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Check Stab β 2014 WLF – 3 Stage LABORATORY WINE FILTER

User guide and Maintenance



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1 General information

1.1 Warranty

1. The β2014 WLF/3S is covered by a warranty against factory defects and malfunctions during the The device is covered under guarantee for fabrication defects and malfunctions during normal working conditions within one year from the date of purchase.
2. “Normal working conditions” is meant by those conditions described in the technical documentation, by eventual variations sent by written notice and by the instruction manual provided with the supply of the instrument.
3. Excluded from this guarantee are electrodes, accumulators and malfunctions due to improper use of the instrument, or natural events such as lightening, floods, fire, etc.
4. Under this guarantee, **DELTA ACQUE** will repair or replace free of charge the instrument, or parts thereof , at the Delta Acque laboratory, Florence Italy , if it is covered under the conditions as explained above. Shipping costs to and from Florence, Italy will be at the buyer’s expense.
5. The guarantee is not valid if the instrument has been handled by, beyond what has been described in this manual, by unauthorized personnel.

1.2 General Information and Security

Observe the following precautions regarding safety to avoid injury and prevent damage to this device or any product connected to it. To avoid potential danger, use this product as specified.

Maintenance procedures must be carried out only by qualified technical personnel.

1.3 Avoiding danger or personal injuries

Use the appropriate compressed air tube. Use only compressed air supply tubes specified for this product and certified by the country of use.

Observe all nominal data. To avoid any danger, observe all nominal values and labels on the product. Consult the manual of the instrument for further information on nominal values before using the product.

Do not use without the cover. Do not use this product with covers or side structures removed.

Do not use if there is a suspected malfunction. Whenever there is a suspected damage on this product, have qualified personnel inspect the product.

Do not use in an explosive environment.



1.4 Contacts and useful addresses

Contact DELTAACQUE del Dott.A.Cavallucci, with Headquarters in Firenze, for any technical commercial clarifications, assistance, spare parts and all that relates to this product.

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2 Presentation of the Product

The **β2014 WLF/3** is a laboratory filter realized and designed for the preparation and clarification of sample wines before doing a tartaric stability test. It is also very useful for other laboratory uses.

Some special characteristics of the device are:

- Filtering capacity of 300ml.
- Possibility to filtrate under nitrogen pressure or air pressure (max. useful pressure 2 bar).
- Filter Membrane of Ø47mm in polymer or fiber glass.

Designed for laboratory use or production use, the **β2014 WLF/3** is supplied complete with a packing box, accessories and a kit of standard membranes for filtration.

3 Presentation of content organization

The content of this manual was drafted according the Italian regulations **UNI-10893** (Technical document of product , User instructions, Articulation an exhibition content).

For a correct use of this device, Comply with the description found in the manual: Order of consultation is progressive therefore it is advisable to consult the manual from the beginning Chapter 1.00, then 2.00, Etc.

3.1 Units of measurement mentioned:

ml: indicates the quantity of sample of the wine to be filtered.

μ: indicate the porosity of the filtering membrane.

4 Data and technical characteristics

4.1 Technical characteristics

Filtering capacity	300 ml.
Pressure max	2 bar (azoto o aria)
Filtering membrane	Ø47
Supporting plate	Plexiglass
Weight	2,0 Kg.

4.2 Accessories

Kit membrane	Not supplied
Connecting air tubes	Supplied



5 Installation

5.1 Characteristics and conditions of storage and conservation.

Store the device **β2014 WLF/3** in a dry place at a temperature between 5,0°C e 80,0°C.

5.2 Shipping the device.

To transport the device: place the device in the original packing box supplied with the device.

5.3 Moving the device.

To move the device it is necessary to disconnect it from the compressed air line. To re position the device, follow the operations used as in first installation.

5.4 Foundation.

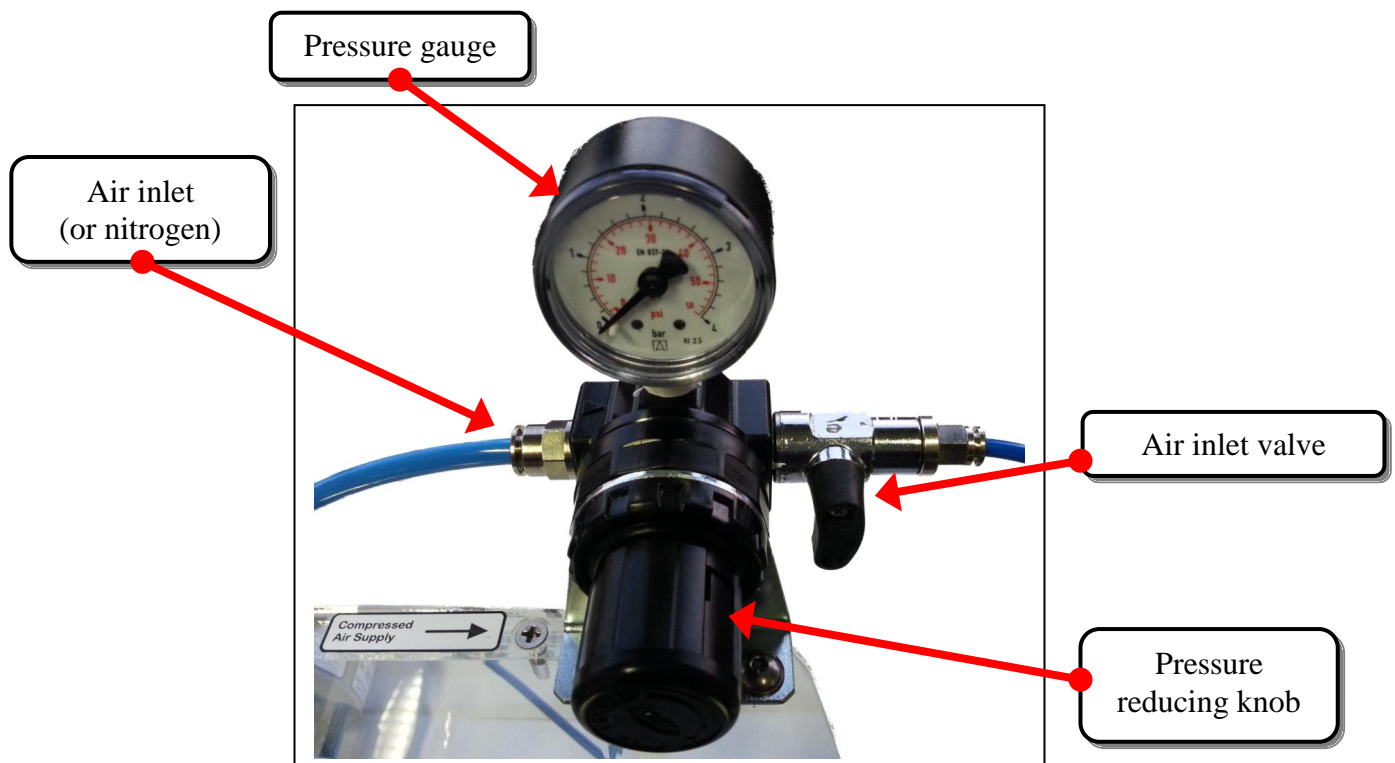
Place the device on a stable surface, with enough space (at least 100 cm x 50 cm, that can withstand the weight of the device adequately), in a dry place and far from heat sources.

