



H301-NIKON-TI-S-ER

Compatible with the following XY stages

- Nikon: Ti-S-E and Ti-S-ER

Compatible with the following Okolab Controllers

- H301-T-BL-PLUS
- UNO-T
- UNO-T-H-PREMIXED
- UNO-T-H-CO2

IST483_rev04

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1. Components and dimensions

H301-NIKON-TI-S-ER includes the following components:

- **Chamber main body** with embedded temperature sensor. It connects to the adapter with screws.
- **Sliding heated glass lid** with Indium Tin Oxide (ITO) conductive coating and embedded temperature sensor.
- **Chamber riser**. It is a removable frame increasing the height of the chamber from 27 to 33 mm, often required when using multi-well (MW) plates.
- **Adapter**. It connects to the Nikon XY Stage TI-S-ER with screws.

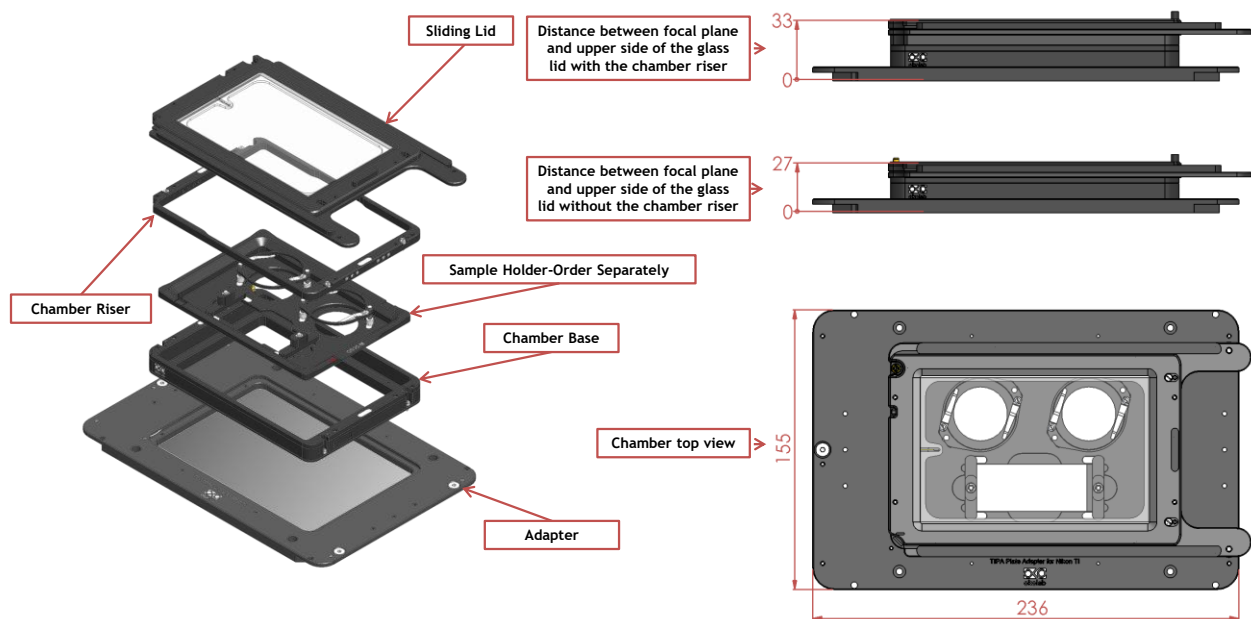


Figure 1. H301-NIKON-TI-S-ER - Components and Dimensions.

2. Available Sample Holders

The following sample holders are available.

NOTE: Please contact info@oko-lab.com if you cannot find the sample holder you are looking for. We are constantly adding new inserts to the list.

| | |
|---------------|---|
| 1x35-M | #1 35mm Petri-dish |
| 1xGS-M | #1 1x3in. chamber slide |
| 1xLABTEK-M | #1 Lab-Tek 1in.x2in. chambered cover glass |
| 1xLABTEK-II-M | #1 Lab-Tek II 1in.x2in. chambered cover glass |
| 1x60-M | #1 60mm Petri-dish |
| 1xT25-M | #1 Nunc and Greiner T25 flask |
| 2x35-M | #2 35mm Petri-dish |
| 2xGS-M | #2 1x3in. chamber slides |
| 2xLABTEK-M | #2 Lab-Tek 1in.x2in. chambered cover glass |
| 2xLABTEK-II-M | #2 Lab-Tek II 1in.x2in. chambered cover glass |
| 2x60-M | #2 60mm Petri-dish |
| 4x35-M | #4 35mm Petri-dish |

| | |
|----------------|--|
| GS35-M | #1 1x3in. chamber slide and #2 35mm Petri-dish |
| LABTEK-35-M | #1 Lab-Tek 1in.x2in. chambered cover glass and #2 35mm Petri- |
| LABTEK-II-35-M | #1 Lab-Tek II 1in.x2in. chambered cover glass and #2 35mm Petri- |
| LABTEK-60-M | #1 Lab-Tek 1in.x2in. chambered cover glass and #1 60mm Petri- |
| LABTEK-II-60-M | #1 Lab-Tek II 1in.x2in. chambered cover glass and #1 60mm Petri- |
| GS60-M | #1 1x3in. chamber slide and #1 60mm Petri-dish |
| 6035-M | #1 60mm Petri-dish and #1 35mm Petri-dish |
| 6MW | 6-well plates |
| 12MW | 12-well plates |
| 24MW | 24-well plates |
| 24MW-NUNC | 24-well NUNC/GREINER plates |
| 48MW | 48-well plates |
| 96MW | 96-well plates. *Includes MW-OIL |
| MW-OIL | Open frame to image multi well plates with oil immersion objec- |

