

## Installation, Operation and Maintenance Manual for Chesterton barrier fluid systems type BSS and PSS

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## 1. Explanation of symbols

You will find the following symbols with all occupational safety warnings in these operating instructions, where there is a potential risk to life and limb. Please adhere to these warnings and act with special care in these cases. Inform other users of all these occupational safety warnings. In addition to the warnings in these operating instructions, the generally valid safety and accident prevention regulations must be taken into account.



Attention note:

A note on appropriate assembly and operation of the pressurised sealing system. Non-adherence may result in malfunctions or damage to the seal support system.



Danger warning:

Warnings which, when not adhered to, may result in damage, injury or the loss of the type approval permit.



Danger warning:

Electrical warnings which, when not adhered to, may result in damage, injury or the loss of the type approval permit.

These warnings are provided within these operating instructions where special attention should be given to ensure that the directives, regulations, warnings and the correct work procedures are adhered to, so that damage or destruction of the machine and other system components can be prevented. These warnings are to be fully adhered to.

## 2. Safety instructions

These operating instructions contain basic information to be taken into account during set-up, operation and maintenance.

They must therefore be carefully read by the technician and other technical staff / operators before assembly and commissioning and the location of these instructions should be made permanently available at the place of installation of the system.

Not only the general safety instructions listed in this chapter, but also the special safety warnings inserted under the main points must be taken into account. In addition, all safety warnings in the attached operating instructions for individual sub-systems must be adhered to along with those of the manufacturer of any optional components installed.



- Read all instructions.
- Keep these operating instructions as a reference document.
- The sealing system and tank may only be removed or fitted when the equipment is in a fully shutdown and safe condition, with careful adherence to the safety, accident and environmental regulations of the operator and local laws as they apply to the relevant system component.
- The use of this system under conditions other than those specified on the type label and the technical data sheet is not permitted. The risk is borne by the operator.
- Any operation under different conditions is to be clarified with the manufacturer in advance.
- The tank is provided without the required safety equipment. Suitable equipment complying with operator regulations and local law is to be fitted before commissioning the system.
- Before commissioning the system, the required tests are to be carried out on the equipped tank, in accordance with the operator regulations and local law.
- The customer or operator must ensure that the persons entrusted with the handling, assembly and operation of the sealing system are also familiar with the design and function of the sealing system and the associated mechanical seal.
- It must be ensured that the circulation zone has been completely filled and bled. The mechanical seal must never be started up dry!

### 3. Risk

Work with tanks may pose a risk of poisoning or asphyxiation. Work may only be carried out with the aid of suitable personal protective measures (e.g. breathing equipment, protective clothing, etc.).



Where there is a risk of an explosive atmosphere being created in the tank. The corresponding steps to prevent the generation of sparks are to be taken. Work in this area may only be carried out by technical staff in accordance with the relevant safety directives.

Care must be taken that the power supply to the drive sub-systems is interrupted and secured to prevent unintentional switching on by third parties.

When handling sealing fluids, it is imperative to take note of the corresponding safety instructions. The required personal protective equipment should be assessed and made available to those working with the tanks.

### 4. Equipment Identification



Tanks with CE labels are those that require a label in accordance with Directive 97/23/EC. The equipment has been designed in accordance with this directive.

Each tank is fitted with a factory label with a CE symbol, which will be given in the first line of the type label, together with the number of the designated institution.

Where not otherwise specified, the type label is attached to a welded label bracket near the top of the housing.

The type label will have the following information:

1. Tank type
2. Manufacturing number
3. Max/min design temperature for housing
4. Max. design pressure for housing
5. Material
6. Test pressure for housing
7. Content for pipe/housing, specified as volumetric unit
8. Drawing no.
9. Year of construction
10. Test date
11. CE symbol and number of the designated institution

			
Tank	<input type="text"/>	Type	<input type="text" value="1"/>
Factory No.	<input type="text" value="2"/>		<input type="text" value="11"/>
Drawing No.	<input type="text" value="8"/>		
Material	<input type="text" value="5"/>	Test date	<input type="text" value="10"/>
Year	<input type="text" value="9"/>	Product group	<input type="text"/>
Tank room		Cooling coil	
Max. filling volume	<input type="text" value="7"/>	Volume	<input type="text" value="7"/>
Max. pressure	<input type="text" value="4"/>	Max. pressure	<input type="text" value="4"/>
Max. temp	<input type="text" value="3"/>	Max. temp	<input type="text" value="3"/>
Test pressure	<input type="text" value="6"/>	Test pressure	<input type="text" value="6"/>

## 5. Use and application

The sealing liquid tank may only be used for tasks as specified in the "Technical Data Sheet", any other use or use exceeding this limitation is not deemed appropriate. The manufacturer cannot be held responsible for any resulting damage. Appropriate use also includes adherence to all operating instructions and the inspection and maintenance intervals.

The operating and design data materials, corrosion allowance, and support loads may be taken from the data sheet or are listed in separate specifications.

General damage includes damage to the pressurised sealing system resulting from pressure peaks, frost, freezing of the media, corrosion or erosion due to short-term operating states or wrong operation of the system, which can no longer be verified; such damage is excluded from the warranty. See separate data sheet for any deviations from this rule.

## 6. Components, transport and storage

- The pressurised sealing system is to be transported and stored in its unopened original packaging.
- Only use suitable equipment or lifting devices to transport the components!
- The storage location must be dry and dust-free. Temperature and ultra violet radiation influences are to be avoided.
- Weight specifications are according to the technical data sheet.
- There are no provisions for long-term preservation of the sealing tank.

