User Manual

Installation of BioPAT® Viamass and Biostat STR® Viamass Support

For Biostat STR® generation 1 and generation 2 systems with
Flexsafe STR® 50 | 200 | 500 | 1000 | 2000 single-use bioreactors

1000072085

SARTORIUS

Contents

1 Introduction

BioPAT® Viamass is a single-use capacitance probe to measure viable cells in cell culture processes. It is measuring the cells' bio-capacitance which scales with viable cell volume and wet cell weight.

It is monitoring viable cells and allows an efficient process control with real-time information on viable biomass. Fully in line with the single-use technologies concept, it is saving substantial time and resources with limiting the need for sampling operations. Consequently, it is also limiting the risks linked to handling and contamination.

This technology is available for the complete Biostat STR® product range meaning:

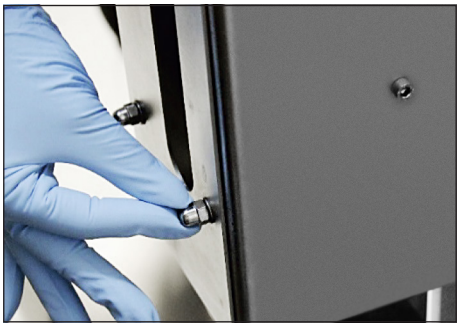
- for both generation 1 and generation 2 hardware
- for the complete Flexsafe STR® single-use bioreactor product range (50, 200, 500, 1000 & 2000 L)

This manual is detailing how to install and connect the BioPAT® Viamass electronics according the system generation and bag size.

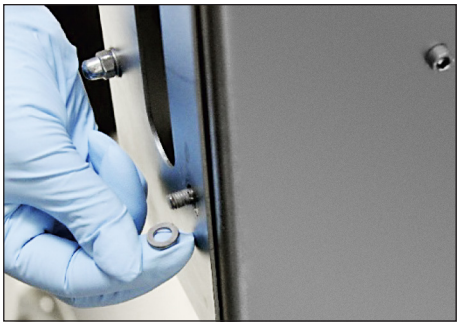
	Description	Order number
BioPAT® Viamass sensor	Readily integrated in Flexsafe STR® bag	
Electronics	BioPAT® Viamass electronics	BPV0001
Cable to DCU	Either: data cable sensor to DCU, 3 m, ODU to M12	SSS000038
	Or: data cable sensor to DCU, 5 m, ODU to M12	SSS000039
Signal simulators	BioPAT® Viamass signal simulator set for SU	BPV0011
Grounding cable	Potential equalization cable 3 m	SSS000035
	Potential equalization cable 5 m	SSS000036
Electronics Holder	For Biostat STR® Gen1 (Ref: BB-8803060 or BB-8803061)	SSS000032
	For Biostat STR® Gen2 (Ref: Biostat STR2)	SSS000033
Biostat STR® Viamass Support	For Biostat STR® Gen 1	DZ-------AD1
	For Biostat STR® Gen 2	DZ-------AD2

