



GESTRA

Valves for Pure and Sterile Steam Systems

Intelligent solutions for sensitive processes



Experience In Motion



GESTRA – Your Competent Partner on Both Sides of the Sterile Boundary

The very highest demands on process and product quality are made by the pharmaceutical and biochemical industries. Only the competent and reliable handling of feedstock, operating media and production equipment creates the environment necessary for the manufacture of flawless products. In addition, a great amount of detailed know-how is needed for the many different production processes, units and valves.

This continuous process has to be supported by vendors who are able to provide special expertise.

With GESTRA as your trusted partner, you gain access to more than 100 years of competence in the entire field of steam and condensate technology – irrespective of whether the focus is on planning a new installation, optimizing the productivity of an existing plant, or quickly finding a good solution for a particular application. We really understand steam and condensate and are there to support you with well-founded advice and a helping hand. On both sides of the sterile boundary.





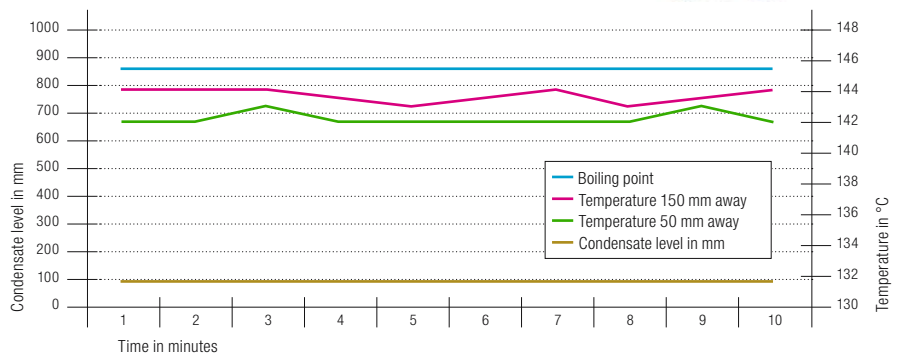
In the Sterile Zone – the Steam Traps for Your SIP Processes

The Membranes “Steriline 1” and “Steriline 2”

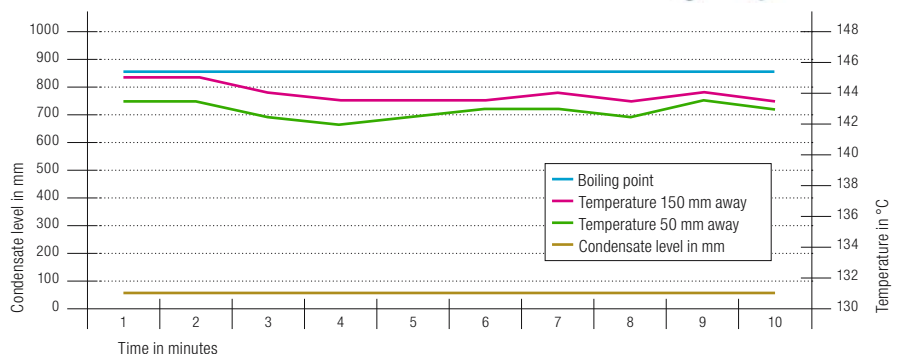
At the heart of every steam trap, there is its functional unit. Only regulating membranes of the type “Steriline 1” or “Steriline 2” are installed in the SMK series. Besides the reduced undercooling, these membranes offer many other advantages.

- ▶ Low mass means a rapid reaction to changing conditions in your processes.
- ▶ Small travelling distances of the moving parts make for low-wear operation.
- ▶ Different seat designs for the two membranes offer the best possible adaptation to the condensate discharging capacity of your process.
- ▶ The smooth, receding surface of the membranes implements your requirements for the surface quality of the body in an optimum manner.
- ▶ A membrane filling that is optimally matched to SIP applications achieves minimum undercooling by opening the steam trap at approx. 4 Kelvin below the boiling point.

The Steriline 1 membrane – precise control for your process
(measured at 3.2 bar (g) upstream pressure and 7.2 kg/h condensate)



The Steriline 2 membrane – precise control for your process
(measured at 3.2 bar (g) upstream pressure and 26.3 kg/h condensate)





In the Sterile Zone – the Steam Traps for Your SIP Processes

The Series SMK 22, SMK 22-5 and SMK 22-8

Differing requirements call for customized product solutions. To meet this need, you have the choice of the various bodies, designs and materials provided by the SMK series. All versions have been developed to answer specific operational requirements and are therefore optimally adapted to your SIP processes.

Optimum function begins with the body.

The SMK 22 is designed so that it is self-emptying. This example has an electropolished surface with a roughness Ra of 0.4 µm.