5.5 Connection to an electric power source:

The device does not need to be connected to an electric power source.

5.6 Connection to a compressed air line:

Connect the tube supplied with the device to a compressed air (or nitrogen) source and the pressure gauge as indicated in the figure below.



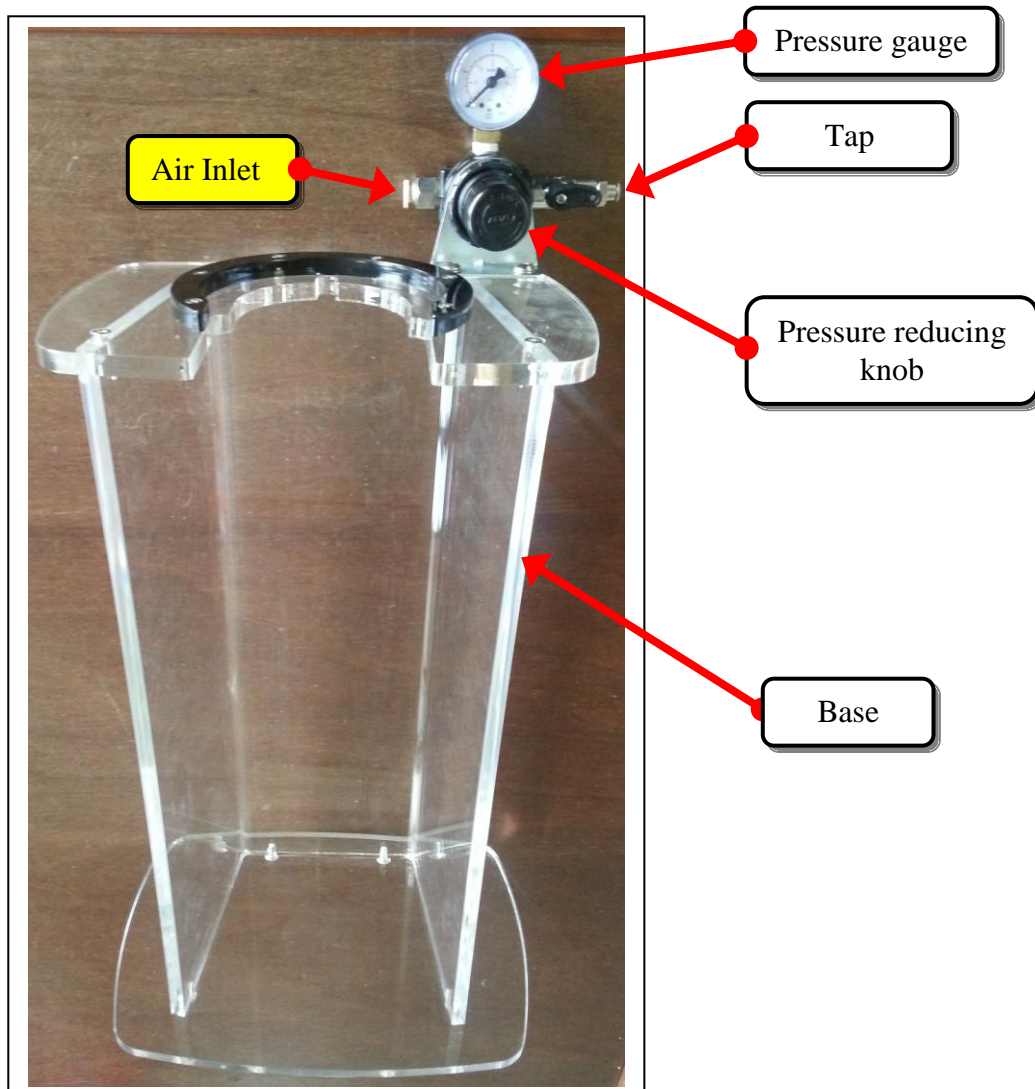
6 Description of Product

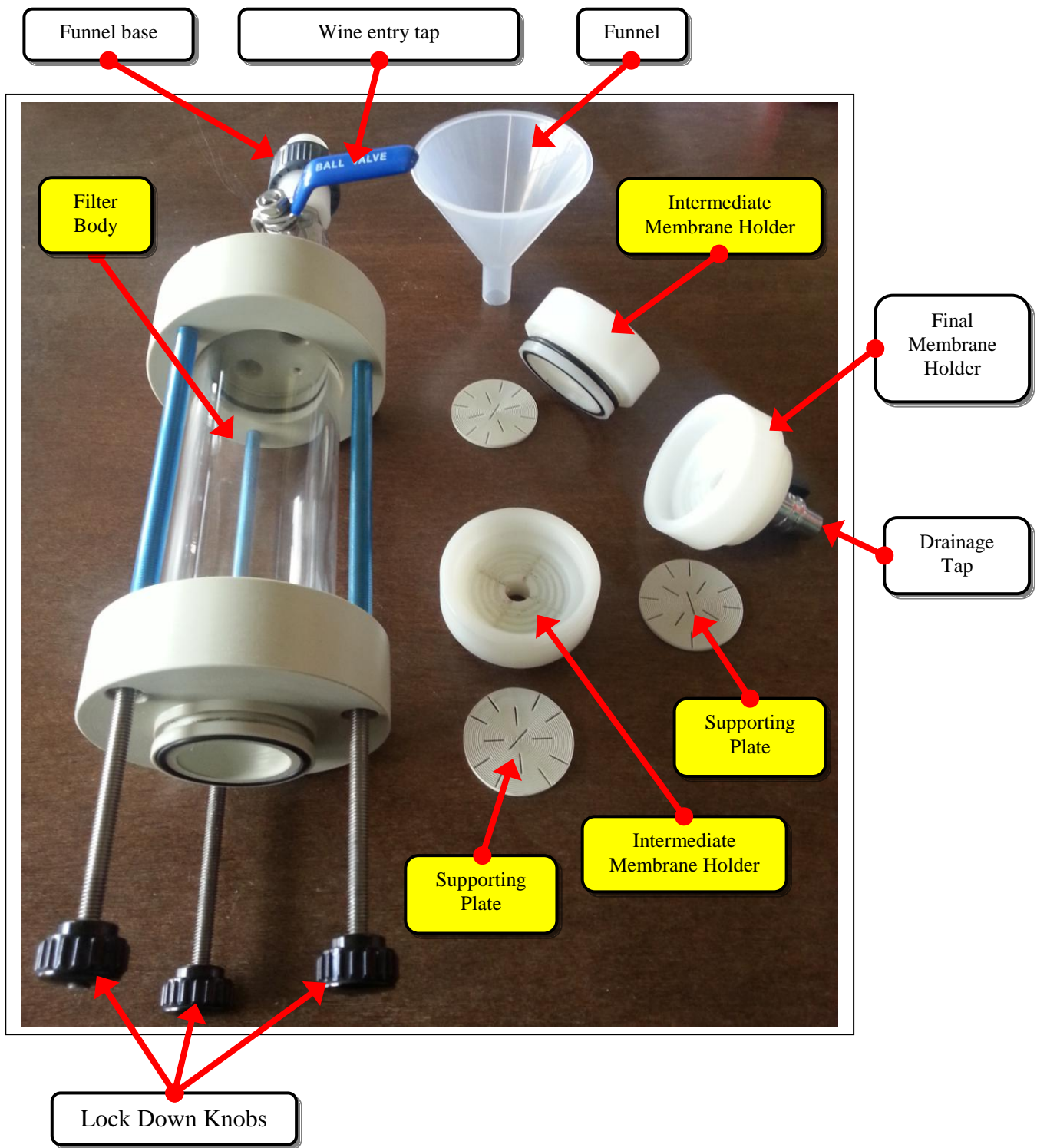
The filtration system **β2014 WLF/3** designed by CheckStab Instruments, is mainly utilized for the preparation and clarification of wine samples before being measured in the laboratory. This device of reduced dimensions was designed to filtrate wine samples under pressure (0 – 2bar). It uses a filtering membrane element made of fiber glass or polymer type PES or PVDF. The characteristics of this filter is that it has 3 stages of filtration. The user can insert three different porosity filter membranes to filter a wine sample. We suggest the following membranes:

- 10μ Membrane for the first stage
- 5μ Membrane for the second stage
- 1μ Membrane for the third stage

6.1 The advantages of using the β2014 WLF/3

- Permits the filtration of small amounts of wine samples.
- Filtration is fast and easy.
- It is possible to use different filter porosity.
- It is easy to clean.
- Can be used for other liquids other than wine.

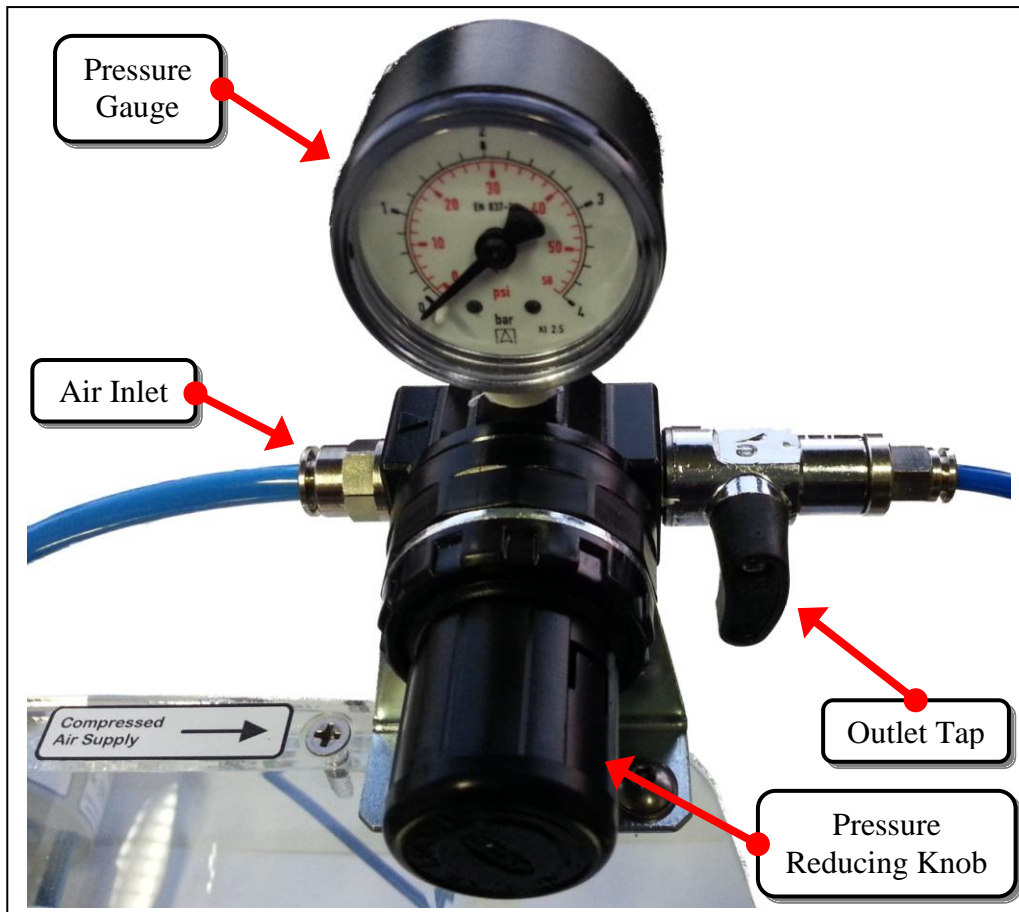




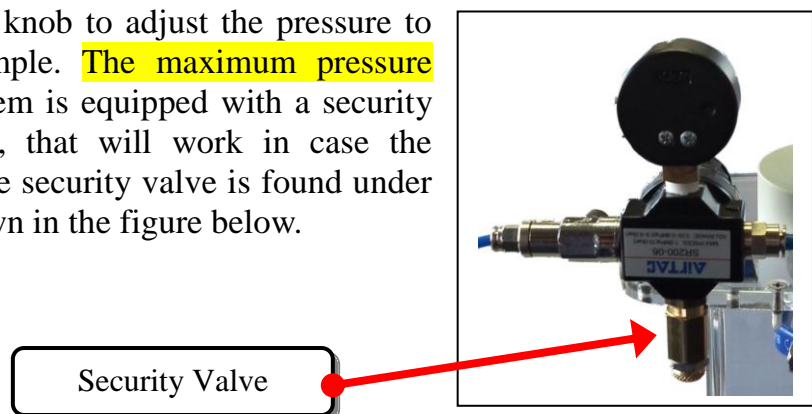
6.2 Brief description of how it works

6.2.1 Preparation:

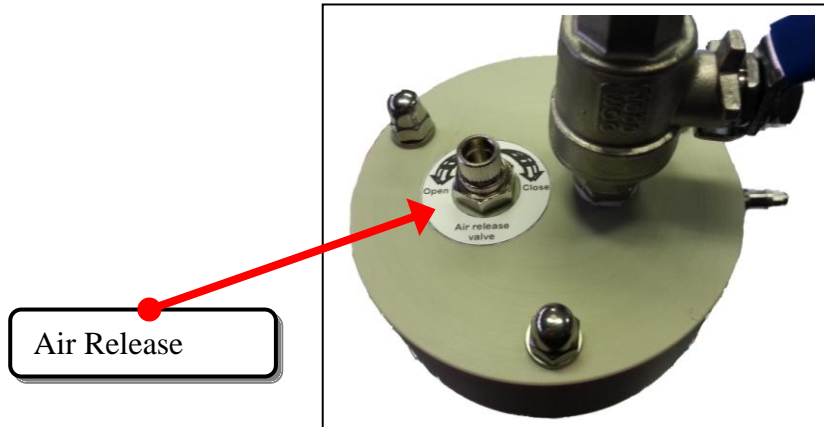
- Connect the air compressor supply to the pressure gauge by using the supplied tube, making sure the compressed air outlet tap is closed.
- Connect the outlet air pressure adaptor to the air inlet adaptor of the filter device.