### Description of the sealing tank

The sealing tank has been constructed in accordance with the attached drawing. The tank has connections that can be used for inspection and cleaning. Where necessary, a connection sleeve for a level switch has been provided.

### Disassembly state

Sealing systems are delivered as complete units.

No sealing liquid has been added, nor does it form part of the consignment. Where possible, accessories have been pre-installed.

### Tank components

- a) Sealing liquid tank
- b) All required connections for add-on systems (see Section 0)

### Possible add-on systems

Depending on the customer requirement, the sealing liquid tank may be fitted with connections for add-on systems. Other add-on systems can be fitted to some degree, following consultation with the manufacturer. Details of optional accessories can be found in the product documentation.

### Functional test

Inspection for damage

Seal tanks are to be visually checked after prolonged storage

Functional check of the additionally fitted monitoring units



## 7. Design and function

### Design

All pressurised weld connections are MAG/TIG welded, either welded through or counter-welded.

Design, construction and manufacturing of the tank is according to Pressure Equipment Directive 97/23/EC in association with the AD-2000 reference work and DIN EN ISO 3834-2 quality assurance.

### Function

Sealing liquid tanks are used to supply mechanical seals. They are to be filled with a suitable sealing liquid. The liquid exchange at the mechanical seal takes place through natural circulation in accordance with the thermosyphon principle or through a forced circulation pump or a seals internal pumping ring. Pressurisation should only be with water or inert gases depending on the system type. Risks associated with pressurisation using other gases are borne by the operator.



### Conditions for use

- Viscosity of the sealing liquid at operating temperature should be < 10cSt with natural circulation, <20cSt, with forced circulation during operation (even during start-up).
- Only product-compatible, neutral, clean, well lubricating and harmless media may be used as sealing liquid. When using a forced circulation pump, the viscosity information provided by the pump manufacturer should be taken into account, but it should not be greater than the values provided above.
- The arrangement of the tanks in relation to the mechanical seal should be in accordance with the mode of operation (see 8.1 and 8.2) and should be agreed upon with the mechanical seal manufacturer.
- Where the sealing circuit contains stop valves (ball valves), they must be open, full bore type providing little or no additional resistance. The use of gate or needle valves is not recommended.
- The liquid level in the tank must always remain above the minimum level of the sight glass (where fitted).
- The temperature of the sealing liquid should remain at least 40°C below boiling temperature of the sealing liquids vapor point under the applied pressure.
- Where necessary, the sealing medium may be cooled or heated via the cooling coil, (where installed).
- Any overflow connections / ventilation connections are to be pipe and channelled into a suitable slop system under atmospheric pressure, without barriers or reduction in the cross-section of the pipe. The pipes should be regularly checked for blockages.

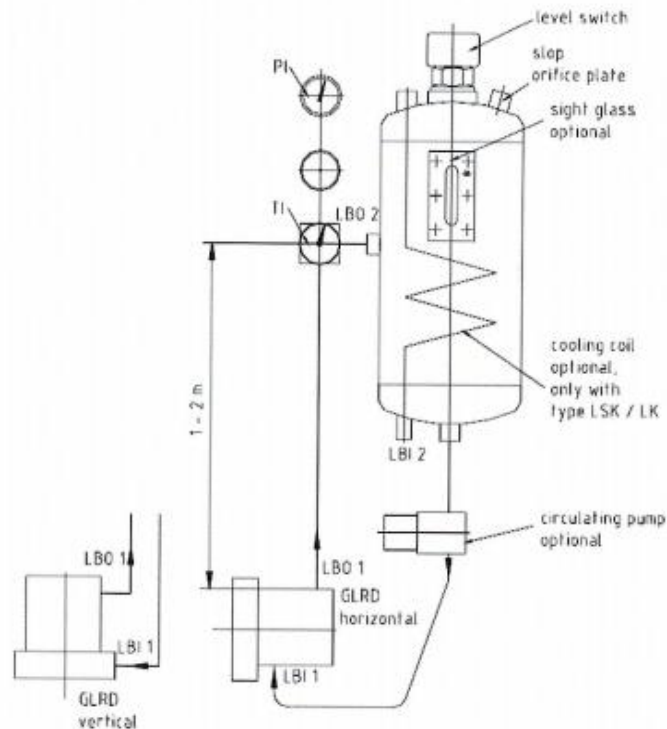


## 8. Mode

### According to API-PLAN 52 (BSS/BSSC)

The operating mode should be non-pressurised feeding (from feed tank)

- a) according to the thermosyphon principle
- b) with forced circulation (forced circulation pump, pumping screw)