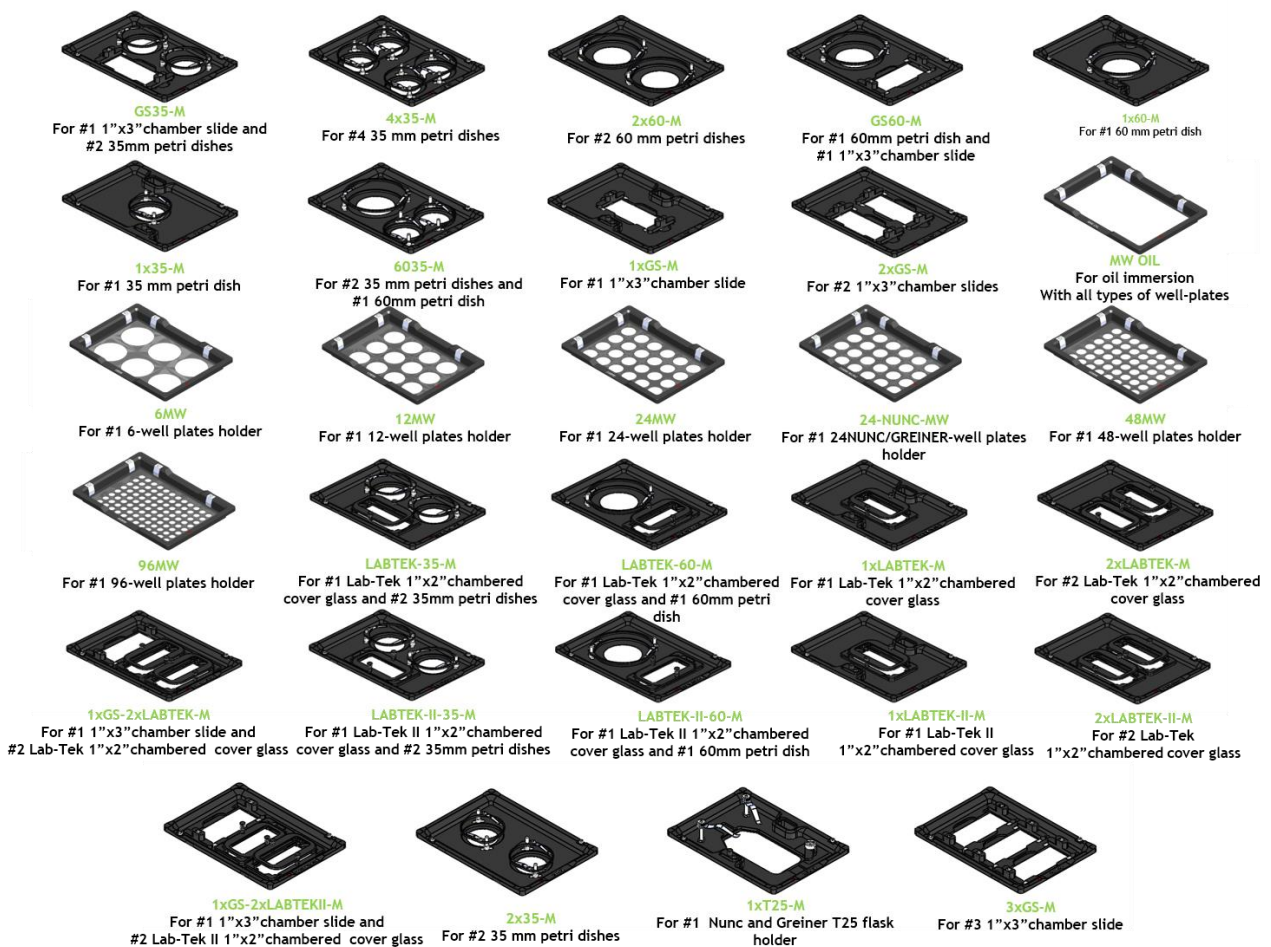


Figure 2. Available sample holders.

3. Available Lids

The following heated glass Lids are available for H301-NIKON-TI-S-ER:

- **H301-SLIDING-LID:** For easy sample loading and pipetting - **Included in code H301-NIKON-TI-S-ER.**
- **H301-KOEHLER-LID*:** Reduces chamber height to 22 mm and allows imaging under Koehler illumination.
- **H301-INJECTION-LID*:** Heated glass lid with two small openings (sealed with flexible plastic) allowing injection or permanent access to the sample. Compatible only with sample holder 1x35.
- **H301-LASER-INTERLOCK-LID*:** Heated glass lid with safety switch. Connects to laser controller and automatically turns laser off when lid is lifted. Compatible only with sample holder 1x35.

* OPTIONAL - not included with H301-NIKON-TI-S-ER

3.1 Sliding lid

The Sliding Lid is a heated glass lid allowing for easy sample loading and pipetting. The Sliding Lid is screwed onto the chamber.

Figure 3 shows chamber dimensions with the Sliding Lid (with and without chamber riser). Figure 4 illustrates how to remove Sliding Lid, when a different Lid is necessary.

NOTE: Sliding Lid MUST BE REMOVED when using any other Lid. The Sliding Lid is fixed onto the chamber with 4 screws. Screws location is indicated by letter A in Figure 4 (image 2 and 3). Keep Sliding Lid fully closed to access screws labeled A in image 2. Open Sliding Lid to access screws labeled A in image 3.

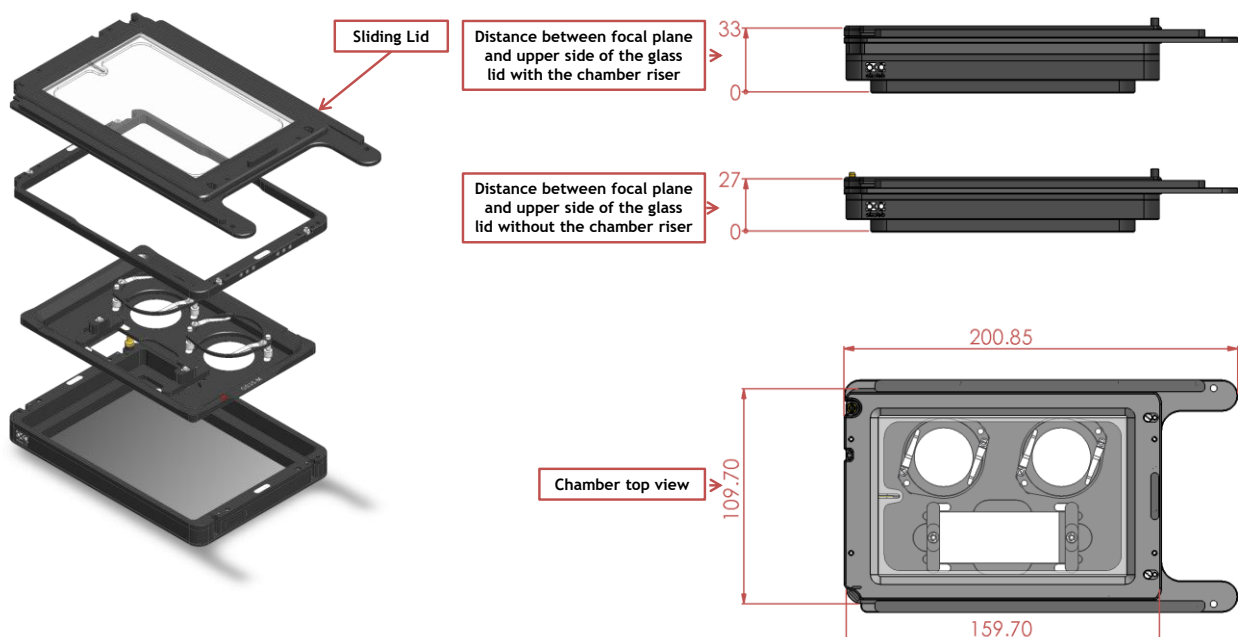


Figure 3. H301-NIKON-TI-S-ER (Sliding Lid comes as standard)

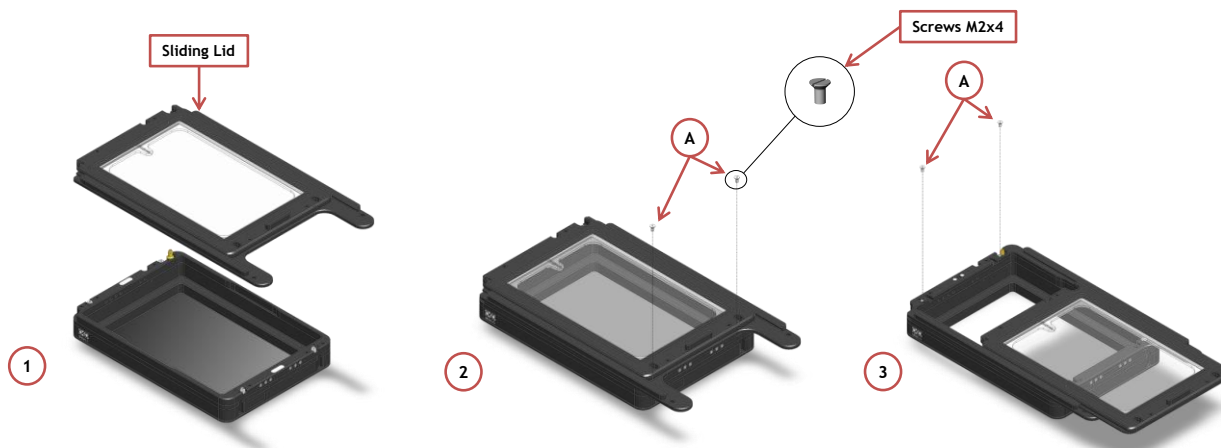


Figure 4. Assembly of the sliding lid

3.2 Koehler Lid

The Koehler Lid is a heated glass lid reducing the chamber's height to 22 mm and allowing imaging under Koehler illumination. The Koehler Lid is placed onto the chamber (NO SCREWS or TOOLS are necessary).

