Operating instructions

Super Safe Sampler

Aseptic sampling system

CE

Dok-ID: V.03.000 - translation

INFORS HT

Infors AG
Headoffice, Schweiz
Rittergasse 27
CH-4103 Bottmingen
T +41 (0)61 425 77 00
F +41 (0)61 425 77 01
headoffice@infors-ht.com
service@infors-ht.com

Infors GmbH
Dachauer Str. 6
D-85254 Einsbach
T +49 (0)8135 8333
F +49 (0)8135 8320
infors.de@infors-ht.com

Infors UK Ltd
The Courtyard Business Centre
Dovers Farm, Lonesome Lane, Reigate
Surrey, RH2 7QT, UK
T +44 (0)1737 22 31 00
F +44 (0)1737 24 72 13
infors.uk@infors-ht.com

Infors Sarl
2, rue du Buisson aux Fraises
Bâtiment D13
F-91300 Massy
T +33 (0)1 69 30 95 04
F +33 (0)1 69 30 95 05
infors.fr@infors-ht.com

Infors Benelux BV
Fabriekstraat 38
7005 AR Doetinchem
P.O. Box 613
NL-7000 AP Doetinchem
T +31 (0)314 36 44 50
F +31 (0)314 37 80 76
infors.bnl@infors-ht.com

Infors Canada
8350 rue Bombardier
Anjou, Quebec
Canada H1J 1A6
T +1 514 352 5095
F +1 514 352 5610
infors.ca@infors-ht.com

Infors Bio-Technology (Beijing) Co., Ltd.
Room 505C, Building 106
Lize Zhongyuan
Wangjing New Industrial Zone
Chaoyang District, Beijing
100102 P.R. of China
T +86 10 51652068
F +86 10 64390585
info@infors-ht.com.cn

Contact details of our local dealers world wide can be found on our website

www.infors-ht.com

Engineering and production in Switzerland

Table of Content

1 Setup and function

1.1 Content of the sampling system set

The aseptic sampling system Super Safe Sampler is supplied as a set:

1 Valve assembly
2 Syringe with Luer Lock
3 Syringe

Fig. 1

The set consists of a completely pre-assembled group of valves with tubing and two syringes packed in a bag.

NOTICE!

If qualification is required, drawings are available along with material certificates for the component parts of the sampling system

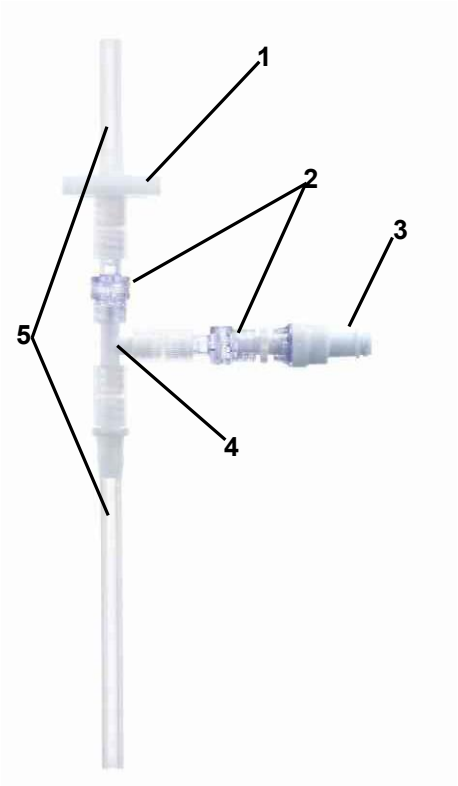

Fig. 2

1 Air filter
2 Check valve
3 Luer activated sample valve
4 T-piece
5 Tube

The valve assembly consists of a T-piece, two check valves, a Luer-activated automatic sample valve, an air filter, a length of tubing as an adapter for the syringe and tubing for connection to the sample dip tube in the vessel.

1.2 Principle of function

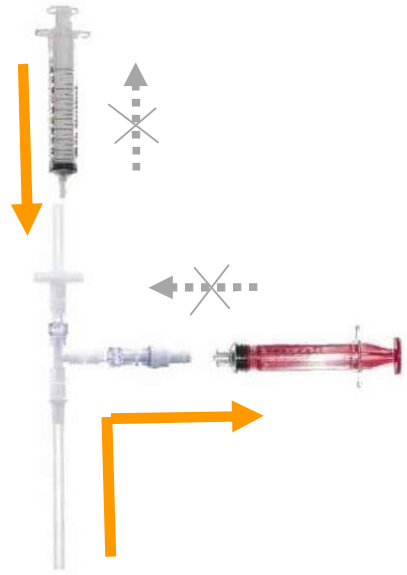

Fig. 3

Liquid culture samples are taken from the sidearm of the T-piece with the Luer fitting using a syringe. The Luer-activated, automatic sample valve opens by putting the Luer connector of the syringe into the valve and closes by removing the syringe. No further handling is necessary.

Unintentional re-introduction of the sample material once it has been withdrawn is prevented by a check valve. Thus, contamination of the bulk culture is impossible. Mis-operation of the sampling system has been excluded by design, in order to obtain the maximum operation safety and user friendliness.

