

TANGENX™ SIUS™ CASSETTE INSTALLATION

- Lift the end plate off the manifold of the TangenX™ SIUS™ cassette holder.
- Remove the protective blue sheet and rinse the EPDM gaskets with deionized water or WFI. Place a rinsed gasket flat against the bottom manifold; ensure that the holes in the gasket line up with the holes in the manifold.
- Using scissors carefully open the cassette bag to remove cassette.
WARNING: Each cassette is stored in 0.2M sodium hydroxide solution as a preservative. Follow standard safety procedures for handling 0.2M sodium hydroxide, including the use of gloves, safety goggles, and lab coat.
- Place the cassette into the holder flat against the gasket. Place another gasket on top of the cassette. Ensure that the holes in the manifold, gaskets, and cassette are completely aligned. If you are using multiple cassettes, continue the same gasket/cassette/gasket pattern, ending with a gasket between the last cassette and the end plate.
- Place the end plate on top of the last gasket of the cassette or cassette stack.
- Install the tie-rod spacers (if used) and washers on each bolt leaving a minimum of 18 mm (0.75 inch) of thread exposed on the rod. By hand, screw the nut on each bolt and hand tighten evenly by alternating from one nut to the other. Bolts must be further tightened to within the recommended torque values using a calibrated manual torque wrench.
- Proceed to step 8 for a four bolt hardware design or skip to step 9 for a two bolt hardware design.
- Using the calibrated torque wrench with a deep style socket, tighten each hex nut ¼ turn following the torque sequence illustrated in Figure 2 for a four bolt horizontal hardware. In ¼ turn increments, tighten the first (H1), second (H2), third (H3), and fourth (H4) nut alternating back and forth until the torque wrench "clicks". Repeat this sequence until the wrench "clicks" without turning the nut. The "click" of the torque wrench indicates that the nut has reached the set point torque value.

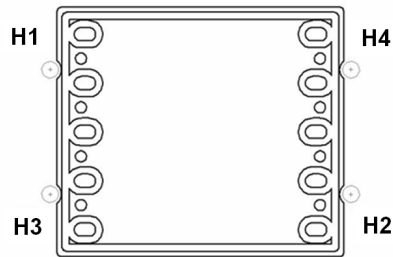
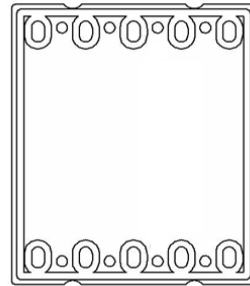


FIGURE 2
TORQUE SEQUENCE FOR TANGENX™ SIUS™ CASSETTES
(4 Bolt Design)

- Using the calibrated torque wrench with a deep style socket, tighten each hex nut ¼ turn following the torque sequence illustrated in Figure 3 for a two bolt vertical hardware. Tighten the first nut ¼ turn, and then tighten the second nut ¼ turn alternating back and forth until the torque wrench "clicks". Repeat this sequence until the wrench "clicks" without turning the nut. The "click" of the torque wrench indicates that the nut has reached the set point torque value.

V1



V2

FIGURE 3
TORQUE SEQUENCE FOR
TANGENX™ SIUS™ CASSETTES
(2 Bolt Design)

CAUTION: Nuts must be tightened uniformly to avoid damaging the cassette. Leakage may result from non-parallel plate alignment or over compression of the cassettes at one end.

- Wait 5-10 minutes and allow the gaskets to relax before re-torquing. Check each nut, per the Figure 1 or 2 sequences, using the torque wrench at its set point torque value.
- Re-torque as needed, to create a liquid-tight seal.
NOTE: Torque may change during processing as the cassettes may compress, or as the cassettes expand or contract with temperature changes. Periodically check the torque of the bolts and adjust torque as needed.