Figure 5 shows chamber dimensions with Koehler lid (with and without chamber riser).

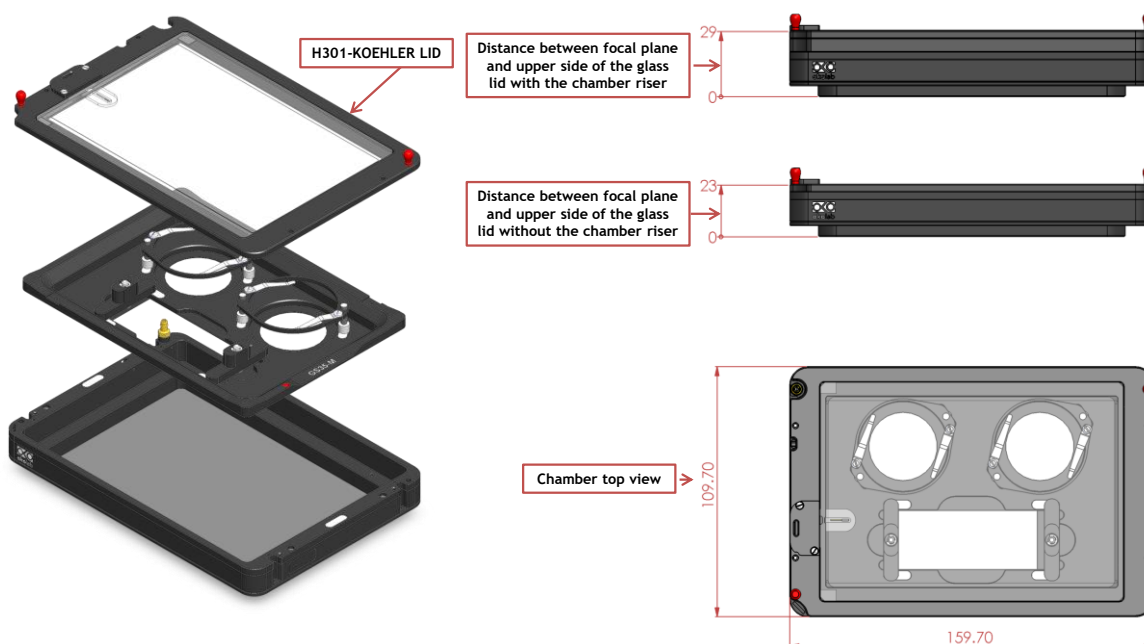


Figure 5. H301-NIKON-TI-S-ER + H301-KOEHLER-LID

3.3 Injection Lid

The Injection Lid is a heated glass lid with two small openings sealed with flexible plastic allowing injection or permanent access to the sample. NOTE: Compatible with sample holder 1x35 ONLY. The Injection Lid is placed onto the chamber (NO SCREWS or TOOLS are necessary).

Figure 6 shows chamber dimensions with the Injection Lid (with and without chamber riser).

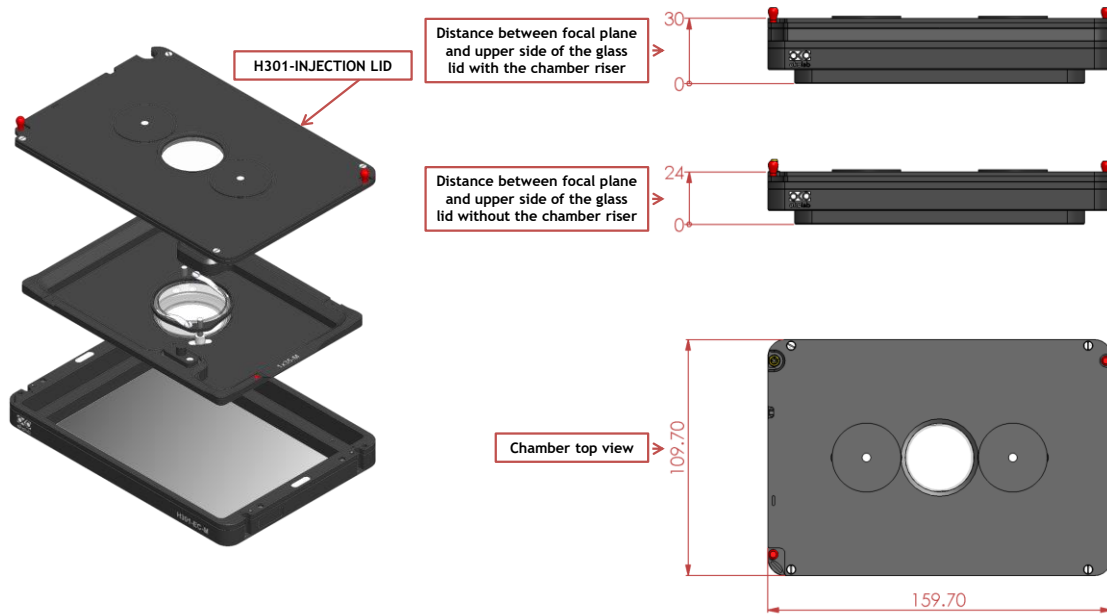


Figure 6. H301-NIKON-TI-S-ER + H301-INJECTION-LID

3.4 Laser Interlock Lid

The Laser Interlock Lid is a heated glass lid with a safety switch connecting to the laser controller. It automatically turns the laser off when the lid is lifted. NOTE: Compatible with sample holder 1x35 ONLY. The Laser Interlock Lid is placed onto the chamber (NO SCREWS or TOOLS are necessary).

Figure 7 shows chamber dimensions with the Laser Interlock Lid (with and without chamber riser).