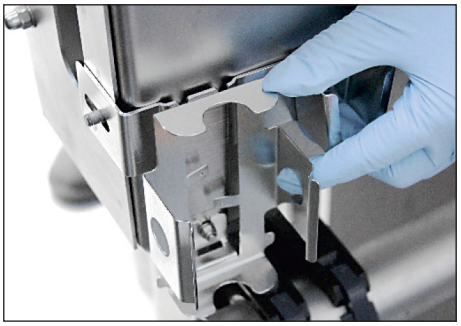
2 Installation of the BioPAT® Viamass

2.1 Installation of the BioPAT® Viamass electronics at the Biostat STR® Hardware Gen 1

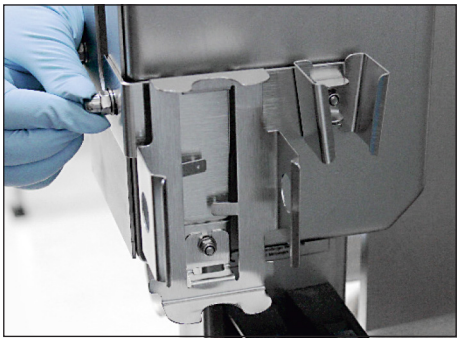


1. Remove the lowest screw nut and washer from the motor arm back side.

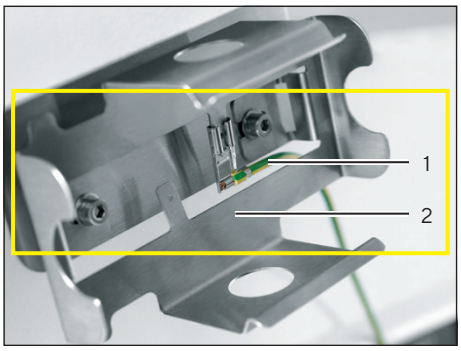




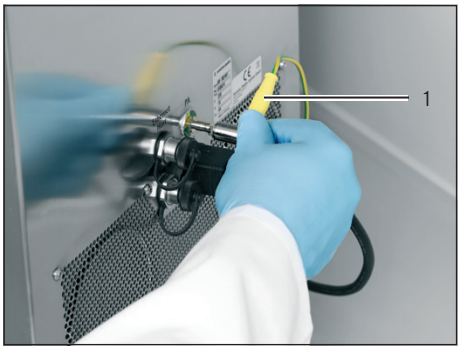
2. Place the BioPAT® Viamass electronics holder on the screw thread.



3. Fix the BioPAT® Viamass electronics holder with the washer and the screw nut.



4. Ensure that the equipotential bonding cable (1) is connected to the electronics bracket (2) as shown in the figure.



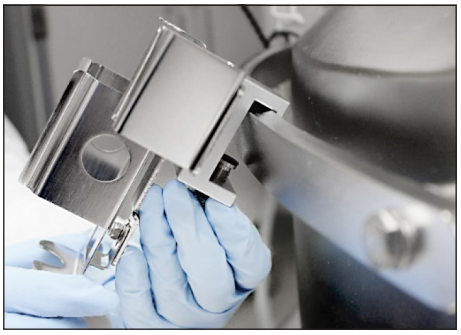
5. Connect the equipotential bonding cable (1) to the equipotential bonding point [PA] on the control unit or your local installation.

6. Place the electronics inside of the BioPAT® Viamass electronics holder.

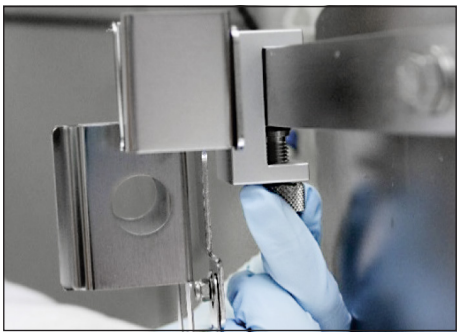
7. Connect the data cable to the electronics. The two red points on the connections have to be aligned.

8. Connect the electronics to the control unit.

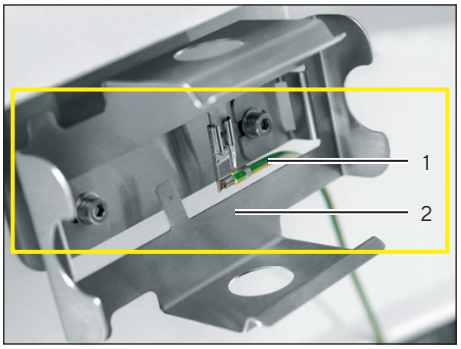
2.2 Installation of the BioPAT® Viamass electronics at the Biostat STR® Hardware Gen 2 and Biostat STR® 2000



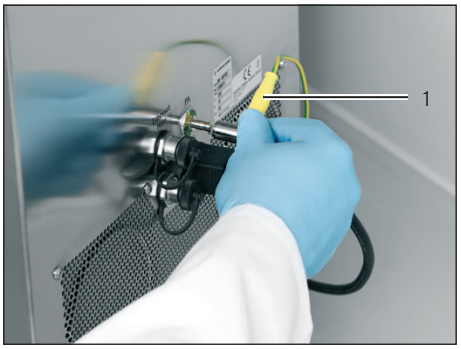
1. Place the BioPAT® Viamass electronics holder to the system rail below the sensor window.