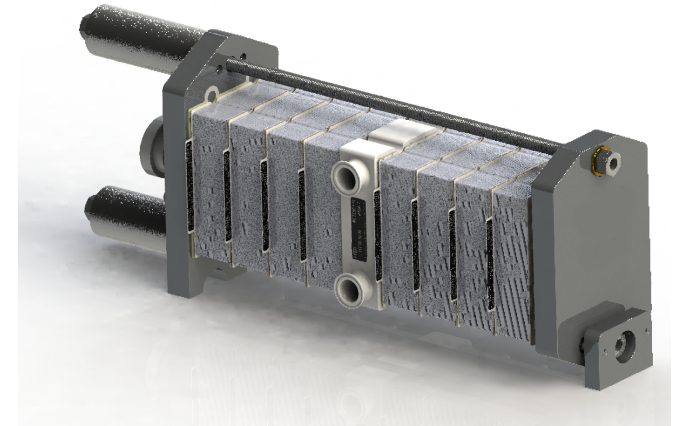
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TangenX™ SIUS™ Cassette Holder

COMPATIBILITY GUIDE



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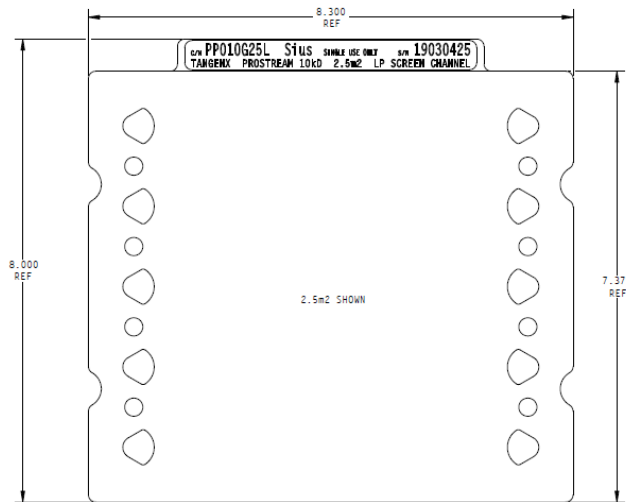
INTRODUCTION

Tangential flow filtration cassettes are typically installed in a stainless steel cassette holder consisting of two steel plates, one acting as a flow distribution manifold and the other as a mating solid flat surface. Repligen offers a complete series of high performance stainless steel cassette holders and are designed for optimal performance with TangenX™ SIUS™ TFF cassettes. In addition to TangenX™ SIUS™ cassette holders, TangenX™ SIUS™ cassettes have been designed to be compatible with other types from alternative manufacturers. The following guide will outline the compatibility of the TangenX™ SIUS™ cassettes with these other types of cassette holders and act as a supplement to the standard user guide.

TANGENX™ SIUS™ SINGLE USE CASSETTES

- TangenX™ SIUS™ cassettes are offered with several different membrane surface areas that include 0.5m², 1.5m², and 2.5m² sizes. These cassettes have a standard universal format designed to fit a wide range of cassette holders of various configurations. Figure 1 shows the dimensions for the alignment notches for the TangenX™ SIUS™ cassette.

Figure 1



- The following is a partial list of cassette holders that are compatible with the TangenX™ SIUS™ cassette.

Repligen	TangenX™ SIUS™ Cassette Holder	(TX032)
Pall	Centrasette Cassette Holder	(FS001K05)
Millipore	Pellicon Cassette Holder	(XX42P0080)
Sartorius	Sartocon Cassette Holder	(17546-202)
GE	Kvick Cassette Holder	(KFHR0115TQE)

- Once the cassette holder has been identified continue to the next section for the supplemental guide to the standard product use guide.
- Only use the gaskets provided by Repligen that are supplied with each TangenX™ SIUS™ cassette.

TANGENX™ SIUS™ CASSETTE | SUPPLEMENTAL INSTALLATION

• Pall Centrasette Cassette Holder

Reference TangenX™ User Guide IF.PUG.006 for basic cassette installation instructions, further details are below.

Pall Centrasette cassette holders are offered in several different configurations and are compatible with TangenX™ SIUS™ cassettes with the part number xxxxxGxx. Both a two bolt vertical and a four bolt cassette holder in the horizontal position are available. The vertical two bolt design requires greater torque to seal the cassette in place. The four bolt design reduces the torque that is required to seal the cassette.