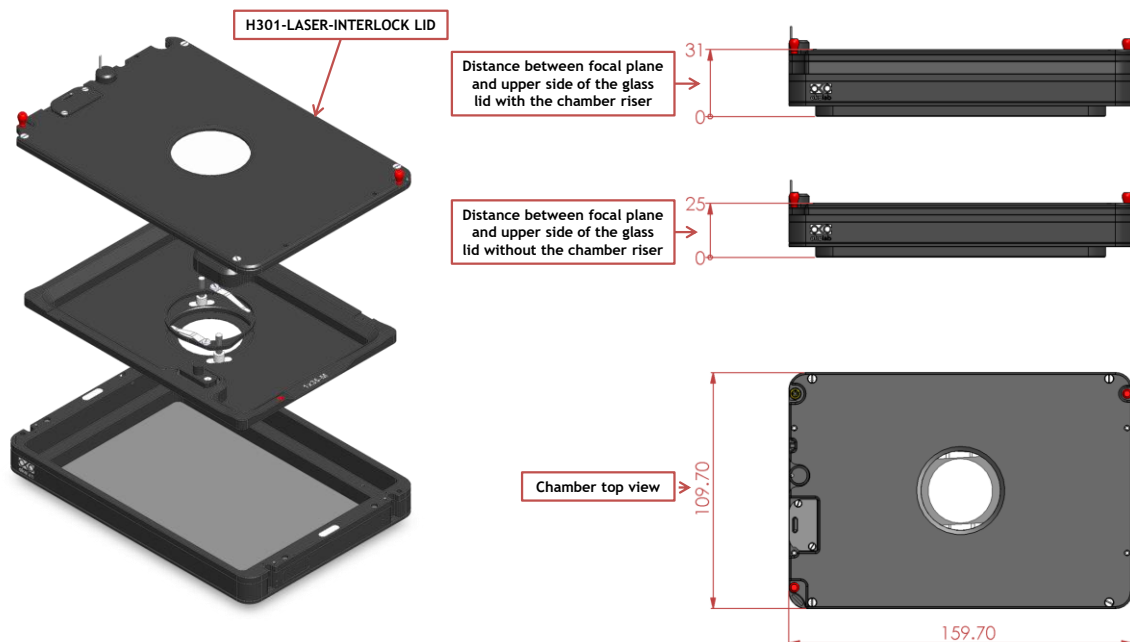
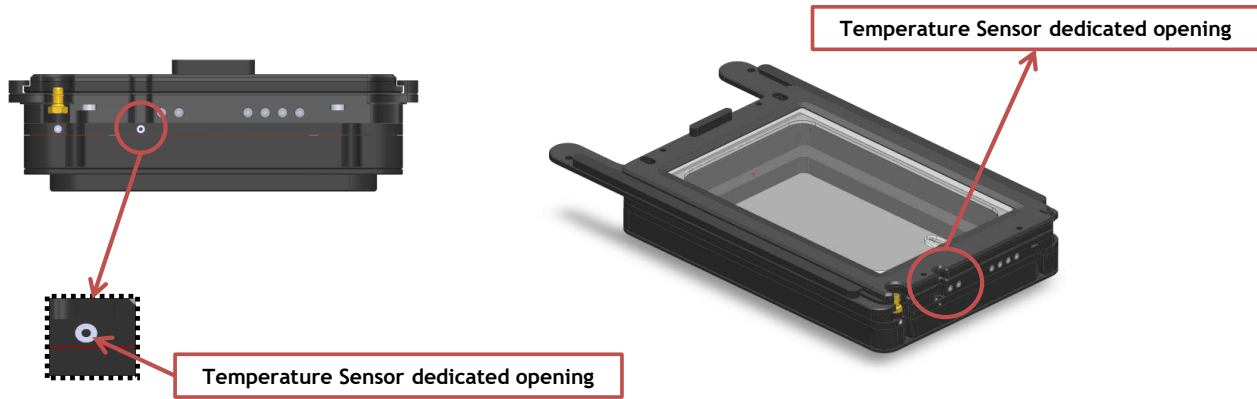


Figure 7. H301-NIKON-TI-S-ER + H301-LASER-INTERLOCK-LID

4. Insertion of the Sample Feedback Temperature Sensor

Insert the Sample Feedback Temperature Sensor through the dedicated opening located in the H301-NIKON-TI-S-ER (see Figure 8, Front and 3D views).



1. Frontal view

2. 3D view

Figure 8. Insertion of the temperature sensor inside the chamber.

5. Insertion of Sample Holder into Chamber

Sample holders fit into the chamber base and are held in place by magnets embedded within both chamber and holder. To introduce a sample holder with the proper orientation, match the red dot on the holder to the one on the chamber base, as illustrated in Figure 9.

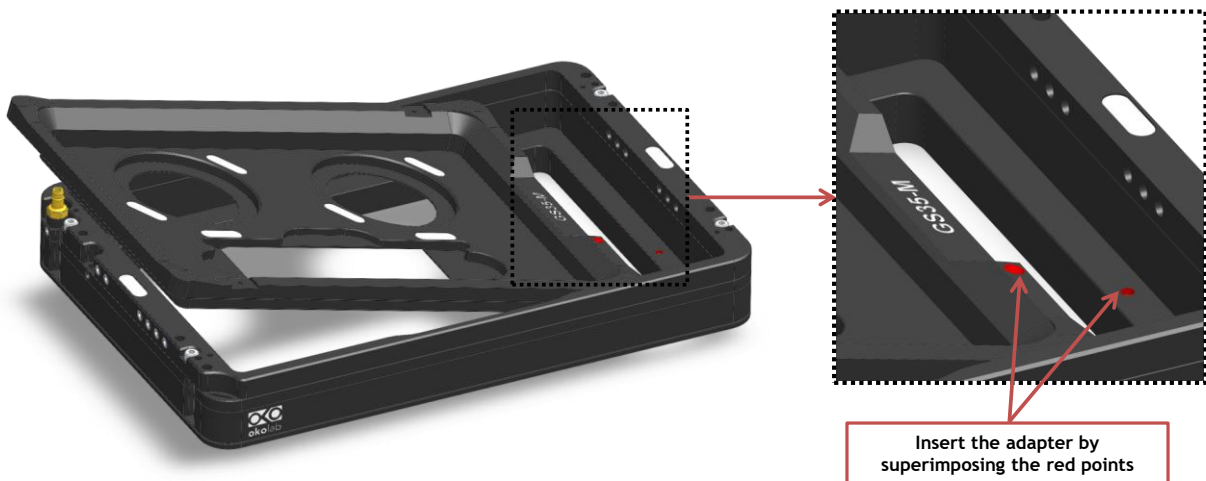


Figure 9. Introduction of the Specimen Holder inside the Chamber Base.

6. Working with 35 or 60 mm Petri Dish – Spacing Rings and Magnetic Locks

Magnetic locks prevent movement of 35 and 60 mm dishes inside the sample holder.

Figure 10 illustrates the available magnetic locks for 35 and 60 mm dishes. Threaded magnetic posts allow adjusting holder's height.

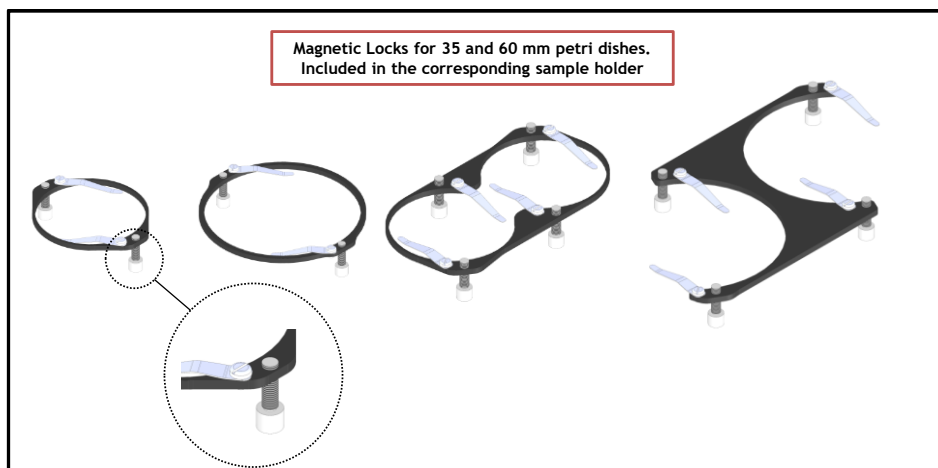


Figure 10. Magnetic locks for 35 and 60 mm dish

NOTE: Magnetic locks are included with sample holder.

Spacing rings accounting for variability in dish diameter from one manufacturer to another are also included. Figure 11 shows how to position the ring. Ring selection guide diagrams: rings for 35 and 60 mm dish -Figure 12 and Figure 13, respectively.

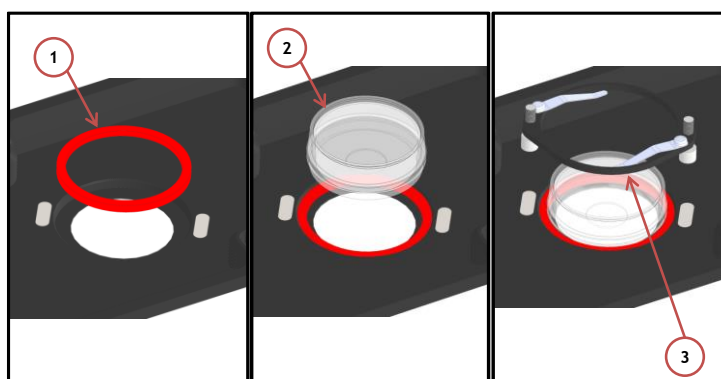


Figure 11. 1) Insertion of the ring, 2) insertion of the 35 mm dish, 3) insertion of the magnetic lock.