- The tap is opened to allow compressed air to enter the filter chamber. This step is performed after the filtration chamber has been filled with the wine to be filtered.
- Use the pressure reducing knob to adjust the pressure to be used to filter the sample. **The maximum pressure allowed is 2 bar.** The system is equipped with a security valve calibrated at 2 bar, that will work in case the pressure exceeds 2 bar. The security valve is found under the pressure gauge, as shown in the figure below.

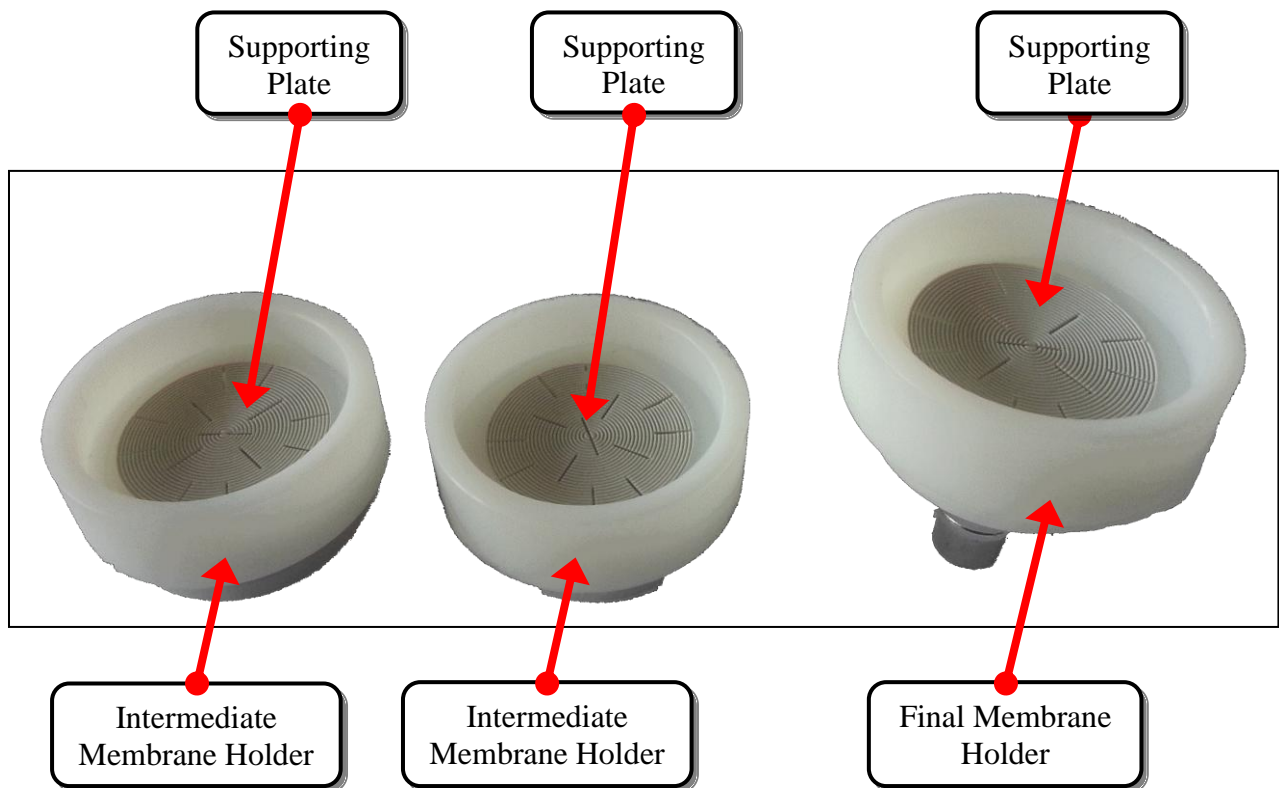


- Open the air release valve. It is necessary to open this valve when beginning to fill the filter chamber with sample wine to be filtered. **Remember to close the valve when finished with filling the filter chamber.** The air release valve is located on top of the filter, as shown in the figure below.