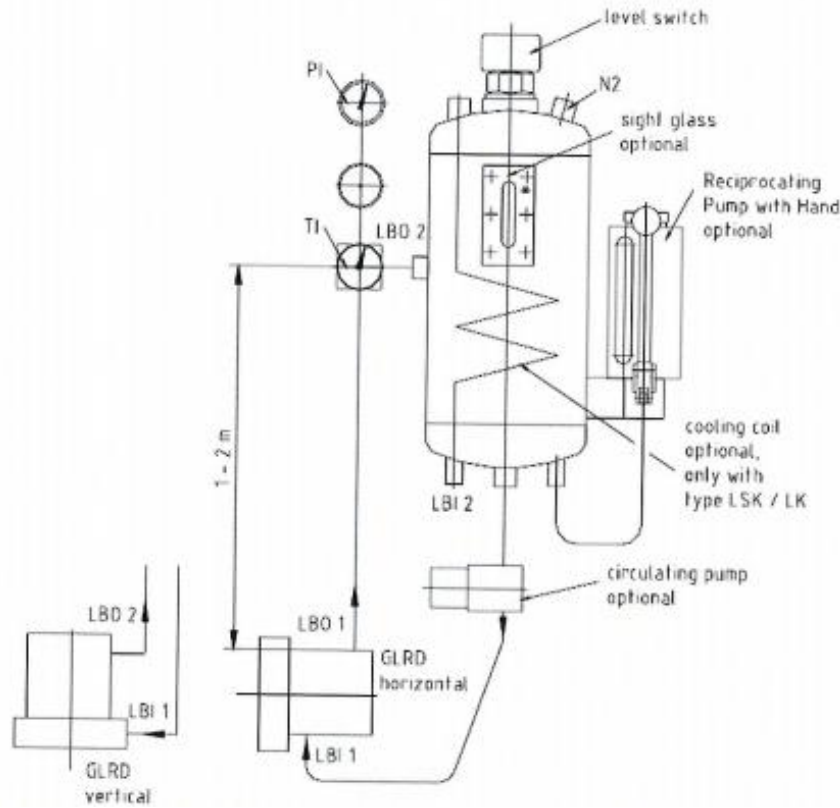
Symbol Norm DIN EN ISO 21049 Plan 52

- Pressurisation is not required, mechanical seal operates in the tandem principle. Feeding liquid (quench) at atmospheric pressure
- Connection point via orifice plate integrated into cover, with pipe to flare stack or slop system.
- Monitoring takes place through a viewing window or with a thermometer, manometer and suitable monitoring equipment such as the "MIN-MAX" level switch or the "MIN-MAX contact", temperature switch and/or a similar device. Optional equipment may be required.
- The filling level must never fall below the "MIN" level during operation. The thermosyphon effect and the circulation of the sealing liquid will be interrupted when the level is not reached. Damage to the mechanical seal will occur.
- Please note: exceeding the "MAX" warning is not a risk factor, as the quenching liquid is channelled to a flare stack or slop system. The "MAX" alarm is nevertheless important! It indicates that the inner mechanical seal is defective.
- Where required, the barrier liquid can be cooled and/or heated and the flow rate of the cooling agent should be adjusted according to the sealing liquid temperature specifications.

### According to API-PLAN 53 (PSS/PSSC)

Operation with pressurised circulation (pressurised sealing tank)

- a.) according to the thermosyphon principle
- b.) with forced circulation (forced circulation pump, pumping screw)



Symbol Norm DIN EN ISO 21049 Plan 53

- For the gas pipe: Connect nitrogen to connection "N2"!
- A reversible pressure regulator is to be fitted for pressure control purposes. A non-return valve must be installed between the gas supply and the pressure regulator.
- Set a constant sealing pressure of 1 to 2 bar above the maximum possible pressure on the mechanical seal. Any pressure fluctuations that may occur must be taken into account.
- Monitoring takes place through a viewing window or with a thermometer, manometer. Or optional monitoring equipment such as the "MIN-MAX" level switch or the "MIN-MAX contact", temperature switch and/or a similar device.
- The fluid level must never fall below the "MIN" level during operation. The thermosyphon effect and the circulation of the sealing liquid will be interrupted when the level is not reached. Damage to the mechanical seal will occur.
- Fluid losses (leakage) can be compensated with a manual refill pump under pressure. Do not open the fill valve when the system is pressurized.
- Where required, the barrier liquid may be cooled and/or heated and the flow rate of the cooling agent should be adjusted according to the sealing liquid temperature specifications.

## 9. Assembly

This is based on the tank drawing. Assembly must take place in such a way that no major additional forces act on the tank, such as vibration or bolting stresses caused by mounting.

### Assembly of the pressurised sealing system

The pressurised sealing system may only be mounted on the bracket provided. Assembly must be such that no vibration acts on the pressurised sealing system. Where necessary, rubber isolating bushes are to be used for assembly. No welding or other physical modification may be carried out on the tank.

### Electrical assembly

The assembly must be inspected by an expert before commissioning to ensure that the required electrical safety measures are in place. Grounding, nulling, isolating transformer, earth leakage or error voltage safety switches must meet the requirements of the relevant power supplier and local regulations.

The voltage stipulated in the technical data must be the same as the grid voltage available.

Please ensure that the electrical plug connections are above potential flood lines and are protected from moisture. Power grid connection cables and sockets are to be checked for damage before use.

The connection ends may not be immersed in water, as this may result in water penetrating into the motor connection zone.

Motor safety switches and switch boxes must never be installed in areas in which there is a risk of explosions.

The electrical connection must be in accordance with the local EVU or VDE regulations. The supply voltage and frequency are to be taken from the pump type label and the type label of the electrical device. The voltage tolerance must be in the range from +6% to -10% of the grid voltage. Care must be taken that the data provided on the type labels are in accordance with the existing power supply.

- The switch device should be set up in the immediate vicinity of the pumping station. The maximum lengths of the power supply cables and level-measuring system cables are to be taken into account.
- The installation site may not be within the "EX" risk zone (even for "EX"-protected pumps).
- Assess the provision of cable conduits.
- Assess the provision of voltage supply.
- Pull the power supply cable and control lines through the cable pipe and connect the controls in accordance with the operating instructions and the terminal plan for the switch box.
- Carry out the required grounding work.
- In addition, the operating instructions for the pump and sensors apply.

### Pipe assembly

The information in below must be taken into account when assembling the pipe system.