NOTE: Spacing rings are included with sample holder.

NOTE: Spacing rings do not block the petri inside its accommodation, but they are designed to center the petri with respect to the observation circular window.

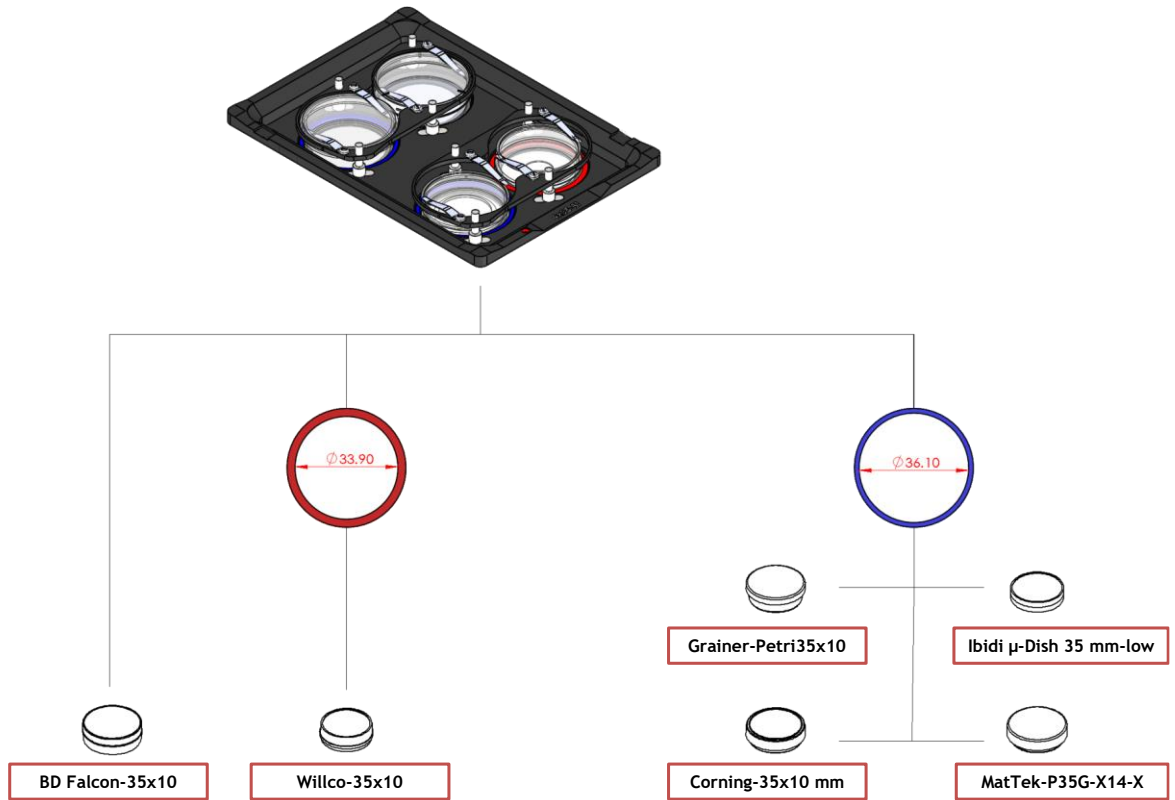


Figure 12. Ring selection scheme for 35 mm dish.

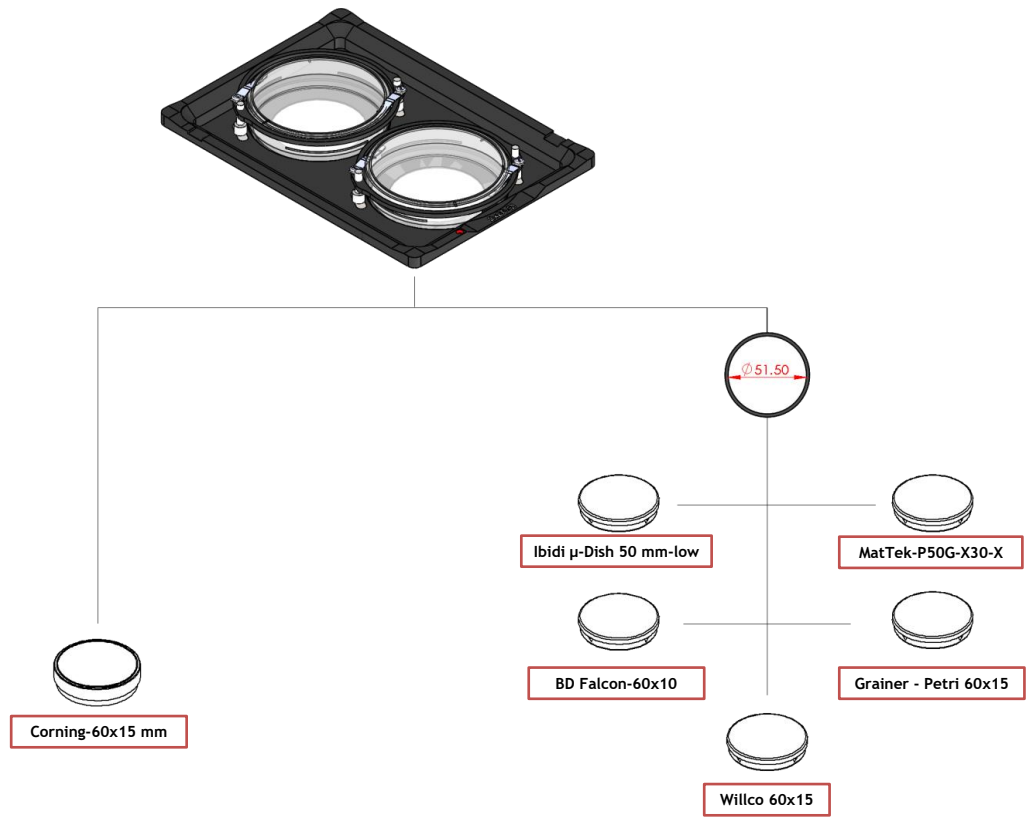


Figure 13. Ring selection scheme for 60 mm dish.

7. Working with 1x3'' and 1x2'' chamber slides - magnetic locks

Magnetic locks prevent movement of 1''x 3'' and 1''x 2'' chamber slides inside of the sample holder.

NOTE: Magnetic locks are included with sample holder.

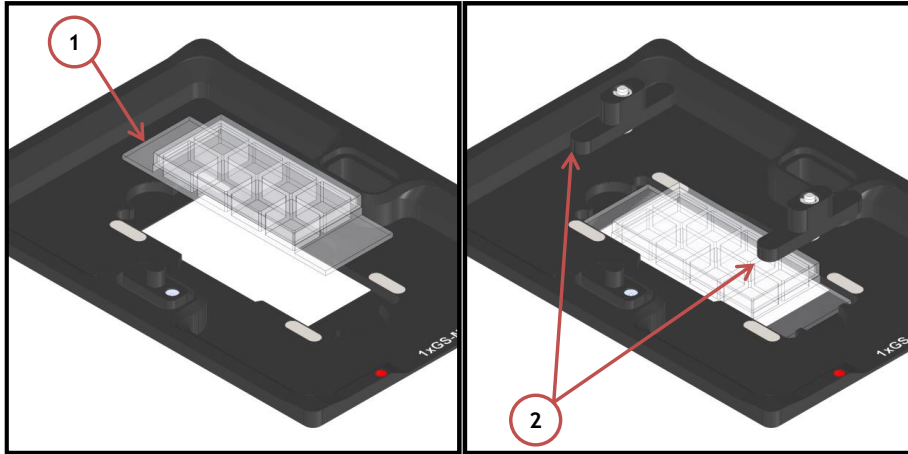


Figure 14. Magnetic lock for 1" x 3" chamber slide.

