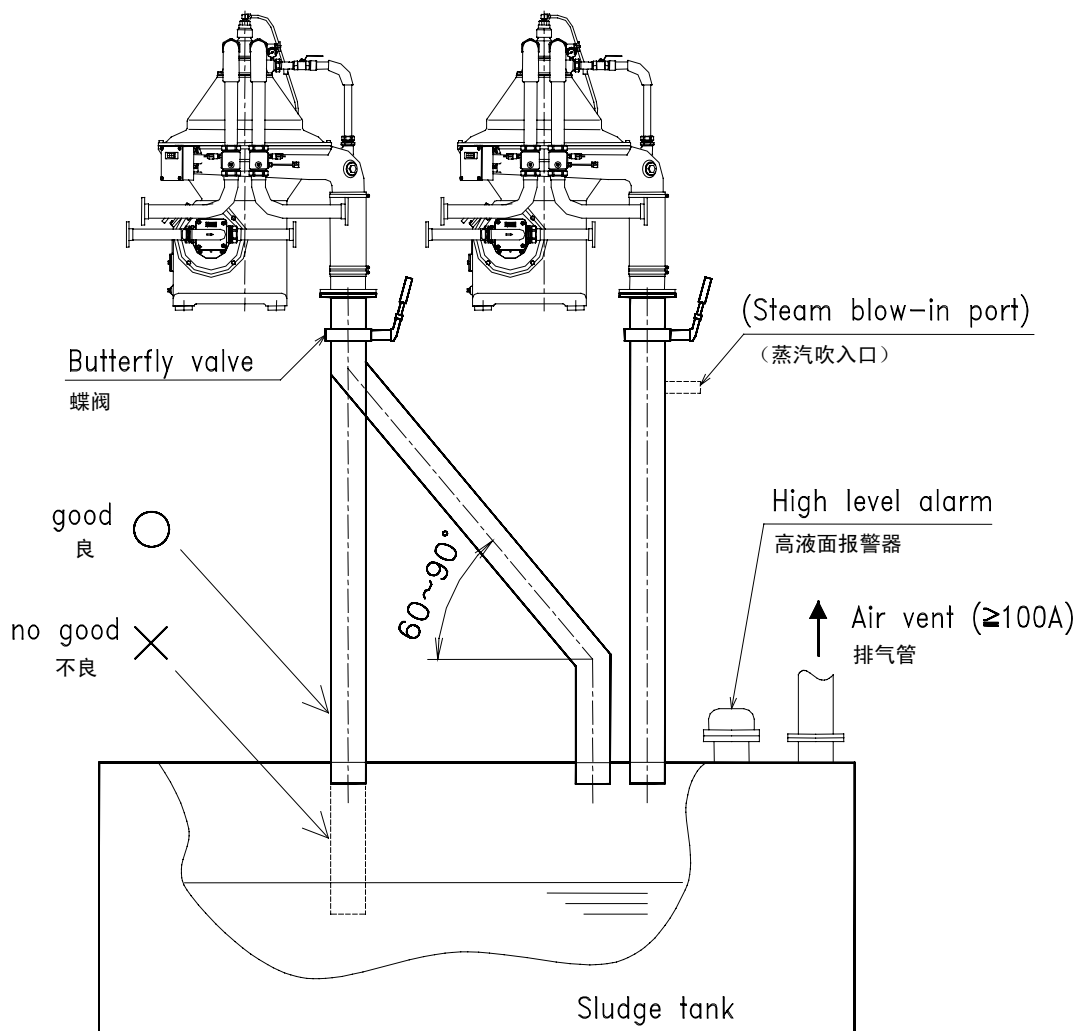


Fig 5-1

## 5.2 Water system

The water system requires the following piping.

1. Operating water piping
2. Operating water drain piping

Solenoid valves for water plumbing are mounted on the purifier body and water plumbing between solenoid valve and purifier is completed. Please execute entrance side water plumbing.

The specifications for the purifier may be broadly divided into "Automatic Specifications (GBC/ GSH)" and "Manual Specifications (GAP-11 / MAN)".

The plumbing of the foregoing items 1 and 2 may be divided into two types by the difference in the specifications.

The respective water systems are described below.