- The pipe cross-section should be as large as possible. Connections should be of the screw type, or clamped for sterile applications.
- Pipes should be ascending, without narrowing or kinks, from the mechanical seal to the tank. Where shut-off devices are required, ball valves should be used.
- Pipes should be fitted in arcs of at most 90° (45° to be preferred) and with a radius > 80 mm (> 100 mm to be preferred).
- The layout must take into account any changes in the length of the pipes caused by thermal expansion or vibrations.
- Pipes should be attached with clamps at regular intervals. Screw connections and fittings should not be subjected to mechanical load.
- The tank should be at least 1 m and at most 2 m above the mechanical seal to ensure that the thermosiphon effect can be initiated. Where a circulation pump is used, a shorter distance is possible.
- The return pipe from the mechanical seal must lead to the lateral connection of the tank.
- Overflow and bleeding connections must be connected according to 0.



### Cooling water pipe

The maximum permissible pressure is to be checked and corrected where necessary. It must be possible to adjust the cooling water flow. (For values, consult the seal manufacturer)

### Insulation

The pressurised sealing system is usually delivered without any insulation. The operator should check whether insulation or other protection is necessary according to the statutory regulations. Insulation should be provided by the customer. When insulating the heat exchanger, care should be taken that the cleaning openings are provided with easily removable insulation caps.

### Cleaning the supply systems

Pipes and screw connections should be cleaned before final assembly (e.g. with compressed air or suitable benzene or alcohol). The cleaning medium must be disposed of in accordance with the specifications.



## 10. Initial operation

It is recommended to flush the tank before installation and commissioning so that any remaining dirt from manufacture and storage is removed from the tank.

Pumps should never be left to run dry (risk of overheating).

Any valves should be opened before commissioning the system.

Where three-phase current equipment is used, care must be taken that the current flow direction has been set.

The flushing medium must be compatible with the sealing liquid.

To ensure ongoing operation, the operator should carry out regular inspections with the aid of the monitoring devices. The intervals are to be defined by the operator. Where the system is being recommissioned after disassembly for maintenance or cleaning purposes, new seals must always be used.

### Plan 53A and Plan 52

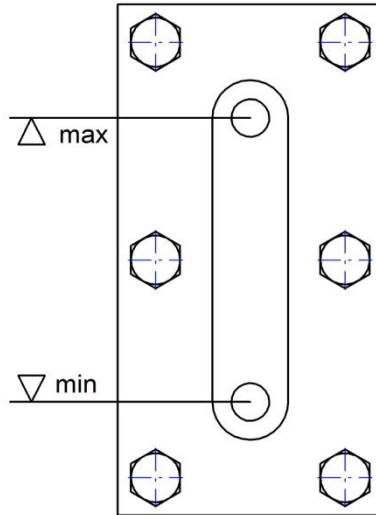
1. Install the System on a place which is free from vibrations, not more than 2m above and 1m away from the mechanical seal. If your seal tank has a cooling coil see section 1 for more information to start up.

2. Connect the seal tank by using the hose to the seal supply connection (50) and back from the seal return connection (51). Ensure that all pipework is rising, there must be no sags, and that bends are < 45° and have a radius greater than 100mm. Further information's to assemble the find tubing (22) see section 2.

3. To remove air from the seal during filling disconnect the pipe back to the seal tank (13) from the inlet on the tank (11). The air in the seal can easily disappear now and the time to fill is reduced. When the fluid reaches the top of the pipe reconnect it and continue to the next step.

4. Open the fill port (N3) and fill the tank with the necessary buffer fluid (Oil or Water).

5. Fill the seal tank until the level can be seen. It is recommended to fill to below the maximum (2).



**Plan 53A**

6. Connect the Gas supply (isolate the supply pipe and use inert gas) to the check valve (9) before the pressure regulator (8). (The pressure regulator has a max. inlet pressure of 25 bar and a regulated pressure (outlet) of max. 16 bar.)
7. Close the pressure regulator by turning the knob clockwise.

**Adjustment of the system operating pressure**

8. Flush the air out of the seal tank by flush in nitrogen and vent via filling port (N3). Close the port (N3).
9. Open the nitrogen supply and adjust the pressure by the pressure regulator (8). Turning the cap counter clockwise increases the pressure, turning clockwise reduces the pressure. When the required pressure is set the regulator can be locked by pushing down the cap.
10. The gas supply must remain connected.
11. At the first start up please check the flow direction of the buffer fluid. The pipe which becomes warm must be connected to the return port of the tank. If not, the thermosyphon effect will stop. If there are Problems with the circulation, change the pipes at the seal tank.