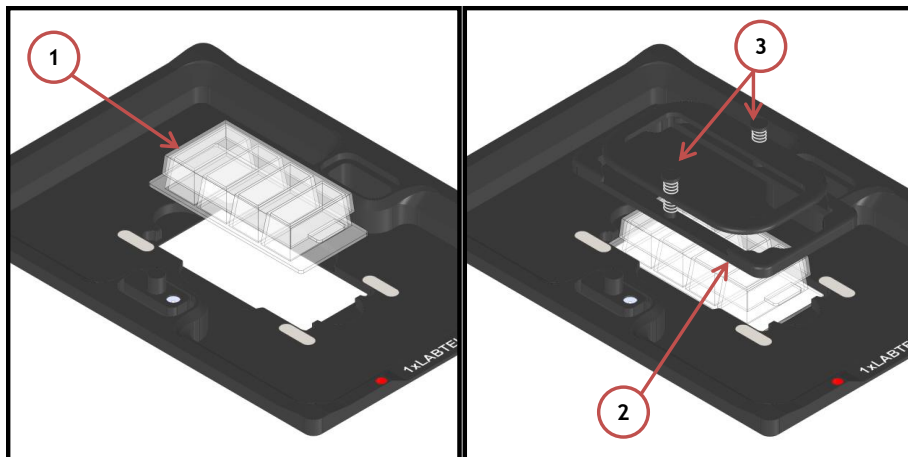


Figure 15. Magnetic lock for 1" x 2" chamber slide. To lock the slide, push simultaneously the buttons indicated with (3).

8. Working with MW Plates - Magnetic locks and Chamber riser

Magnetic locks hold MW plates in place into sample holder illustrated in Figure 16

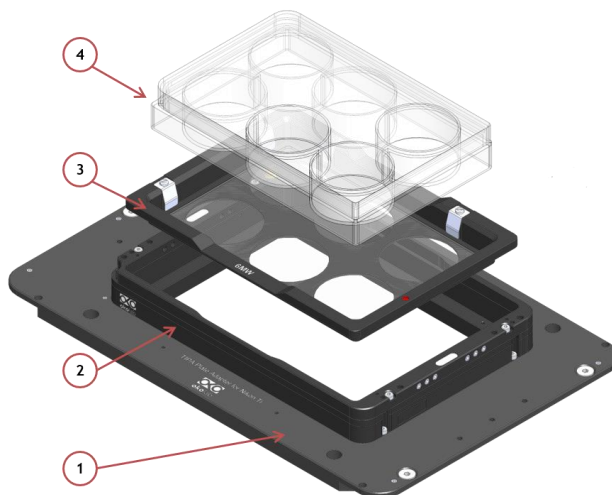


Figure 16. Magnetic locks for MW plates. Ships with 6, 12, 24, 48 MW plates.

Chamber Riser increases chamber's height and is REQUIRED with 6, 12, 24, 48 MW plates, regardless of the Lid employed.

Figure 17 shows how to install and fasten the chamber riser in place. Screws location is indicated by letter A.

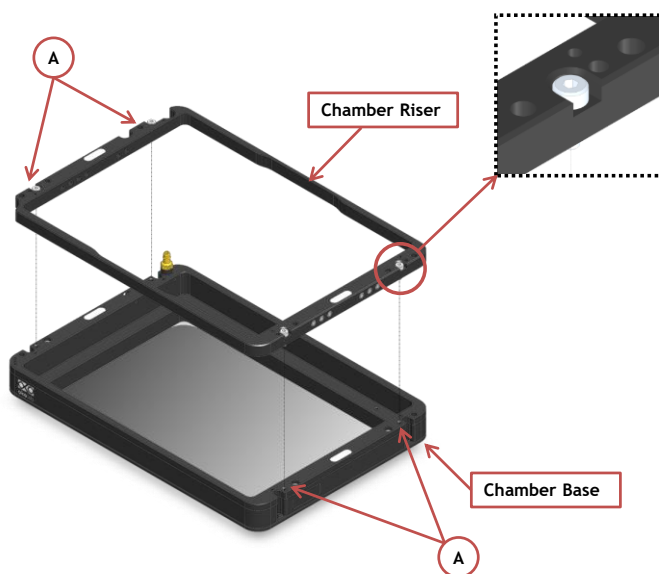


Figure 17. Riser Assembly.

9. Connection of the Gas Supply

A single silicon tubing carries output gas from the Okolab Gas Controller to the H301-NIKON-TI-S-ER. Silicon tubing connects to a gas input - brass opening - located on a corner of the H301-NIKON-TI-S-ER. See Figure 18. Connect by gently pushing silicon tubing onto brass opening.



Figure 18. Connection with gas supply.

10. Working with Perfusion

The Chamber Riser included with H301-NIKON-TI-S-ER features 12 perfusion holes for the insertion of perfusion tubing up to 2.5 mm in outer diameter. To lock the Chamber Riser into the base use a 1.5mm Allen key to secure the 4 GUTB2-2,5-6 screws as shown in Figure 19.

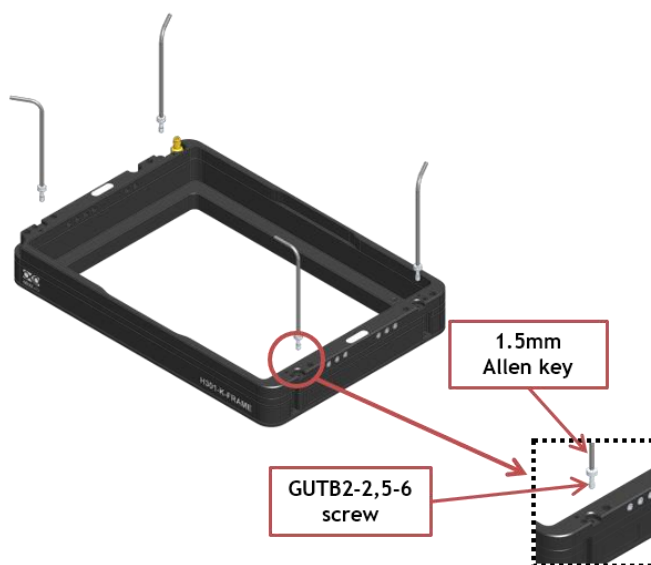


Figure 19. How to lock the Chamber Riser.

Small screws plug the perfusion holes when not in use. (Grub screws M3x6). Remove small screws with a 1.5 mm Allen key as necessary before introducing perfusion tubing.

Figure 20 shows location of perfusion holes.