2. Fix the BioPAT® Viamass electronics holder by the fixation screw.



3. Ensure that the equipotential bonding cable (1) is connected to the electronics holder bracket (2) as shown in the figure.



4. Connect the equipotential bonding cable (1) to the equipotential bonding point [PA] on the control unit or your local installation.

5. Place the electronics inside of the BioPAT® Viamass electronics holder.

6. Connect the data cable to the electronic. The two red points on the connections have to be aligned.

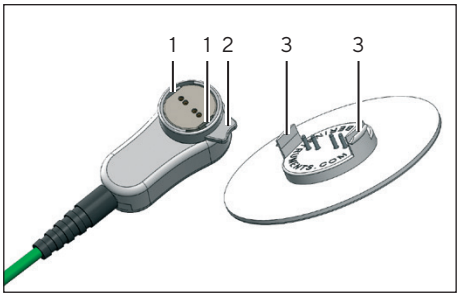
7. Connect the electronic to the control unit.

3 Connection

3.1 Connection of the BioPAT® Viamass preamplifier with the single-use sensor disc (Flexsafe STR® 50 – 2000 L)

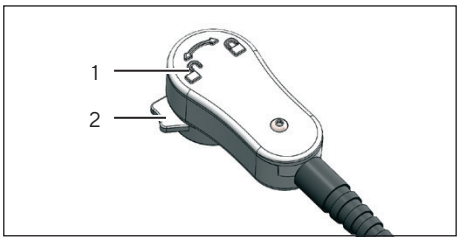
Connect the BioPAT® Viamass preamplifier with the single-use sensor disc after filling the bag up to the minimal working volume (25% of the maximum working volume). In addition install the corresponding Biostat STR® Viamass Support (60 mm or 100 mm depending on your holder – see table on page 4) based on the sensor window opening height for Biostat STR® 500, 1000 und 2000. Follow the detailed instructions in Chapter "4 Installation for Biostat STR®", page 11.

During the cultivation process it is not allowed to disconnect the BioPAT® Viamass preamplifier from the single-use sensor disc.

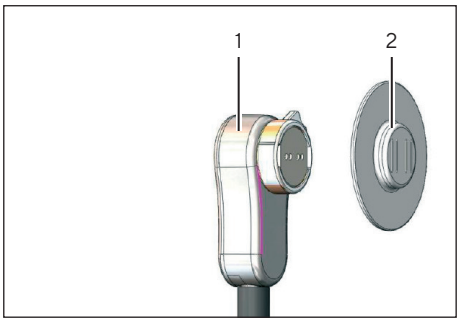


Every single-use sensor disc has four platinum electrodes and two plastic mounts for the connection of the preamplifier (3). On the preamplifier housing a locking ring (2) and guiding slots (1) are located.

In the guiding slots the plastic mounts of the sensor disc are locked, in order to ensure a safe and reliable connection.

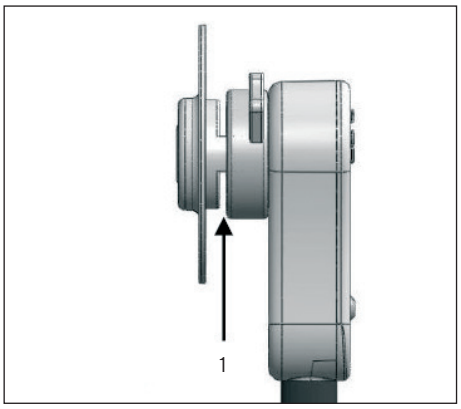


- ▶ Remove the protection tape from the single-use sensor disc.
- ▶ Turn the locking ring (2) into the unlocked position (1).