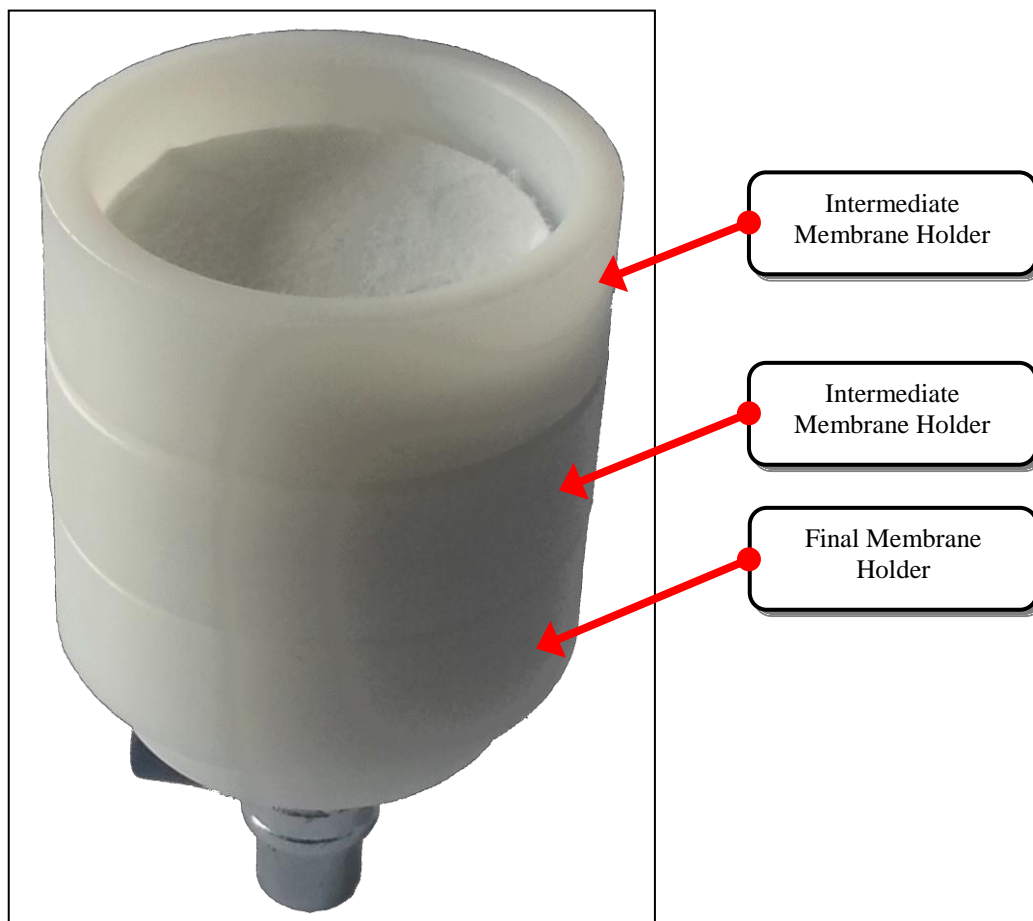
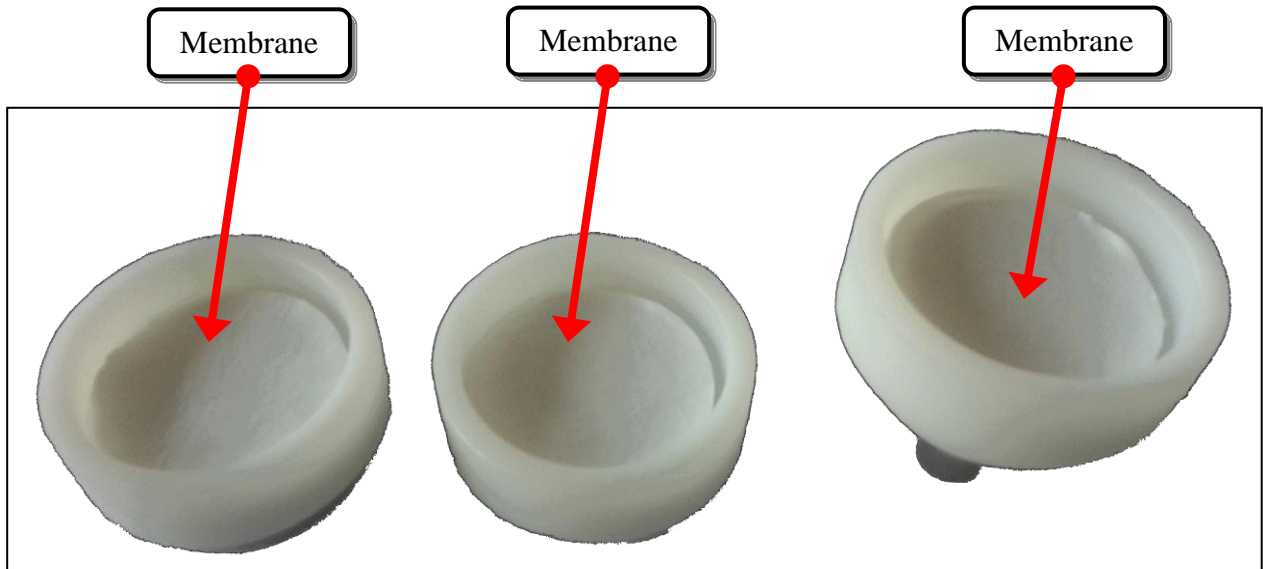


6.2.2 Filtration:

- The 3 stage filter is composed of 2 intermediate membrane holders and one final membrane holder.



- Insert the filter membrane inside the membrane holder, on top of the supporting plate, and arrange the 3 membrane holders, as shown in figure below.



- It is recommended the use of 10 μ . membrane for the first membrane holder, the 5 μ . Membrane for the second and 1 μ . For the final membrane holder.



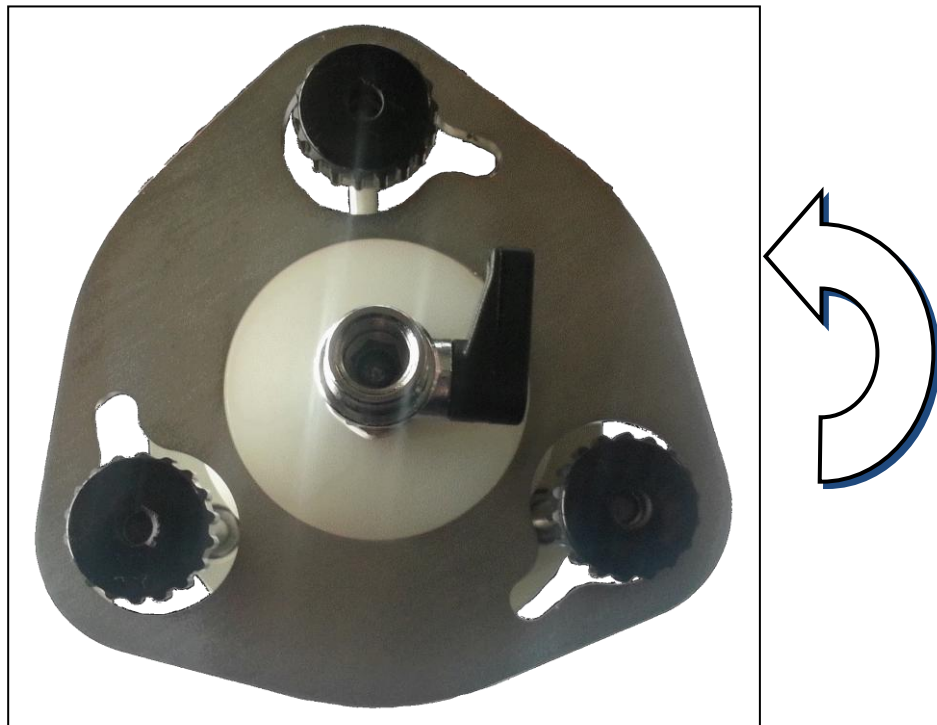
- Now position the series of membrane holders under the filter.



- Use the stainless steel plate shown in the figure below to lock down the membrane holders.



- Insert the plate by passing the lock down knobs through the holes of the plate.



- Rotate the plate as shown in the preceding figure and tighten evenly the lock down knobs.



- Now position the filter on the supporting structure as shown in the figure below.



- Place under the filter device a container for the filtered wine sample.
- Open the air release valve and the inlet for the wine. Pour the wine to be filtered in the supplied funnel at top of filter assembly.
- Once the chamber has been filled (remember that the chamber capacity is 300ml), close the air release valve and the wine filling tap (under funnel).



- Open the compressed air inlet valve and increase the pressure by using the pressure knob until reaching the desired pressure.