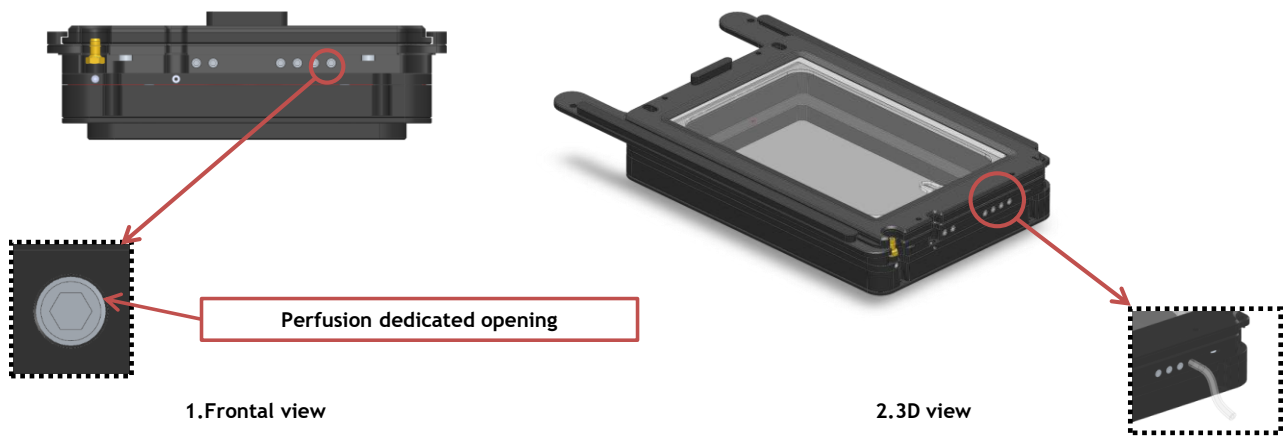


Figure 20. Perfusion.

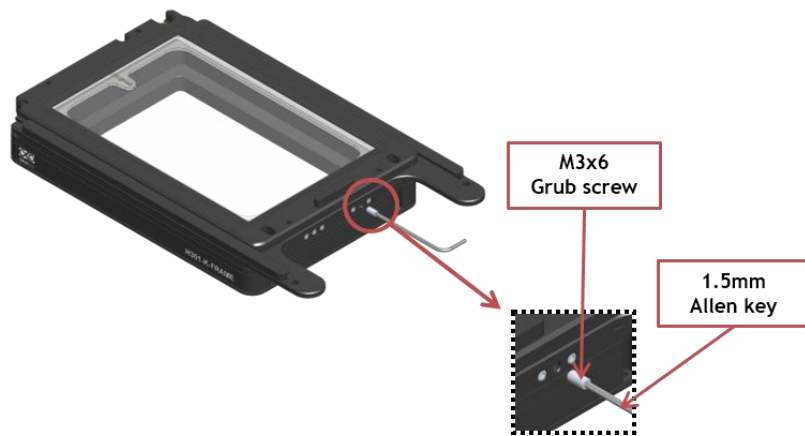


Figure 21. How to access the perfusion holes.

10.1 MICROFLUIDIC-C-RISER (Optional)

The MICROFLUIDIC-C-RISER is a chamber riser with 19x3 mm windows (on the two short sides) to allow insertion of microfluidic tubings. Windows are magnetically closed. Compatible with most of H201 and H301 Okolab chambers. Thickness of this chamber riser is 8mm (2mm more than default chamber riser). Requires Koehler lid and single accommodation specimen holders.

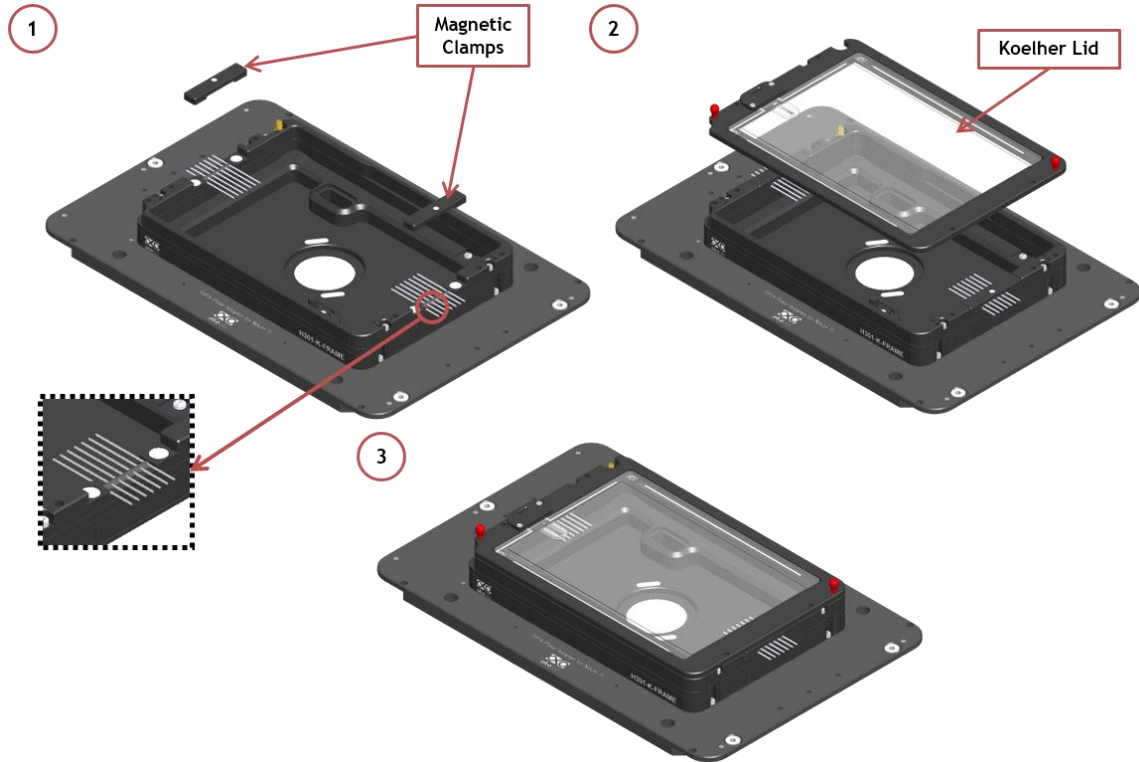


Figure 22. MICROFLUIDIC-C-RISER.

11. Connection of the Chamber with adapter

Follow the steps shown in the images of Figure 23 and listed below in order to correctly install the chamber onto XY stage:

1. Follow the arrows shown in Figure 23 Images 1 and 2 for placing the captive screws in the proper housings
2. Place the chamber on the adapter as shown in Figure 23 Image 3
3. Use a 1.5mm metric Allen Wrench to tighten two of the four captive screws in place (A in Image 4) while keeping the sliding lid closed. (See Figure 23 Image 4)
4. Tighten the remaining two captive screws (A in Image 5) while keeping the sliding lid open.
5. Image 6 of Figure 23 shows the chamber fixed on the adapter