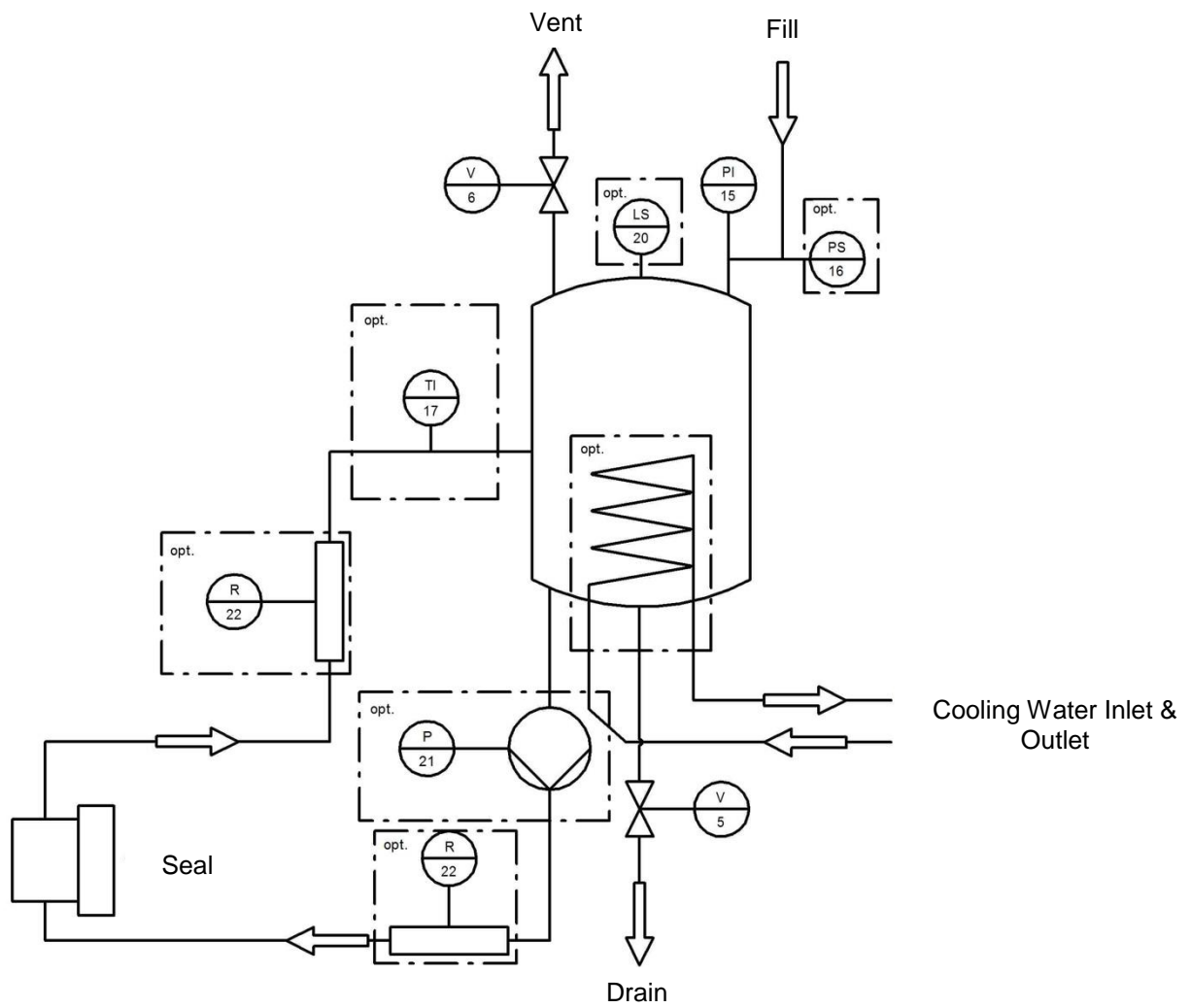
**Tabel 1: Cooling coil (optional)**

1. Connect the cooling water supply to the cooling coil inlet (N9) on the seal tank and the cooling coil outlet (N8) to a suitable drainage.
2. Open the cooling water supply.