Perform piping work without any mistake, while referring to individual piping diagrams (Fig 5-2 to Fig 5-3 ) and 5.4 Flow diagram.

The piping materials recommended for the water system is resin lining pipe, or stainless steel pipe (bore diameter: 15A).

Prior to piping work, do complete flushing.

(The solenoid valve supplied by Mitsubishi Kakoki has a built-in strainer. When you do not use the unit, make sure that an 80-mesh strainer before the valve.)

### NOTE

If flushing is neglected, the solenoid valve seal or the diaphragm of reducing valve might be damaged, or the functions of the bowl of the purifier might be ruined.

### 5.2.1 Quality of operating water

Operating water is used to open or close the valves of the bowl of the purifier. To prevent generation of scale or corrosion, it is necessary that the quality of operating water is clean water and soft water.

The water quality recommended for operating water is shown below.

- Evaporation remainder : 10ppm or less
- Total hardness 110mg/kg or less :CaCO<sub>3</sub> / L (Hardness 6°dH or less)
- pH value 6.5 to 7.5
- Salt content 100mg/kg or less : (Cl<sup>-</sup> 60mg/kg or less).

### NOTE

If hard water is used, the scale deposited in the water supply equipment, water drain nozzle, solenoid valve, etc. could cause troubles.

There is the necessity that makes the cleaning interval of short, because the adhesion of the fur increases to the water supply device and pilot valve, as the hardness becomes high.

## 5.2 水系统

水系统必须设置下列配管。

1. 工作水配管
2. 工作水放泄配管

水用电磁阀类已经安装在分油机本体上。用来连接电磁阀和分油机的配管已经连接好。请进行入口侧水配管施工。

分油机的规格分为“自动化规格（GBC/GSH）”和“手动规格（GAP-11/MAN.）”两种。

上述第1项的配管根据这些规格的不同可分为2种类型。

以下对它们的水系统加以说明，请对照各自的配管图（Fig 5-2～Fig 5-3）及 5.4 流程图等进行正确施工。

并且，对于所使用的配管材料，建议选用树脂内膜钢管或不锈钢钢管。（口径：15A）而且，在配管施工结束后，请对管内进行充分的冲洗。

（本公司所提供的电磁阀单元已预先装入过滤器，不使用该单元时，请务必在阀的前级安装 80 目的过滤器。）

### 注

如果不进行冲洗，有可能损伤电磁阀的密封部或减压阀的隔膜部、降低分油机回转体的功能。

### 5.2.1 工作水的水质

工作水用于分油机回转体的开闭阀，为了防止水垢的发生或腐蚀，要求其水质为清澈水并且是软水。以下是作为工作水推荐的水质。

- 蒸发残渣：10ppm 以下
- 全硬度 110mg/kg 以下：CaCO<sub>3</sub>/L（6°dH 以下）
- pH 值 6.5～7.5
- 盐分 100mg/kg 以下：（Cl<sup>-</sup>60mg/kg 以下）

### 注

如果使用硬水，会在给水装置、排水喷嘴及电磁阀等处附着水垢，有可能引起故障。

硬度越高，给水装置或导阀上附着的水垢也越多，因此，需要缩短清扫间隔。

5.2.2 Operating water piping and sealing and substitute water piping.

5.2.2.1 Automatic specifications

1. In the case of the automatic specifications, standard connection form of the operating water piping is as Fig 5-2.
- For the operating water, sealing water and substitute water lines, a primary pressure of 0.25~0.5MPa is required.

**NOTE**

When the water pressure exceeds 0.75MPa, faulty operation of the Reducing valve could result.

For manual operation of the purifier, the manual control knob attached to the solenoid valve may be used.

2. Although the solenoid unit (one supplied by Mitsubishi Kakoki) is fixed in the main body of the purifier, in the case that move it in a different place, use flexible tube between the purifier and the solenoid unit, so that do not receive the influence of the vibration. Also, install it less than 3m away from the purifier and install it at a point about 0.3 to 0.5m lower than main body connection.