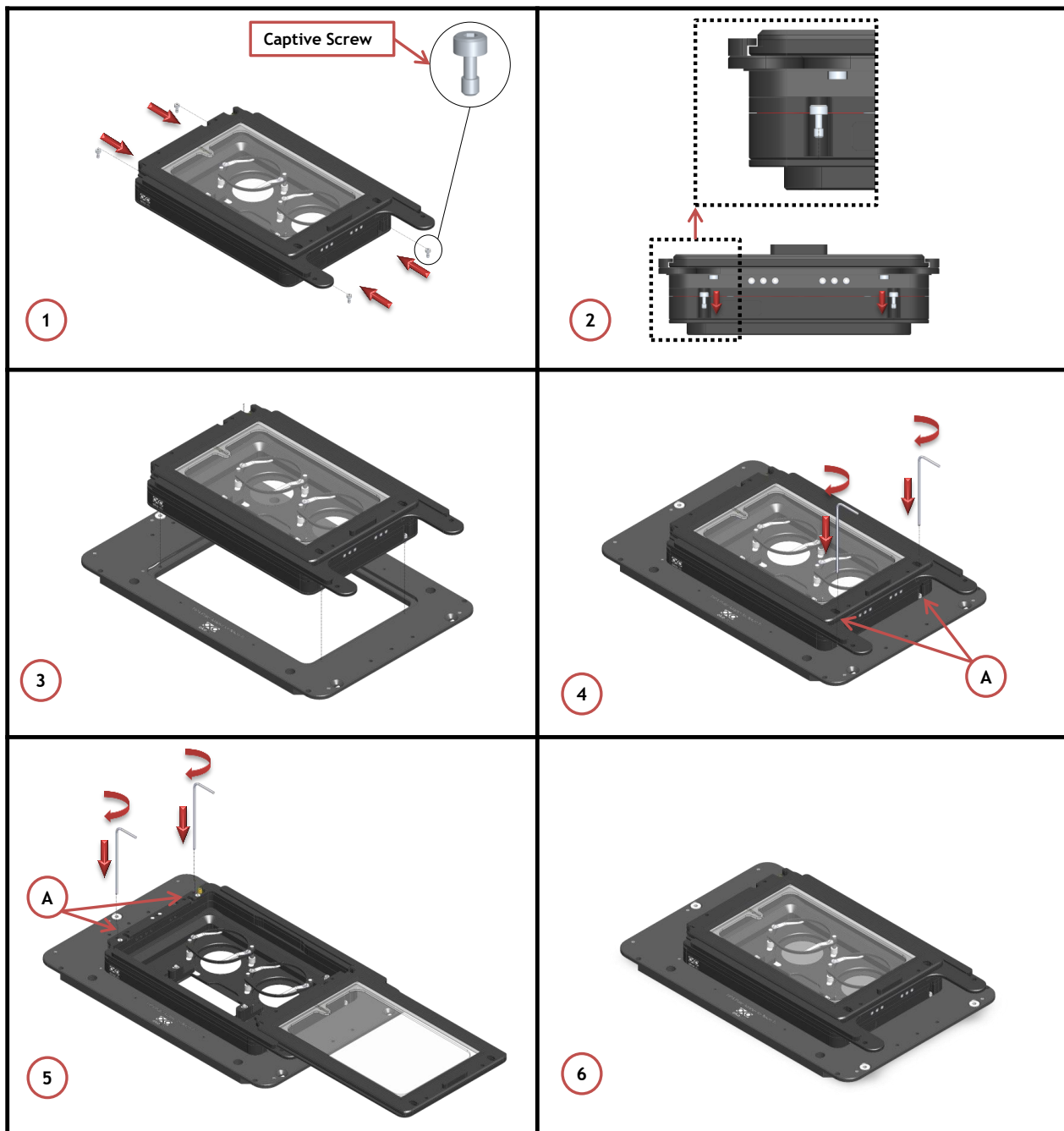


Figure 23. How to assemble the chamber to the adapter.

12. Connection of the Chamber with XY stage

Once you have assembled the chamber with adapter you can place it on the XY stage, following the steps shown in Figure 24.

1. Place the adapter on the stage (See Figure 24 Image 1).
2. Use the Grub screws to align correctly the adapter on the stage. Grub screws housings are indicated with letter A in Image 2 of Figure 24.
3. Follow the arrows shown in Image 3 of Figure 24 for placing flat socket head cap screws; use the provided Allen wrench for tightening the flat socket head cap screws and fastening the adapter on the stage. Screws housings are indicated with letter B in Image 4 of Figure 24.

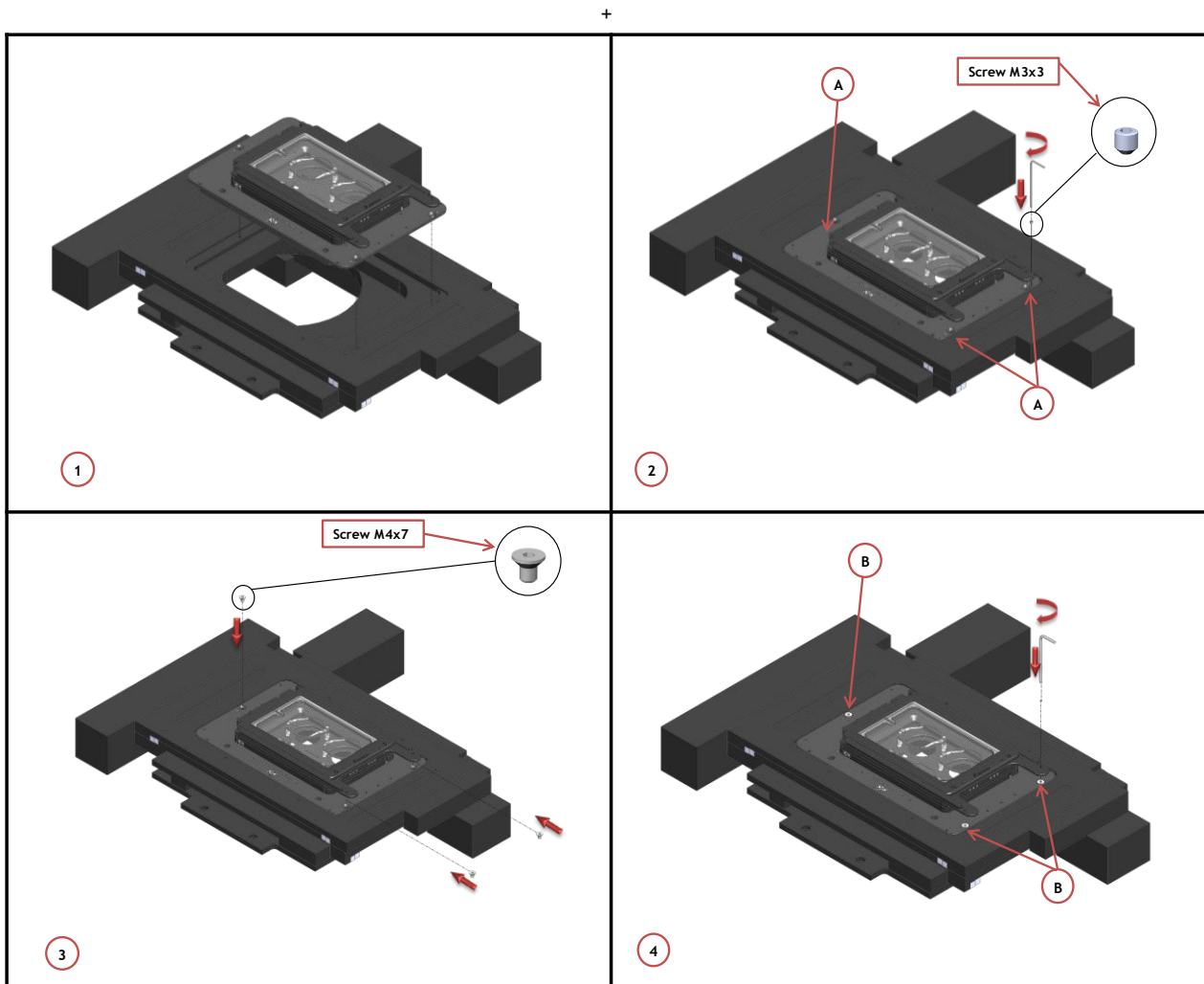


Figure 24. How to fix the H301-NIKON-TI-S-ER to the XY stage.

13. Cleaning

- Turn the system off and pull the mains plug out the socket
- Remove the lid from the chamber main body, and keep it separate from the chamber main body while the chamber cools down.
- To clean the body and the glass lid of the chamber, wipe with a soft micro-fiber cloth. For stubborn smudges, you can damp the soft micro-fiber cloth with ethyl alcohol (product code UN1170). Do not put any liquid directly on the chamber. While cleaning the glass lid, do not apply strong force to the surface of the glass lid because it can be damaged.