SMK 22

Material: 1.4435
Functional unit: sterile membrane
Internal surfaces: Ra down to 0.4 µm
Interior: virtually pocket-free
Connections: clamp or orbital welding ends
Body joint: clamp or bolts

SMK 22-5

Material: 1.4404
Functional unit: sterile membrane
Internal surfaces: Ra down to 0.6 µm
Interior: virtually pocket-free
Connections: clamp or orbital welding ends
Body joint: clamp

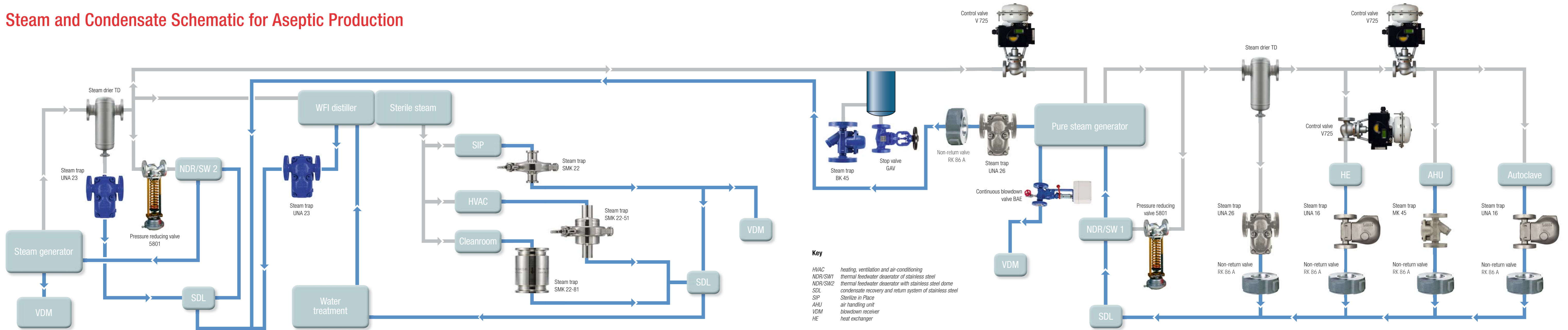
SMK 22-8

Material: 1.4404
Functional unit: sterile membrane
Internal surfaces: 0.8 µm
Interior: virtually pocket-free
Connections: for mounting between clamps (50.5 mm)*

* Accessories for mounting between orbital welding ends available as an option



Steam and Condensate Schematic for Aseptic Production



Key

- HVAC heating, ventilation and air-conditioning
- NDR/SW1 thermal feedwater deaerator of stainless steel
- NDR/SW2 thermal feedwater deaerator with stainless steel dome
- SDL condensate recovery and return system of stainless steel
- SIP Sterilize in Place
- AHU air handling unit
- VDM blowdown receiver
- HE heat exchanger



GESTRA Valves behind the Sterile Boundary

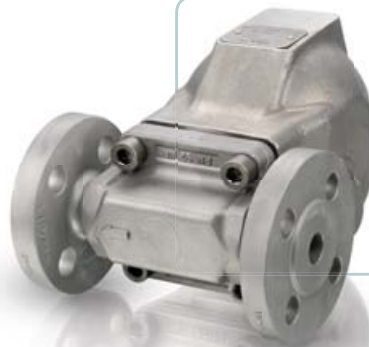
The RK, UNA, MK and BK Series

In addition to the valves for the SIP processes or for generating WFI (Water For Injection), GESTRA offers you more valves with special properties that have been finely engineered – all to your benefit.



Wafer-type non-return valve RK 86A

Owing its patented design for sandwiching between flanges, the RK 86A can be used to meet several different international standards at the same time. Whenever the requirement is to reliably prevent fluids from flowing in reverse, this valve offers the best properties, and is also well suited for standardized use worldwide (ASME, EN, BS, JIS). Not only is there an antistatic connection, the standard design also has sealing surfaces of the same size at the inlet and outlet, which helps to prevent leakage – and all made of austenitic steel.



Float trap UNA 16A and UNA 26A

Equipped with a dependable rolling ball regulator, these units will ensure years of perfect operation for your installation. Whenever large and fluctuating quantities of condensate have to be discharged, these products are first class.



Membrane steam trap MK 45 and MK 45A

Made of stainless steel or steel, depending on the point of use, these two valves are built around a capsule that guarantees a rapid response and hence proper drainage for sensitive applications.



Steam trap with bimetallic regulator BK 45

Steam traps with bimetallic regulators are characterized by robustness and a broad spectrum of applications. A special advantage is their insensitivity to superheated steam. For this reason, this is the ideal steam trap to use for the distribution of plant steam.



Important Notes on Selecting and Installing Steam Traps

Not only are our experts always available to help you choose the optimum steam trap for a certain application, we also are happy to give you assistance and advice with the design and equipment of entire new installations.

On this page, we briefly present a few aspects which will have a positive effect on the efficiency and productivity of your plant, and which yield a sound basis for all our recommendations.

What operating principle should I choose?

Depending on the particular application, a number of different solutions are possible. GESTRA recommends that you only use energy-saving valves. A few examples to illustrate this point:

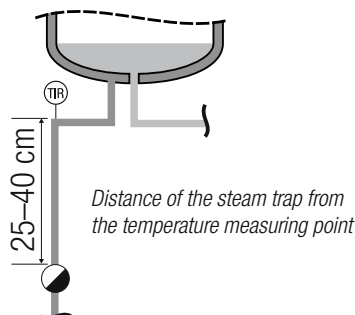
- The sterilization of valves can best be implemented with a product from the SMK series and the rapid-response "Steriline 1" membrane.
- Make-up vessels and fermenters are sterilized dependably with an SMK and a "Steriline 2" membrane.
- Reliable results for the drainage of steam driers are obtained with a float trap UNA (exact model depending on the expected discharge volume).
- For flash vessels, which optimally exploit the energy between two pressure levels, ball float traps of the type UNA are the best choice, because they offer continuous drainage.