NOTICE!

Disinfection of the automatic sample valve by wiping with a commercial disinfectant can be accomplished before fitting the syringe, in order to guarantee the sterility of the sample. This measure is not necessary to ensure the sterility of the bulk culture and can be omitted.

Following sampling, a second syringe can be fitted and air pushed in via the sterile filter, in order to displace culture solution from the sample tubing and the dip tube of the vessel. With a conventional sampling system, the next sample cannot be taken immediately, as rinsing of the sampling hose and the immersion tube is necessary. By previously removing most of the culture in the sampling line, this sampling system can save culture volume, which is particularly important with small vessels and/or frequent sampling.

The dead volume of the culture remaining in the group of valves after flushing with sterile air amounts to a few µl and is negligibly small, therefore, in relation to the usual sample volume of 10 mL. If the withdrawal of a very small sample volume is required, with minimum possibility of falsification, a small quantity of culture solution (e.g. 1 mL) can be introduced and rejected before the actual sample is taken.

1.3 Designated use

The Super Safe Sampler can be employed for aseptic sampling for the following applications:

- Cell cultivation
- Bacterial cultivation
- Fungal cultivation, if formation of mycelia which might clog the valves does not occur.
- Algal cultivation, if formation of cell aggregates which might clog the valves does not occur.

The Super Safe Sampler is autoclavable and for this reason reusable. It can be used in combination with practically any pressureless culture vessel like:

- Autoclavable stirred tank reactors
- Reusable spinner flasks
- Disposable sterile spinner flasks
- Disposable sterile culture bags

1.4 Practical tips

Sterility of the culture vessel is ensured at all times without the possible measures mentioned below.
The use of a sterile syringe and sterile caps is only necessary if the sample has to be processed under sterile conditions.
For sampling, the same non-sterile syringe can be used repeatedly, without fear of contamination of the culture vessel

Possible measures

- For each sample, use a new, sterile syringe with Luer Lock fitting, in order to ensure the sterility of the sample.

Fig. 4

Fig. 5

Fig. 6

- After autoclaving and each sampling, immediately close the sample valve and the syringe with a sterile, female Luer Lock Cap (Dead End Cap) to keep the valve and the sample sterile.

The caps are not included in the kit. Very convenient to use are so-called combi-caps that fit on male and female connectors alike.

Caps that are vented and made of steam sterilisable material can also be fitted during sterilisation.

CAUTION!
Danger of loss of property due to not steam sterilisable parts!

When using ordinary caps, which are not vented and consist of material that is not steam sterilisable, the sample system can be damaged during sterilisation.

Therefore:

– When using caps during sterilisation ensure they are vented and steam sterilisable; otherwise fit them after sterilisation only.

- Before fitting the syringe, carry out a wiping disinfection of the sample valve. Spray a commercially available disinfectant onto the valve, leave to soak, then wipe off with a sterile cloth.

2 Preparations for Use

2.1 Safety

WARNING!
Danger of health risk when working with pathogenic organisms!

Mechanical failure of the automatic valves may cause leakage of culture from the sampling system. This contains a severe health risk if working with pathogenic organisms!

Therefore:

– Always clamp off the sampling tube with a strong hose clamp (not included in the kit!) for additional safety when working with pathogenic organisms.
– Only remove the clamp when sampling.
– Ensure the clamp is securely fitted before removing the syringe from the sample valve.

CAUTION!
Risk of contamination due to leakages from the sampling system!

Loose screw connections between the component parts of the sampling system can lead to non-sterile air penetrating the system or a possible contamination of the laboratory with culture

Therefore:

– Before and after the sterilisation in the autoclave: Always check and, if necessary, adjust all screw connections of the sampling system for tightness.

CAUTION!
Danger of loss of property due to sterilisation above limited temperature!

Sterilisation temperatures above 121 °C can lead to damage of components of the sampling system.

Therefore:

– Sterilise at max. 121 °C
– Ensure that components of the sampling system do not get in contact with the walls of the autoclave.

CAUTION!
Danger of loss of property due to using force!

If the screw connections of the sampling system are tightened with force, this can damage of the component parts.

Therefore:

– Gently tighten all screw connections with two fingers.
– Do NOT use tools!

In order to prepare the system for the sterilisation and later use, proceed as follows:

Procedure before sterilisation

1. Attach the connecting tubing between the vessel and the group of valves to the dip tube.

The tube can be secured with a cable tie for additional security.

Fig. 7

Preparations for Use

Fig. 8

2. Gently turn the automatic sample valve clock-wise to ensure the screw connection is tight.

Fig. 9

3. Gently turn the air filter clock-wise to ensure the screw connection is tight.

Fig. 10

4. Loosely cover the valve assembly with aluminium foil.

The cover protects the air filter against condensation and keeps the surface of the automatic valve sterile after removal from the autoclave.

Fig. 11

For additional safety when working with pathogenic organisms:

5. Clamp off the tube with a strong hose clamp.

NOTICE!

Tubing filled with water during sterilisation in the autoclave makes for better heat transfer and thereby reduces the contamination risk.