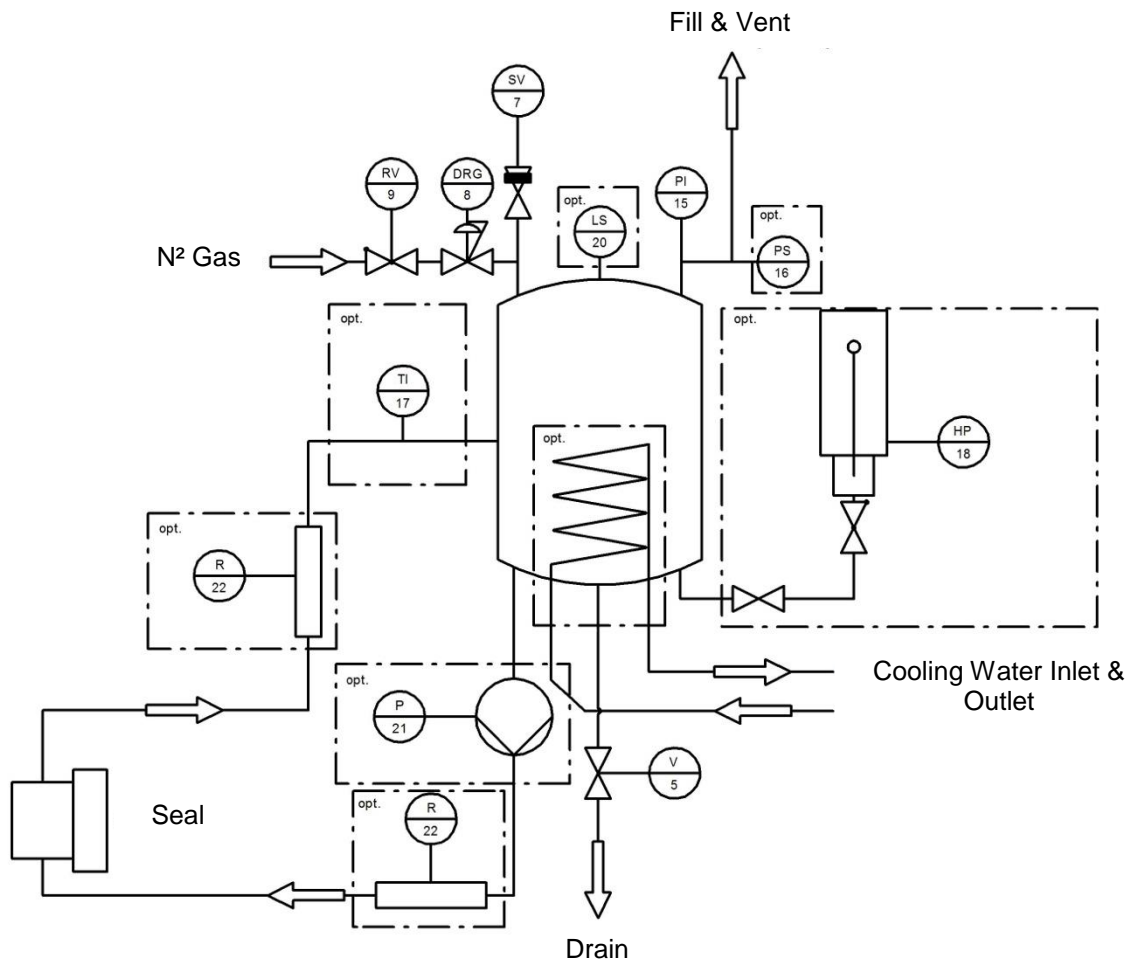
**Tabel 2: Finned tube (optional)**

1. Install the delivered finned tube. Connect the finned tube with the seal inlet (50) and the other end with the buffer fluid inlet on the seal tank (N4). \*
- \*It is possible to bend the finnd tube.

**BSS/C Installation scheme Plan 52**



PSS/C Installation scheme Plan 53A



### 11. Switching off

Before switching off the circulation pump, care should be taken that heating of the tank is discontinued by switching off the supply. Care should be taken that the stopping time of the pump is sufficiently long, as due to the hot wall materials used there may be some delayed heating, posing a risk of steam bubble formation and destruction of the equipment!

To prevent pressure peaks valves should always be gradually opened and closed.

**Only open the tank once it has cooled down and is not pressurised. This applies to all sealing elements to which the tank has been fitted.**



**Note:**

Depending on the medium used, there is a risk of freezing when temperatures drop below 5°C. In such cases the sealing liquid tank must be completely drained via the draining connections provided before being decommissioned. This is to prevent frost damage.



**Note:**

Drainage screws may only be removed in a depressurised state and when the medium has reached a safe temperature. An adequate cooling time must be ensured.

Open the drainage screws and allow medium to drain via the drainage connection (5). Collect the medium in accordance with operator and local regulations and risk warnings and dispose of it in an appropriate way.

Completely empty the heat exchanger.



**Attention:**

When opening pressurised components there is a risk that the lock screw may be ejected away under pressure, there is also a risk of sustaining burns where temperatures are high.

## 12. Maintenance and disposal

Standards, norms and local regulations should be adhered to.

Correctly installed and operated sealing liquid systems require practically no maintenance. Sealing or barrier liquid should always be available in adequate amounts.

### Maintenance intervals

#### Daily

- Check and note the system pressure
- Look for signs of leaks from the seal, system and pipes.
- Check the sealing liquid filling level / temperature and adjust when required.
- Check the temperature and the flow rate of the cooling medium.
- Check all alarm signals. Take action as necessary.

#### Monthly

- All filters (where present), should be inspected and replaced when they are dirty or blocked.
- Any discolouration of the sealing liquid or filter contamination can be sign of a leak of the inner mechanical seal and should be investigated without delay.

#### After 5 years

- We also recommend that a complete internal and external inspection of the tank and all system components should be carried out at 5-yearly intervals.

### Cleaning

The cleaning intervals of the sealing liquid system depend on the system location and the medium used.

Cleaning may be carried out

- mechanically by brushing with a nylon brush.
- high-pressure cleaning of each individual pipe using special nozzles and water
- chemical cleaning of the entire space on the pipe side. The liquid used must be chloride-free.

It is recommended that chemical cleaning be carried out by a specialised company.

When rinsing the tank, the rinsing liquid must be duly disposed of. The rinsing medium must be compatible with the sealing medium. External cleaning is not absolutely necessary but is good maintenance practice.

When using sealing liquid systems in sterile areas, the necessary sterilisation temperatures and times are to be adhered to. These are determined by the operator.



Note:

A **nylon or stainless steel brush is to be used for cleaning stainless steel tanks and pipes**. The use of a normal steel brush will result in corrosion.

### Breakdown

After any breakdown, the tank and the monitoring equipment should be checked. Faulty components and those that are no longer functional are to be removed, repaired or replaced.

Repairs



Repairs may only be carried out by specialised staff. Original spares should be used to ensure correct operation.

Welding on the tank or heating of the tank for other reasons, as well as all work that could result in a decrease in wall thickness, is not permitted.

### **Disposal**

The following procedure is to be used for proper disposal:

The sealing liquid system should be taken out of operation.

Liquids are to be drained from the tank, pipes and components and duly disposed of. The same applies to contaminated cleaning cloths and binders.

All cables and switch equipment are to be removed and disposed of as electronic waste.

All plastic parts are to be separately disposed of.

Steel and aluminium materials are usually handed over to a disposal company.

### **13. Leaks**

The following procedure is to be followed:

1. Mark the leak
2. The sealing system should be taken out of operation.
3. Tighten the screws once the system has been depressurised. If the leak cannot be removed with the steps as detailed above, the seals should be replaced. Once the old seal has been removed, the sealing surfaces must be thoroughly cleaned. Inspect the sealing surfaces for damage and repair or replace in accordance with these instructions.
4. New seals should be placed dry onto the sealing surfaces and the screw connections tightened. Care should be taken that where a connection has several screws they are positioned crosswise and are evenly tightened.