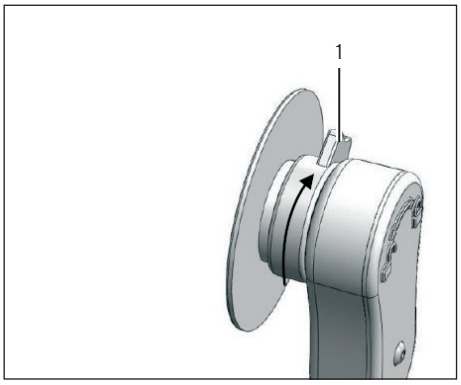


- ▶ Align the BioPAT® Viamass preamplifier (1) with the plastic mounts of the single-use sensor disc (2).
- ▶ Make sure the plastic mounts are in line with the guiding slots of the preamplifier.

To allow an optimal connection and no interference with the environment, the single-use sensor disc is welded onto the bag with an angle (not shown here). It is resulting in an angle also for the preamplifier at the connection point.



- Place the BioPAT® Viamass preamplifier in a square angle onto the sensor disc. Do not apply any force onto the preamplifier or sensor disc, with the result that a clearance (1) is visible between preamplifier and sensor disc.
- Dependent on the vertical position of the sensor disc inside the sensor window opening the preamplifier has to be positioned with the cable towards the top or bottom (see Chapter "4.2 Installation of the support for BioPAT® Viamass for Flexsafe STR® 500 L, 1000 L and 2000 L (hardware generation 1 and 2)", page 12).



Only after a proper alignment of the preamplifier and the sensor (as explained above), turn the locking ring totally into the lock position (1). This ensures a secured connection of the preamplifier on the sensor disc.

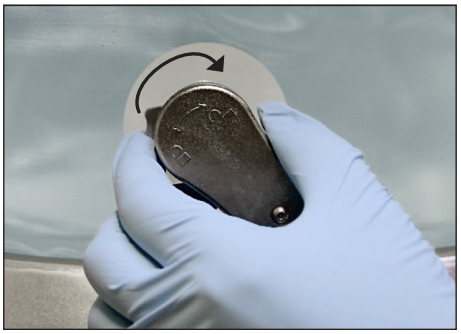
⚠ Attention

Unlocking and reconnecting of the preamplifier onto one sensor disc is not permitted. Therefore, a proper alignment of both parts prior to turning into the locking position is crucial.

4 Installation for Biostat STR®

4.1 Installation for Biostat STR® Gen1 | Gen 2 50 – 200

1. Fill the Flexsafe STR® 50 | 200 L bag with your culture medium to the minimal volume (25% of the maximum working volume).



2. Connect the preamplifier to the Viamass sensor in accordance to operating instructions according to Chapter „3 Connection“, page 9.
3. Fill the Flexsafe STR® bag to the desired working volume.
4. It is not permitted to disconnect the preamplifier before the end of your cultivation.

4.2 Installation of the support for BioPAT® Viamass for Flexsafe STR® 500 L, 1000 L and 2000 L (hardware generation 1 and 2)

For use of the BioPAT® Viamass sensor together with a Flexsafe STR® 500 L | 1000 L | 2000 L bag, installation of the Biostat STR® Viamass Support device is needed.

The Biostat STR® Viamass Support device is available in two sizes:
For Biostat STR® Gen 1 (60 mm sensor window height) as well as for Biostat STR® Gen 2 and 2000 L (100 mm sensor window height).

Moreover the Biostat STR® Viamass Support is a multi-use device.

To facilitate easy installation, the support device is composed out of two parts. Please follow the subsequent instruction for the installation of the STR® Viamass Support device for Flexsafe STR® 500 – 2000 L.