WARNING

Maximum useful pressure of the device is 2 bar. If the pressure exceeds this maximum pressure the security valve will activate.

- Open the tap for draining the wine at bottom of device.
- Wait for the wine to filter (the time of this process can vary from a few seconds to a few minutes).
- As soon as the filtration has finished, close the air inlet valve and open the air release valve to bring the inside chamber air pressure back to atmospheric pressure.
- The filtered wine is ready inside the receiving container.

WARNING

Normally, the filtered wine from the first few seconds of the process is discarded, due to the fact that the process is less efficient in the first few seconds and may contain traces of undesired elements.

WARNING

It is advised not to wait too long from the moment the wine has finished being filtered. This is because the pressure tends to increase and can for bothersome air bubbles in the filtered wine.

- To clean the filter, loosen the three lock down knobs, rotate the stainless steel plate and position the plate towards the bottom of the guide rods. To pull off the membrane holders easier, it is recommended that the draining tap be left in the open position.



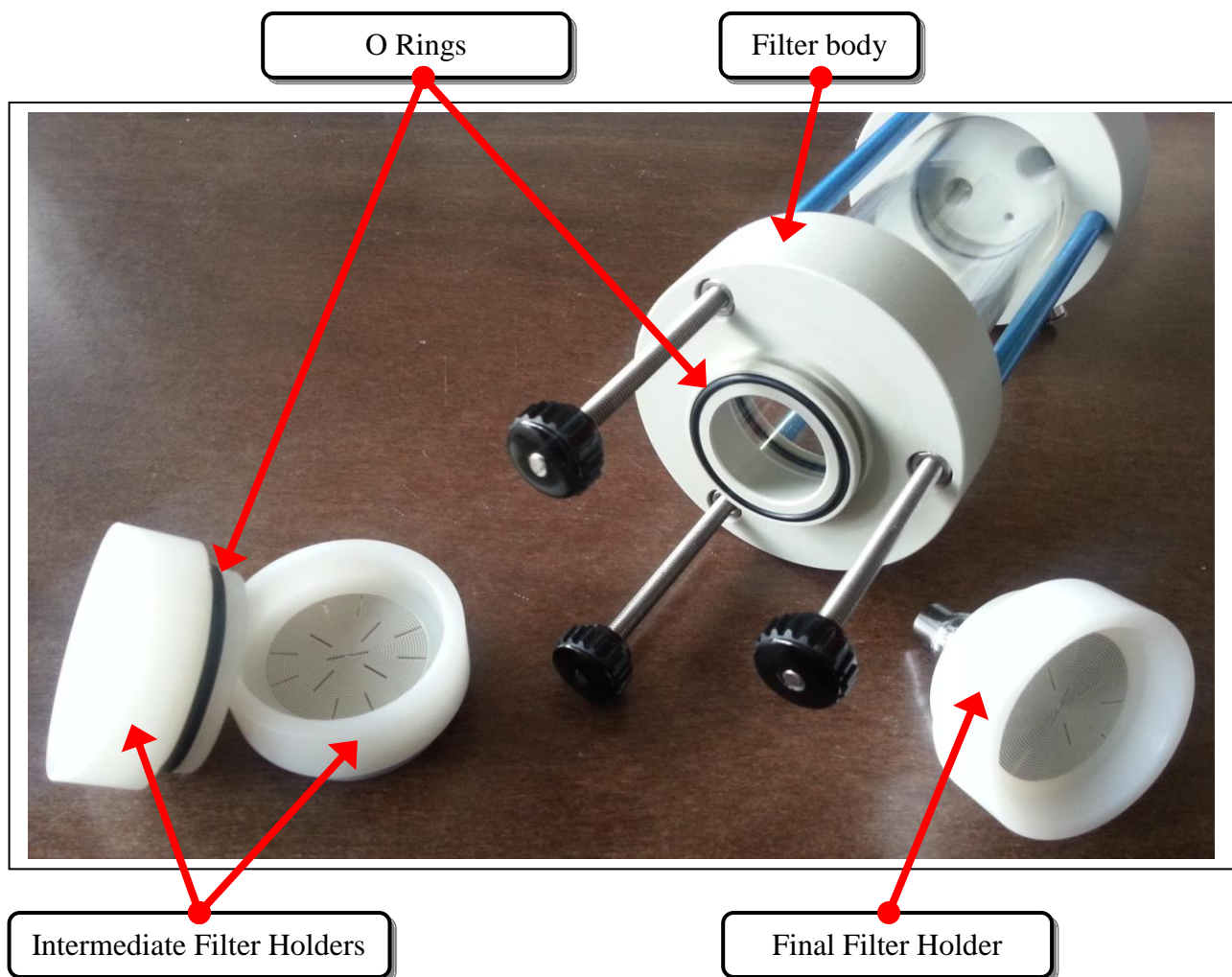
7 Cleaning, pest control and disposal

7.1 Instructions for cleaning

To clean the **β2014 WLF – 3 Stage filter** Proceed as follows:

- Loosen the 3 lock down knobs. (It is not necessary to unscrew them completely, only enough to be able to take off the stainless steel plate).
- Rotate the lock down plate and slide it down. To do this easier, keep the draining tap open.
- Pull and slide off all 3 membrane holders and thoroughly wash with distilled water. It is recommended that each membrane support inside the membrane holder be thoroughly cleaned as well.
- Take the filter body and wash with warm water from the bottom hole and if necessary with a laboratory brush. Dry with paper.
- It is recommended to use distilled water for a more thorough cleaning.

The below figure shows all the parts that need clearing as describe above:



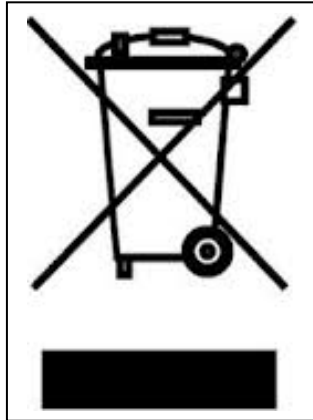
NB: the filter membranes, once used, must be disposed of and replaced with new membrane filters.

7.2 Extraordinary cleaning

The laboratory filter β 2014 WLF/3 does not require extraordinary cleaning.

7.3 Disposal

Broken devices beyond repair must be disposed by using the appropriate organizations dedicated to disposal and not released in the environment.



According to art.13 del Legislative decree 25 July 2005, n.151 “Actualization of Directive 2002/95/CE, 2002/96/CE 3 2003/108/CE relative to reduction of dangerous substance in electrical devices, as well as the disposal of waste”

The trash bin symbol with an X indicates that the product must be disposed of separately from normal waste.

The user must deliver the device to be disposed to the differential collect site for electronic or electro technical waste, or deliver to the sales distributor at the purchase of an equivalent device, on a one to one basis.

Adequate differential collection for re cycling for environmental disposal contributes to avoiding negative effects to the environment and health and favours the recycling of material of which the device is made.