### **14. ATEX**

Before commissioning, the operator must check the components used for suitability regarding EX zone, ignition protection type and EPL.

Ensure that the ignition temperature of the sealing liquid or the transfer medium is at least 50°K above the maximum permitted surface temperature of the pump.

All conductive parts of a device must be connected in such a way that no dangerous differences in potential can occur between them. If there is a possibility that insulated metal components could become charged and thus act as a source of ignition, grounding connections must be provided. The grounding resistance may not exceed  $10^6$  Ohm.

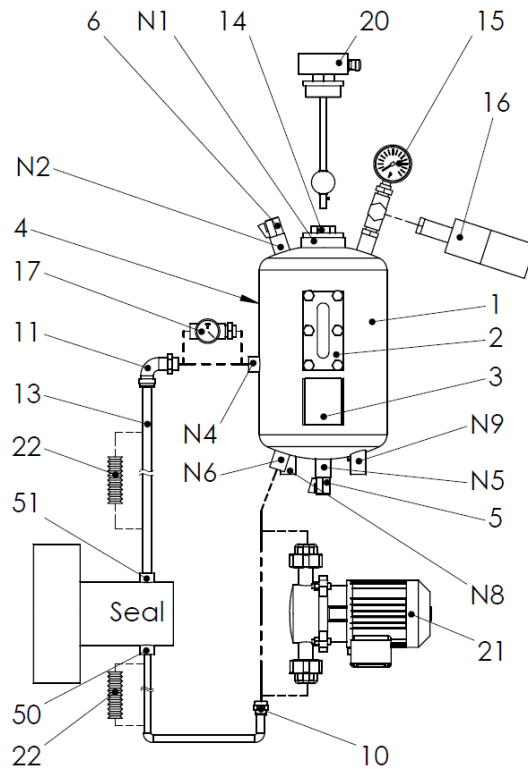


## 15. Component list

POS	Description	Plan 52 BSSC/BSS	Plan 53A PSSC/PSS	Item Number
1	Seal tank	X	X	
2	Sight glass	X	X	
3	Name plate	X	X	
4	Mounting console	X	X	
5	Drain valve Rp 1/2"	X	X	STS-100047
6	Vent valve Rp 1/2"	X		STS-100047
7	Safety valve TÜV approved		X	STS-100103
8	N2 Pressure regulator with pressure gauge		X	STS-100098
9	Check valve N2		X	STS-100102
10	R 1/2" Straight Fitting 12mm Push In Tube	X	X	
11	R 1/2" Elbow 12mm Push In Tube	X	X	
12	---			
13	PA-Tube Dia. 12mm	X	X	
14	Plug R2"	X	X	
15	Pressure gauge unit	X	O	STS-100149
16	Pressure switch unit	O	O	STS-100111
17	Temperature gauge unit	O	O	STS-100145
18	Hand pump unit	-	O	STS-100113
19	Refill valve in Pos. 18 included	O	O	
20	Level switch	O	O	STS-100107
21	Circulation pump unit	O	O	STS-100091
22	Finned Tube Kit	O	O	STS-100148
23	---			
50	NPT Straight 12mm Push In Tube	X	X	
51	NPT Straight 12mm Push In Tube	X	X	

16. Item Overview BSS/C

Plan 52 mit Kühlschlange  
Plan 52 with Cooling Coil



Pos. / Beschreibung

- 1 Behälter
- 2 Schauglas
- 3 Typenschild
- 4 Befestigungskonsole
- 5 Entleerungsventil Rp 1/2"
- 6 Entlüftungsventil Rp 1/2"
- 10 Dichtungs-Versorgungsanschluss 12mm
- 11 Dichtungs- Rücklaufanschluss 12mm
- 12 ---
- 13 PA-Schlauch Dia. 12mm
- 14 Verschluss R2"
- 15 Manometer Einheit (opt.)
- 16 Druckschalter Einheit (opt.)
- 17 Temperaturmesseinheit (opt.)
- 20 Niveauschalter (opt.)
- 21 Umwälzpumpeinheit (opt.)
- 22 Rippenrohr Kit (opt.)
- 50 Dichtungs-Versorgungsanschluss 12mm
- 51 Dichtungs-Rücklaufanschluss 12mm
- N1 Niveauschalteranschluss G2" mit Verschluss
- N2 Entlüftung Rp 1/2"
- N3 Füllanschluss / Manometeranschluss Rp 1/2"
- N4 Sperflüssigkeit Rücklauf Rp 1/2"
- N5 Entleerung Rp 1/2"
- N6 Sperflüssigkeit Versorgung Rp 1/2"
- N7 ---
- N8 Kühlwasser - Austritt R 1/2"
- N9 Kühlwasser - Eintritt R 1/2"