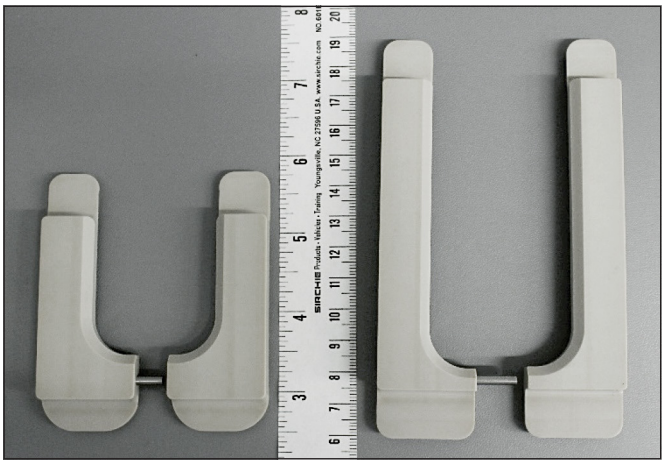


Fig. 1: STR® Viamass Support front for Gen 1 500 – 1000 L (left side) and Gen 2 500 – 1000 L | 2000 L (right side).

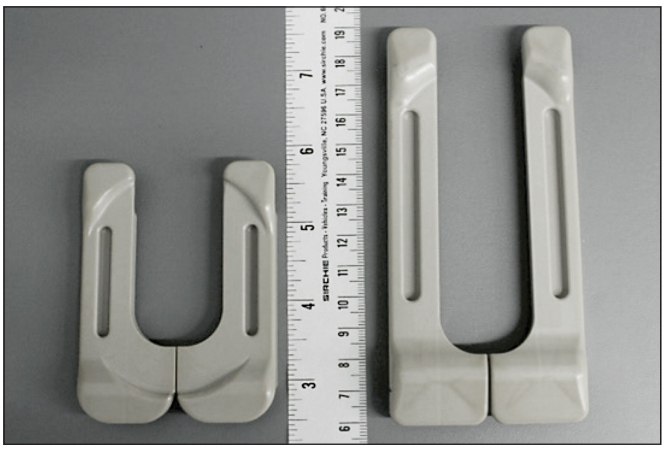
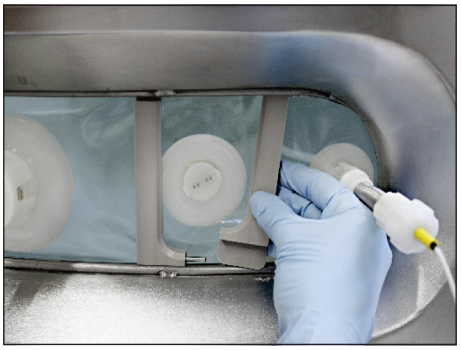


Fig. 2: STR® Viamass Support back for Gen 1 500 – 1000 L (left side) and Gen 2 500 – 1000 L | 2000 L (right side).

⚠ Attention

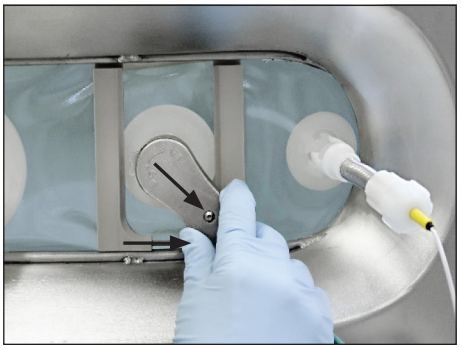
Only push the support with the flat area against the film, otherwise the film can be damaged.

Always follow this procedure for installation of the STR® Viamass Support device:



1. Fill the Flexsafe STR® bag with your culture medium to the minimum filling volume (25% of maximum working volume).

   Make sure that the back of the STR® Viamass support is always pressed flat against the bag, so that no damage to the bag can occur. Clamp both support device parts between bag holder and Flexsafe STR® bag.