Illegal disposal by the user will be sanctioned by the administrative laws as DGLgs.n.22/1997 (article 50 and the following of DLgs.n.22/1997)



8 Filterability Index with WLF2014-1L

8.1 Description

The filterability indices are currently the only valid way to evaluate the filterability of a liquid. Check Stab instruments offers an advanced system to evaluate and control the quality of filtration of a liquid.

Check Stab's **WLF2014-1L** fitted with the KIT **CIF2014** can carry out and calculate the filterability index and the maximum filterable volume of a product, and is used to evaluate the efficiency of various filtration systems.

CALCULATING THE FILTERABILITY INDEX

The filterability of a wine is evaluated based on the filterability index, that is the result of the following filtration test. The product to be tested must flow through a membrane of 3,9cm² (Ø25mm), porosity 0,65 micron under a constant pressure of 2 bar. The flow rate must be timed, in hundredths of a second of 200ml and 400ml of sample product. The index value of the content is obtained by subtracting twice the time taken for the passage of 200ml from the time taken for the passage of 400ml of the product.

Example: if the time of 200ml (T200) flows through in 75 seconds T200=75 seconds and the time of flow of 400ml is 166 seconds T400=166 seconds.

Filterability index will be:

$$\text{Filterability Index} = (T400 - 2 * T200)$$

$$\text{Filterability Index} = (166 - 150) = 16$$

N.B. The results depend a lot on the type of membrane used, therefore these values are to be considered indicative and subject to interpretation by the user.

WHITE WINE	
From 0 to 10	The wine can be filtered at 0,45µ
From 10 to 30	The wine requires pre filtration
➤ 30	Filtration extremely difficult. The wine needs to be clarified or other treatment.



RED WINE

From 0 to 15/20	The wine can be filtered at 0,45 μ
From 20 to 40	The wine requires pre filtration
➤ 40	Filtration extremely difficult. The wine needs to be clarified or other treatment.

CALCULATION OF MODIFIED FILTERABILITY INDEX

The calculation of modified filterability index is used to understand the progress of filtration over time.

It is calculated by using the following formula:

$$\text{Modified Filterability Index} = (T_{600} - T_{200}) - 2 * (T_{400} - T_{200})$$

Example, if the time that 200ml (T₂₀₀) flows through in 75 seconds T₂₀₀=75seconds, and the time that 400ml flows through in 166 seconds T₄₀₀=166seconds and if the time of 600ml flows through in 240 seconds T/600=270 seconds

The modified filtration index will be:

$$\begin{aligned}\text{Modified Filterability Index} &= (T_{600} - T_{200}) - 2 * (T_{400} - T_{200}) \\ \text{Modified Filterability Index} &= (200 - 75) - 2 * (166 - 75) = 13\end{aligned}$$

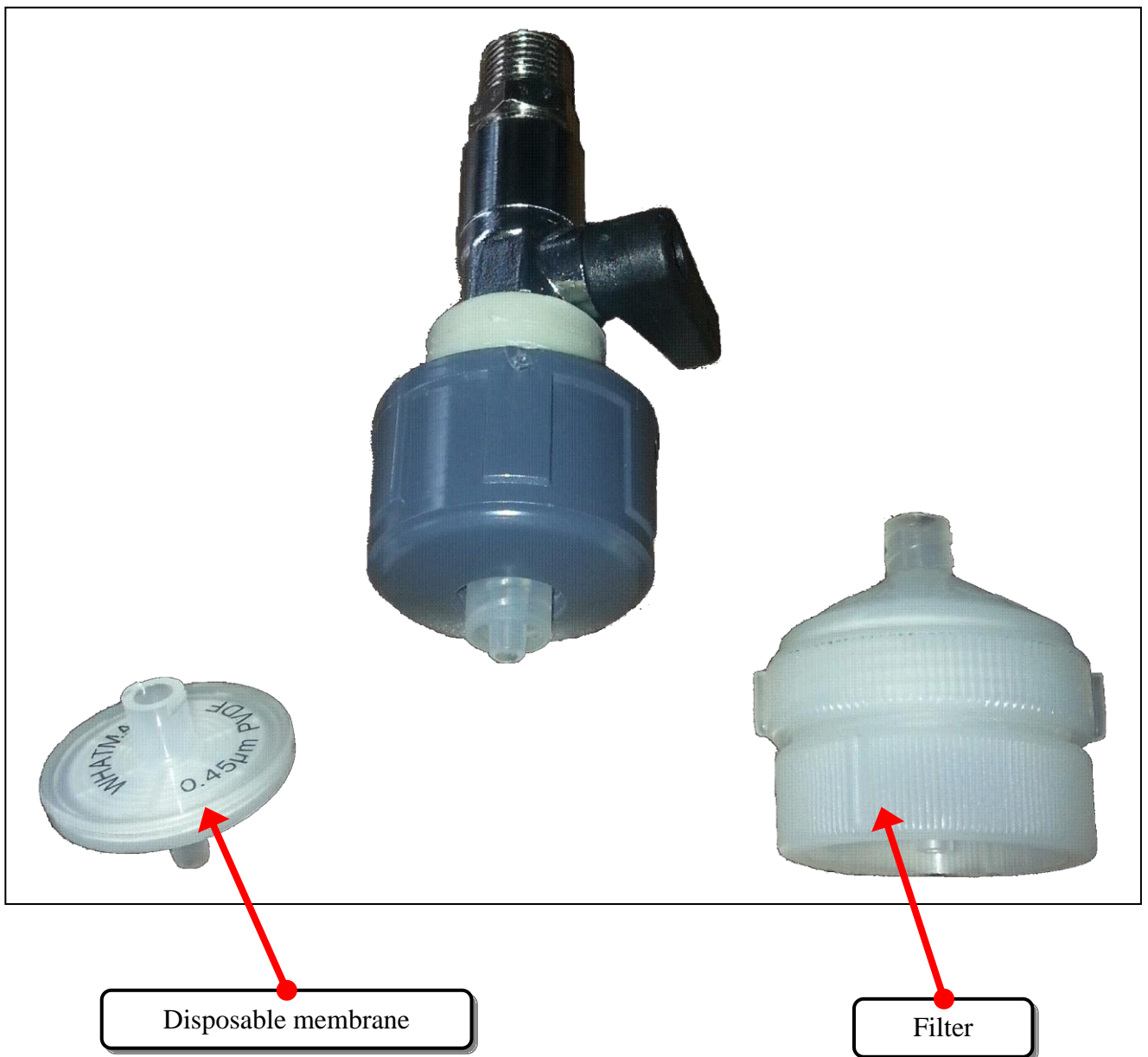


8.2 Use of device CIF2014

The device **CIF2014** can be supplied with:

- Filter Holder Ø25mm and relative membrane of Ø25mm with porosity 0,65µ.
Suggested for those who do a small number of filterability index measurements in the laboratory.
- Syringe type Ø25 porosity 0,65 µ disposable.
Suggested for those who do many filtration index measurements in the laboratory.