Should steam traps be insulated against their surroundings, for example with heat lagging?

Thermostatic steam traps, such as the SMK series, should definitely not be insulated. These units need the undercooling through the body to guarantee a quick reaction and thus the optimum condensate discharge. Any insulation here would lead to banking-up before the valve and possibly a negative effect on the processes. Ball float traps of the UNA series, on the other hand, may be insulated because they operate by level-control.

How and where should I install the necessary temperature measurement in the SIP line, in order to guarantee validation and reliable operation?

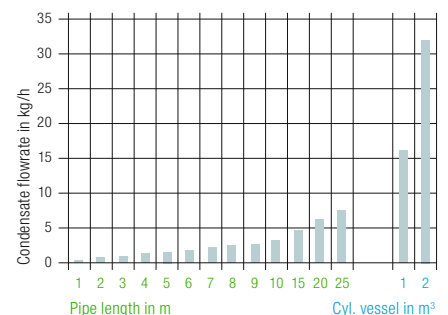
Once the steam traps of the type SMK have been adjusted to the condensate flowrate in your plant, you can mount the temperature measurement unit at a distance of approx. 25 to 40 cm upstream of the steam trap; this allows you to achieve the minimum overall height. If the data are implausible or fluctuate strongly, however, it is advisable to place the temperature measuring point farther away. This facilitates the validation and you will avoid non-conformities.



Just how much condensate is produced in the sterilization of a make-up vessel or in the sterilization of valves?

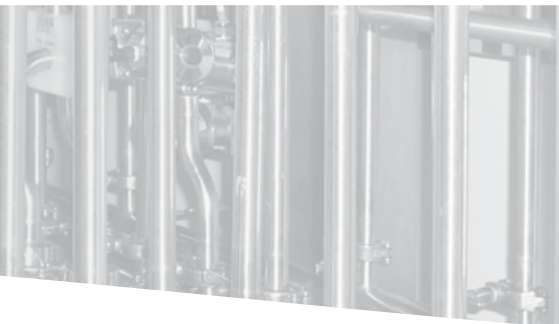
Depending on whether the pipework is insulated, the heat transmission coefficient can vary, resulting in different condensate quantities. It is therefore not possible to quote a value that fits all situations. We will be happy to take a look at your setup and give you a quick answer on the basis of specific data.

Condensate in a DN20 pipe of stainless steel during sterilization with saturated steam at 3 bar / 144 °C



Must WFI (Water For Injection) that has been used for sterilization be discharged, or it is possible to save energy here?

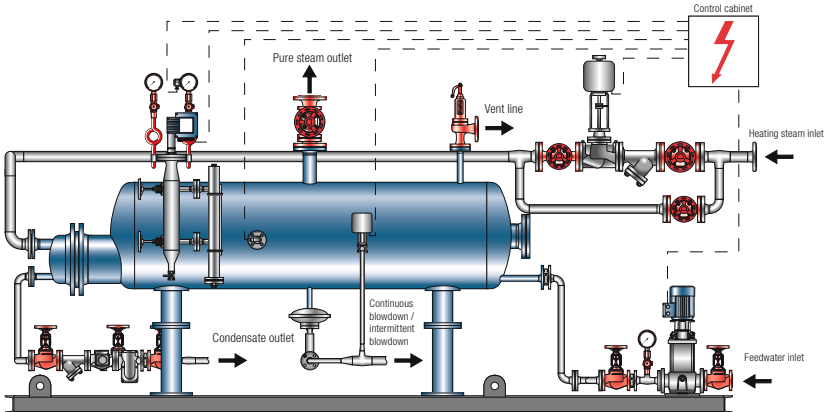
As long as it is guaranteed that the two cycles are totally separate, WFI that has been used for sterilization can certainly be routed via a condensate recovery system for re-use as plant steam. Depending on the quantity and duration, the necessary investments pay off very quickly. We will be glad to give you further details and advice on this possibility.



Special Equipment and Vessels for Heat Recovery

Equipment and vessels especially designed for heat recovery form the basis for general energy-saving concepts. Through the optimized combination of various components, the energy already invested can be re-used to achieve considerable savings in comparison with simple "once-through" installations.

Steam driers, condensate return systems in conjunction with a condensate receiver tank, thermal deaerators and water-bath desuperheaters are just a few of the components from the GESTRA product range that can be installed to give you the optimum in energy utilization.





GESTRA AG

Münchener Str. 77, D-28215 Bremen
P.O. Box 10 54 60, D-28054 Bremen
Telephone +49 (0) 421-35 03-0
Telefax +49 (0) 421-35 03-393
E-mail gestra.ag@flowserve.com
Internet www.gestra.de