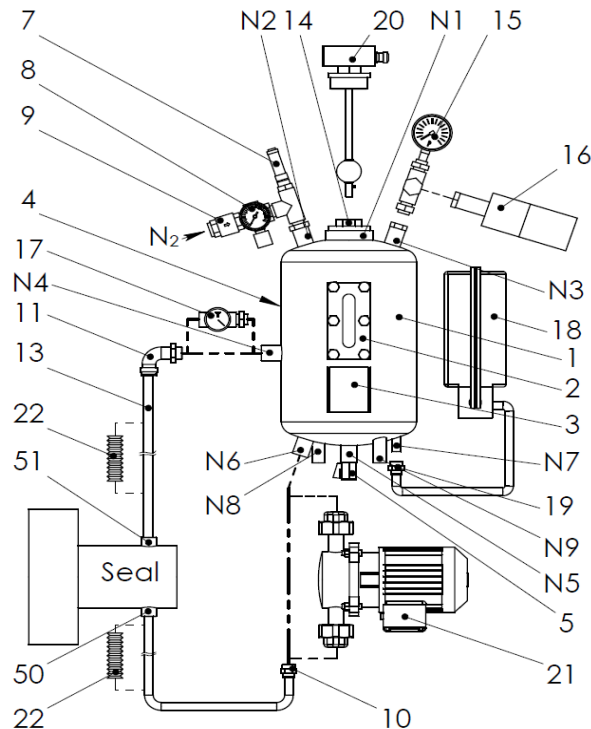
Pos. / Description

- 1 Seal Tank
- 2 Sight Glass
- 3 Name Plate
- 4 Fixture
- 5 Drain Valve Rp 1/2"
- 6 Vent Valve
- 10 Seal Supply Connection Dia. 12mm
- 11 Seal Return Connection Dia. 12mm
- 12 ---
- 13 PA-Hose Dia. 12mm
- 14 Plug R2"
- 15 Pressure Indicator Kit (opt.)
- 16 Pressure Switch Kit (opt.)
- 17 Temperature Indicator Kit (opt.)
- 20 Level Switch (opt.)
- 21 Circulation Pump (opt.)
- 22 Finned Tube Kit (opt.)
- 50 Seal Supply Connection Dia. 12mm
- 51 Seal Return Connection Dia. 12mm
- N1 Level Switch Nozzle G2" with Plug
- N2 Vent Rp 1/2"
- N3 Fill / Pressure Indicator Nozzle Rp 1/2"
- N4 Seal Return Connection Rp 1/2"
- N5 Drain Rp 1/2"
- N6 Seal Supply Connection Rp 1/2"
- N7 ---
- N8 Cooling Water Outlet R 1/2"
- N9 Cooling Water Inlet R 1/2"



17. Item Overview PSS/C

**Plan 53A mit Kühlschlange**  
**Plan 53A with Cooling Coil**



**Pos. / Beschreibung**

- 1 Behälter
- 2 Schauglas
- 3 Typenschild
- 4 Befestigungskonsole
- 5 Entleerungsventil Rp 1/2"
- 6 ---
- 7 Sicherheitsventil TÜV geprüft
- 8 N2 Druckminderer mit Manometer
- 9 Rückschlagventil N2 Ein Rp 1/2"
- 10 Dichtungs-Versorgungsanschluss 12mm
- 11 Dichtungs- Rücklaufanschluss 12mm
- 12 ---
- 13 PA-Schlauch Dia. 12mm
- 14 Verschluss R2"
- 15 Manometer Einheit (opt.)
- 16 Druckschalter Einheit (opt.)
- 17 Temperaturmesseinheit (opt.)
- 18 Handpumpe Einheit (opt.)
- 19 Nachfüllventil in Pos. 18 erhalten (opt.)
- 20 Niveauschalter (opt.)
- 21 Umwälzpeneinheit
- 22 Rippenrohr Kit
  
- 50 Dichtungs-Versorgungsanschluss 12mm
- 51 Dichtungs-Rücklaufanschluss 12mm
  
- N1 Niveauschalteranschluss G2" mit Verschluss
- N2 N2 Eingang Rp 1/2"
- N3 Füllanschluss / Manometeranschluss Rp 1/2" m. Verschl.
- N4 Sperrflüssigkeit Rücklauf Rp 1/2"
- N5 Entleerung / Füllanschluss Rp 1/2"
- N6 Sperrflüssigkeit Versorgung Rp 1/2"
- N7 Nachspeisung Rp 1/8"
- N8 Kühlwasser - Austritt R 1/2"
- N9 Kühlwasser - Eintritt R 1/2"

**Pos. / Description**

- 1 Seal Tank
- 2 Sight Glass
- 3 Name Plate
- 4 Fixture
- 5 Drain Valve Rp 1/2"
- 6 ---
- 7 Safety Valve TÜV approved
- 8 N2 Regulator with Pressure Gauge
- 9 Check Valve N2 Rp 1/2"
- 10 Seal Supply Connection Dia. 12mm
- 11 Seal Return Connection Dia. 12mm
- 12 ---
- 13 PA-Hose Dia. 12mm
- 14 Plug R2"
- 15 Pressure Indicator Kit (opt.)
- 16 Pressure Switch Kit (opt.)
- 17 Temperature Indicator Kit (opt.)
- 18 Hand Pump Assembly (opt.)
- 19 Refill Valve included in Item 18 (opt.)
- 20 Level Switch (opt.)
- 21 Circulation Pump (opt.)
- 22 Finned Tube Kit (opt.)
  
- 50 Seal Supply Connection Dia. 12mm
- 51 Seal Return Connection Dia. 12mm
  
- N1 Level Switch Nozzle G2" with Plug
- N2 N2 Inlet Rp 1/2"
- N3 Fill / Pressure Indicator Nozzle Rp 1/2" with Plug
- N4 Seal Return Connection Rp 1/2"
- N5 Drain / Fill Rp 1/2"
- N6 Seal Supply Connection Rp 1/2"
- N7 Refill R 1/8"
- N8 Cooling Water Outlet R 1/2"
- N9 Cooling Water Inlet R 1/2"