If the sampler is to be used in conjunction with sterile single-use culture vessels like e.g. spinner flasks or culture bags, autoclave the sampler separately (loosely covered with aluminium foil) and connect it to the vessel under a laminar flow hood.

Procedure after sterilisation

1. Remove the aluminium foil.

As necessary:

2. Fit the sterile cap.

3 Sampling

3.1 Safety

CAUTION!
Risk of contamination due to leakages from the sampling system!

Loose screw connections between the component parts of the sampling system can lead to non-sterile air penetrating the system or a possible contamination of the laboratory with culture

Therefore:

– Before and after the sterilisation in the autoclave: Always check and, if necessary, adjust all screw connections of the sampling system for tightness.

CAUTION!
Danger of loss of property due to using force!

If the screw connections of the sampling system are tightened with force, this can damage of the component parts.

Therefore:

– Gently tighten all screw connections with two fingers.
– Do NOT use tools!

For sampling proceed as follows:

Procedure

If fitted:

1. Remove the clamp from the sample tube.
2. Check all screw connections on the group of valves for tightness. Carefully tighten the screw connections with two fingers as necessary.

If fitted:

3. Remove the cap.

If desired:

4. Carry out a wiping disinfection.

Fig. 12

5. Place a Luer lock syringe on the sample valve.

If the sample is to be processed under sterile conditions: use a sterile syringe.

Sterile syringes are consumables and therefore not included in the set. Different sizes can be used depending on the application: Luer-Lock syringes from 1 up to 60 mL volume are available from laboratory suppliers.

NOTICE!

The use of a syringe with Luer push-fit is also possible. However, a syringe with a Luer lock prevents unwanted movement of the syringe.

6. Turn the syringe a quarter-turn clockwise to lock.

Sampling:

Fig. 13

7. Pull back on the syringe piston – **NOT COMPLETELY!** - in order to draw up the desired sample volume.

Rinsing with sterile air:

The dip tube and its tubing connection can be rinsed with sterile air after sampling.

NOTICE!

Only use a dry and clean syringe in order to avoid clogging of the filter. This syringe can be reused as often as desired because the air is led via a sterile filter.

Sampling

8. Pull back on the syringe piston to fill it with air.
9. Place the syringe on the tube on the air filter.

Fig. 14

10. Push the piston into the syringe.

Remains of culture liquid are displaced back into the vessel.

Fig. 15

11. Repeat step 8 to 10 until there is no more liquid in the tube.

Removing remaining liquid from the dead volume:

12. Completely pull back on the piston of the sample syringe. Except for a few µl, all remaining liquid is removed from the dead volume.

The transparent plastic parts are like a magnifying glass - therefore very small quantities of remaining liquid can appear larger than they actually are.

Fig. 16

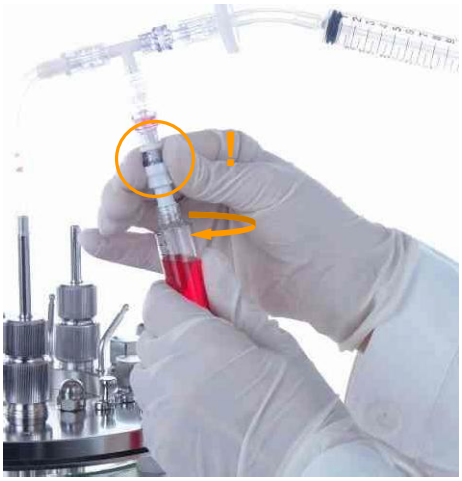

Fig. 17

CAUTION!
Risk of contamination due to inappropriate removal of the syringe!

When holding other parts than the sample valve (e.g. T-piece) while removing the syringe, the sample valve can come off together with the syringe by accident. This can lead to contamination of the culture vessel.

Therefore:

– Always hold the sample valve when removing the syringe.

13. While holding the sample valve with one hand, use the other hand to loosen the syringe by turning it a quarter-turn anticlockwise.

14. Remove the syringe from the sample valve.

Fig. 18

As necessary:

15. Fit a cap onto the sample valve and the sample syringe.

4 Cleaning

CAUTION!
Danger of loss of property due to use of unsuitable cleaning reagents!

The use of unsuitable cleaning reagents e.g. acids, caustic solutions or solvents can lead to damage to the sampling system.

Therefore:

– Never use acid, caustic solution or solvent as cleaning reagents for the sampling system.
– Only use water or a mild soap solution.

The sampling system can be rinsed with either water or, if necessary, with a mild soap solution.

NOTICE!
The sterile filter must not be rinsed with water.

1. Fill the vessel with water or mild soap solution

Or:

1. Remove the sample tubing from the dip tube in the vessel and hold in e.g. a beaker with water or soap solution.
2. Place a syringe on the sample valve.
3. Pull back on the piston of the syringe, in order to rinse the sampling system with water or soap solution.

When using soap solution:

4. Rinse the sampling system thoroughly with water afterwards.

NOTICE!
If the test protocol foresees to kill the culture by sterilisation of the culture vessel, the valves of the sample system can stick together due to remnants of culture solution. In this case it is better to sterilise the sample system separately in a beaker filled with water (tubing filled with water, air filter removed).