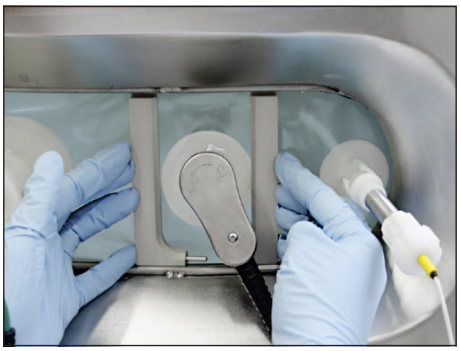


2. Connect the preamplifier to the Viamass sensor in accordance to operating instructions according to Chapter „3 Connection“, page 9. Make sure that the cable points in direction of the stainless steel pin.

   Keep at least a distance of 1 cm between the right and left support device part, so that the stainless steel pin is still visible.

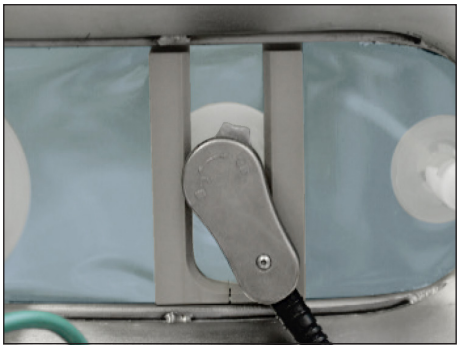
⚠ Attention

Take care to not clamp your fingers between the support parts while pushing the support sides together.

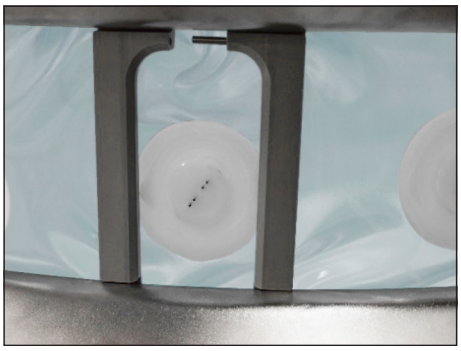


3. Push the left and right part of the support device together until the stainless steel pin is no longer visible.

▶ Make sure that the back of the STR® Viamass support is always pressed flat against the bag, so that no damage to the bag can occur. Clamp both support device parts between bag holder and Flexsafe STR® bag.



4. Fill the bag to the desired working volume.
5. Keep the STR® Viamass Support device and the preamplifier installed until end of your cultivation.



⚠ Notice

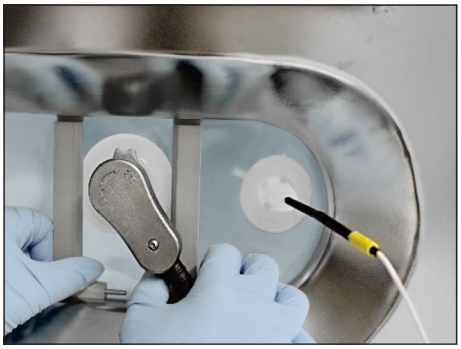
Depending on bag installation, the Viamass sensor may not be placed vertically central inside the window. In case of a downward deviation, the stainless steel pin should face towards the upper sensor window edge. In case of an upward deviation, the stainless steel pin should face towards the lower sensor window edge.

4.3 Uninstallation of STR® Viamass support

Uninstallation of the STR® Viamass Support must be carried out according to the following instruction:

⚠ Attention

Always disconnect the BioPAT® Viamass preamplifier before the bag is uninstalled. The non-compliance can cause damages at the preamplifier or bag.



1. Drain the bag to the upper edge of the sensor window.
2. Pull the right and the left part of the STR® Viamass support device carefully apart.
3. Disconnect the preamplifier.
4. Remove the STR® Viamass Support device.

Sartorius Stedim Biotech GmbH
August-Spindler-Strasse 11
37079 Goettingen, Germany

Phone: +49 551 308 0
www.sartorius.com

The information and figures contained in these instructions correspond to the version date specified below.
Sartorius reserves the right to make changes to the technology, features, specifications and design of the equipment without notice.
Masculine or feminine forms are used to facilitate legibility in these instructions and always simultaneously denote the other gender as well.

Last updated:
06 | 2020

Printed in the EU on paper bleached without chlorine. | W
DIR No.: 2486627-000-01