The TangenX™ SIUS™ cassette must be placed in the cassette holder with the cassette's identification label facing "up" or away from the lower flow-path manifold and towards the brass retaining nuts. Tighten the bolts in ¼ turn increments, as described on page 4 and page 5, until the recommended torque is achieved. The suggested torque values shown in Table 1 found below.



Table 1 Recommended Torque Values | Pall Centrasette Holder

Holder Part Number	Torque Range (in-lbs)	Torque Range (Nm)
FS001K05 (4-Bolt)	300 – 450	35 – 50
FS004K05 (2-Bolt)	600 – 900	70 – 100

• Millipore Pellicon Cassette Holder

Reference TangenX™ User Guide IF.PUG.006 for basic cassette installation instructions. The Millipore Pellicon cassette holders are also offered in several different configurations and are compatible with TangenX™ SIUS™ cassettes with the part number xxxxxGxx. Several four bolt holders in the horizontal and vertical positions are available.

Millipore Pellicon pilot and process scale holders utilize a series of permeate channels resembling a "star" shape on the lower manifold. This type of holder requires a manifold support plate to be installed when using TangenX™ SIUS™ cassettes. The support plate is available from Millipore and is identified with the part number XXPEL3MAP. The TangenX™ SIUS™ cassette must be placed in the cassette holder with the cassette's identification label facing "up" or away from the lower flow-path manifold and towards the brass retaining nuts. Do not use the white compression washers included with the Pellicon cassette holders. Only use solid stainless steel spacers. Tighten the bolts in ¼ turn increments, as described on page 4 and page 5, until the recommended torque is achieved. The suggested torque values are below.



Table 2 Recommended Torque Values | Millipore Pellicon

Holder Part Number	Torque Range (in-lbs)	Torque Range (Nm)
XX42P0080 (4-Bolt)	300 – 450	35 – 50

• Sartorius Sartocon 2 Cassette Holder

Reference TangenX™ User Guide IF.PUG.006 for basic cassette installation instructions, further details are below.

The Sartorius Sartocon 2 cassette holders are offered in many different configurations and are compatible with TangenX™ SIUS™ cassettes with the part number xxxxxGxx. Several two bolt holders in the vertical positions are available. The TangenX™ SIUS™ cassette must be placed in the cassette holder with the identification label facing away from the feed/retentate ports and towards the brass retaining nuts. Tighten the two bolts in ¼ turn increments, as described on page 4 and page 5, until the recommended torque is achieved. Suggested torque values are shown below.



Table 3 Recommended Torque Values | Sartorius Sartocon Slice 2-Bolt

Holder Part Number	Torque Range (in-lbs)	Torque Range (Nm)
17546-202 (2-Bolt)	600 – 900	70 – 100

• GE Kvick Lab Cassette Holder

Reference TangenX™ User Guide IF.PUG.006 for basic cassette installation instructions. The manual torque GE Kvick cassette holders are compatible with TangenX™ SIUS™ cassettes with the part number xxxxxGxx. Four bolt holders in the vertical position are available. The TangenX™ SIUS™ cassette must be placed in the cassette holder with the identification label facing away from the feed/retentate ports and towards the brass retaining nuts. Tighten the two bolts in ¼ turn increments, as described on page 4 and page 5, until the recommended torque is achieved. Suggested torque values are shown below.



Table 4 Recommended Torque Values | GE Kvick Holder

Holder Part Number	Torque Range (in-lbs)	Torque Range (Nm)
KFHR0115TQE (4 Bolt)	300 – 450	35 – 50

• TangenX™ SIUS™ Cassette Holder (TX032)

Follow the instructions outlined in TangenX™ User Guide IF.PUG.006 for cassette installation procedures. A copy is included in the box of every TangenX™ SIUS™ cassette. TangenX™ SIUS™ cassette holders are offered in several different configurations, both horizontal and vertical positions. The cassette holder is compatible with all TangenX™ SIUS™ cassettes with the part number xxxxxGxx.