5.2.2 工作水配管

5.2.2.1 自动化规格

1. 自动化规格的工作水配管采用如 Fig 5-2 所示的连接方式。
- 但工作水及封水、置换水管路的 1 次压必须是 0.35~0.5MPa。

**注**

水压超过 0.75MPa 时, 有可能引起减压阀的动作不良。

另外, 进行手动运转时, 可利用电磁阀上附带的手动操作手柄。

2. 电磁阀单元 (本公司提供品) 已装在分油机本体上, 如将它从分油机本体拆下进行设置时, 请在分油机本体和电磁阀单元之间设置挠性配管, 并注意避免受到振动的影响。
- 另外, 请将其设置在 3m 以内, 电磁阀应设置在低于本体连接口 0.3~0.5m 的位置。

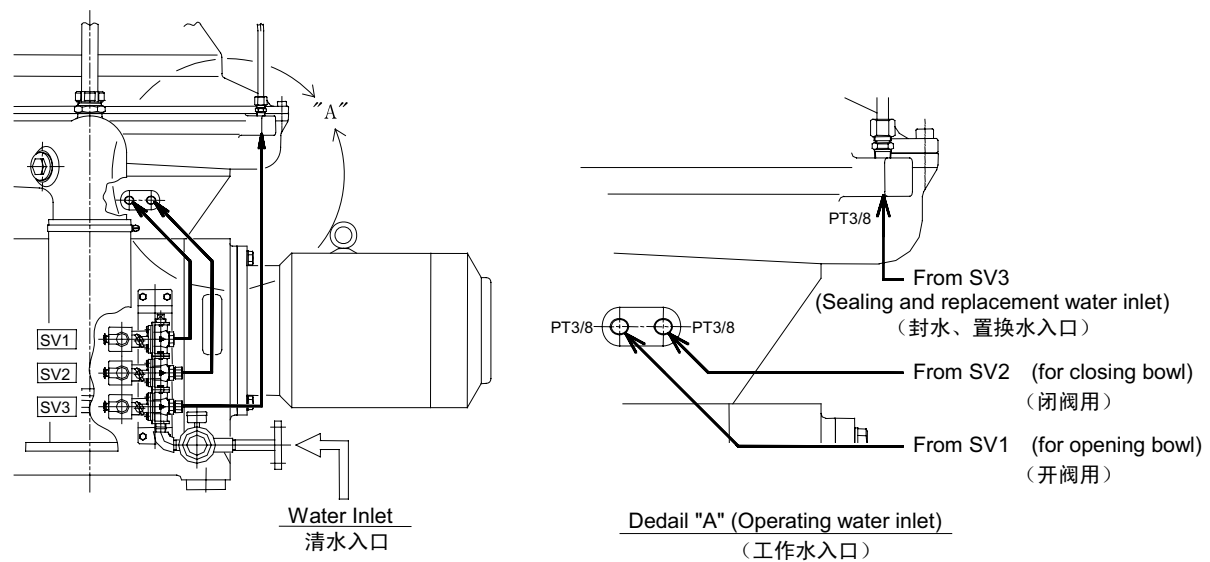


Fig 5-2

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### 5.2.2.2 Manual specifications

1. In the case of manual specifications, connection of the operating water piping is as Fig 5-3. (In the case that move the solenoid unit in a different place)  
The required water pressure and its limitations are the same as for the automatic specifications.
2. If the sealing and substitute water piping is laid as shown in Fig 5-4, it is economical, because water can be supplied to the neighboring other purifiers as well.
3. Although the solenoid unit (one supplied by Mitsubishi Kakoki) is fixed in the main body of the purifier, in the case that move it in a different place, use flexible tube between the purifier and the solenoid unit, so that do not receive the influence of the vibration. Also, install it less than 3m away from the purifier and install it at a point about 0.3 to 0.5m lower than main body connection.

### 5.2.2.2 手动规格

1. 使用手动规格时，工作水配管的连接要领如 Fig 5-3 所示。（另外设置电磁阀单元时）  
所需水压及其限制根据自动规格的要求。
2. 如果封水，置换水配管按 Fig 5-4 所示进行施工，则同时可向邻近的另外的分油机给水，经济性好。
3. 电磁阀单元（本公司提供品）已装在分油机本体上，如将它从分油机本体拆下进行设置时，请在分油机本体和电磁阀单元之间设置挠性配管，并注意避免受到振动的影响。  
另外，请将其设置在 3m 以内，电磁阀应设置在低于本体连接口 0.3~0.5m 的位置。