Both options are supplied with the Luer Lock attachment.

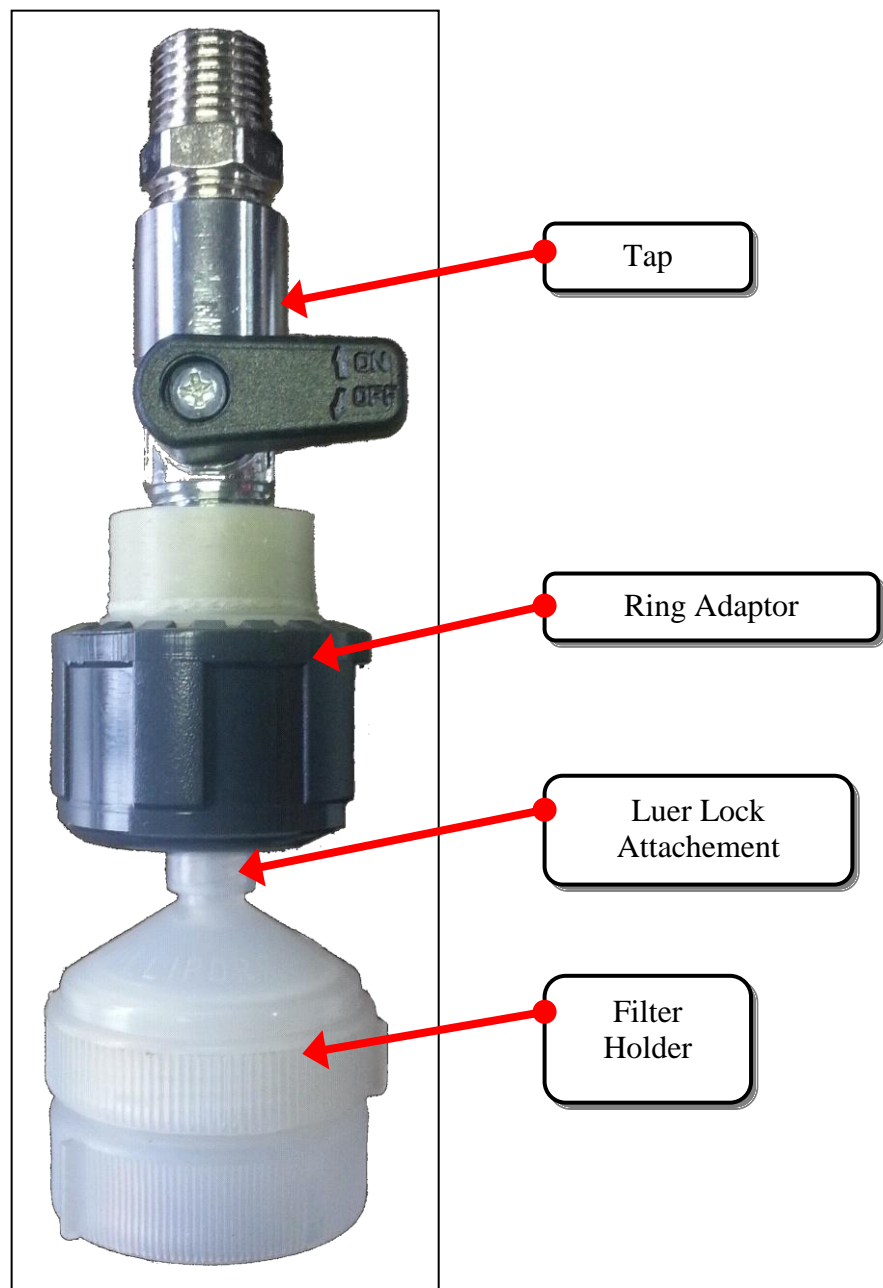


8.2.1 Options kit with the filter holder.

As previously mentioned, this option is suggested for those who do not do many measurements for the filterability index.

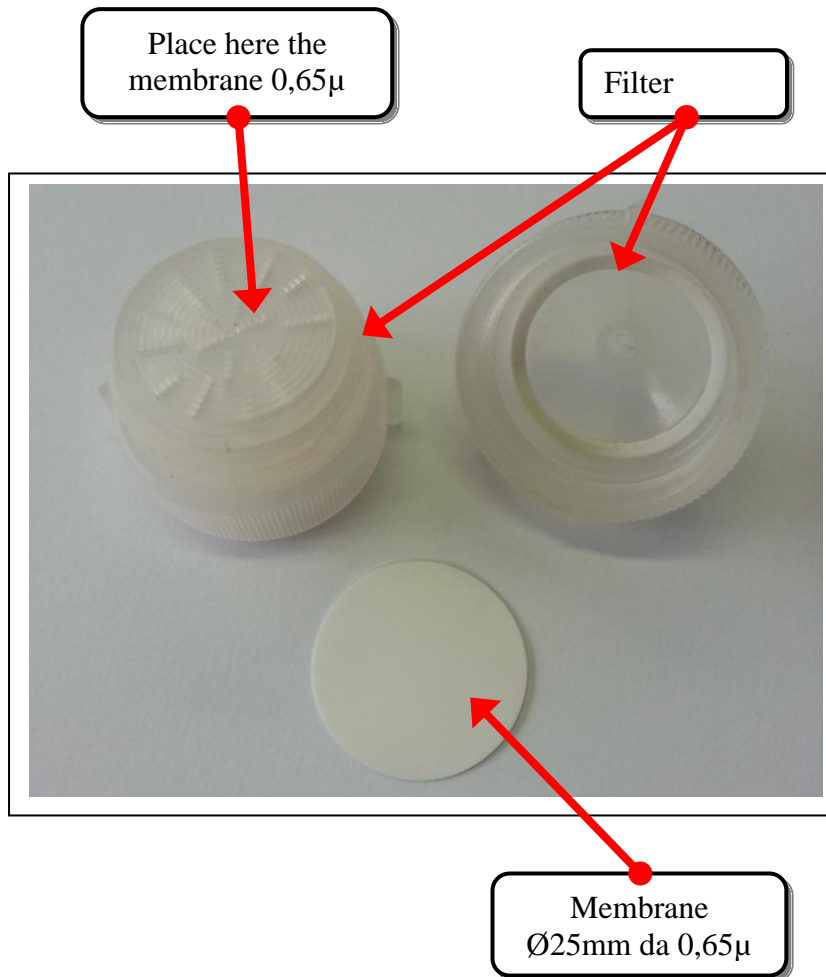
Instructions for mounting the membrane and cleaning.

The device is shown in the figure below:



To insert the membrane in the membrane holder do as follows:

- Unscrew the filter holder.
- Open the filter holder and insert the membrane Ø25mm of 0,65µ.



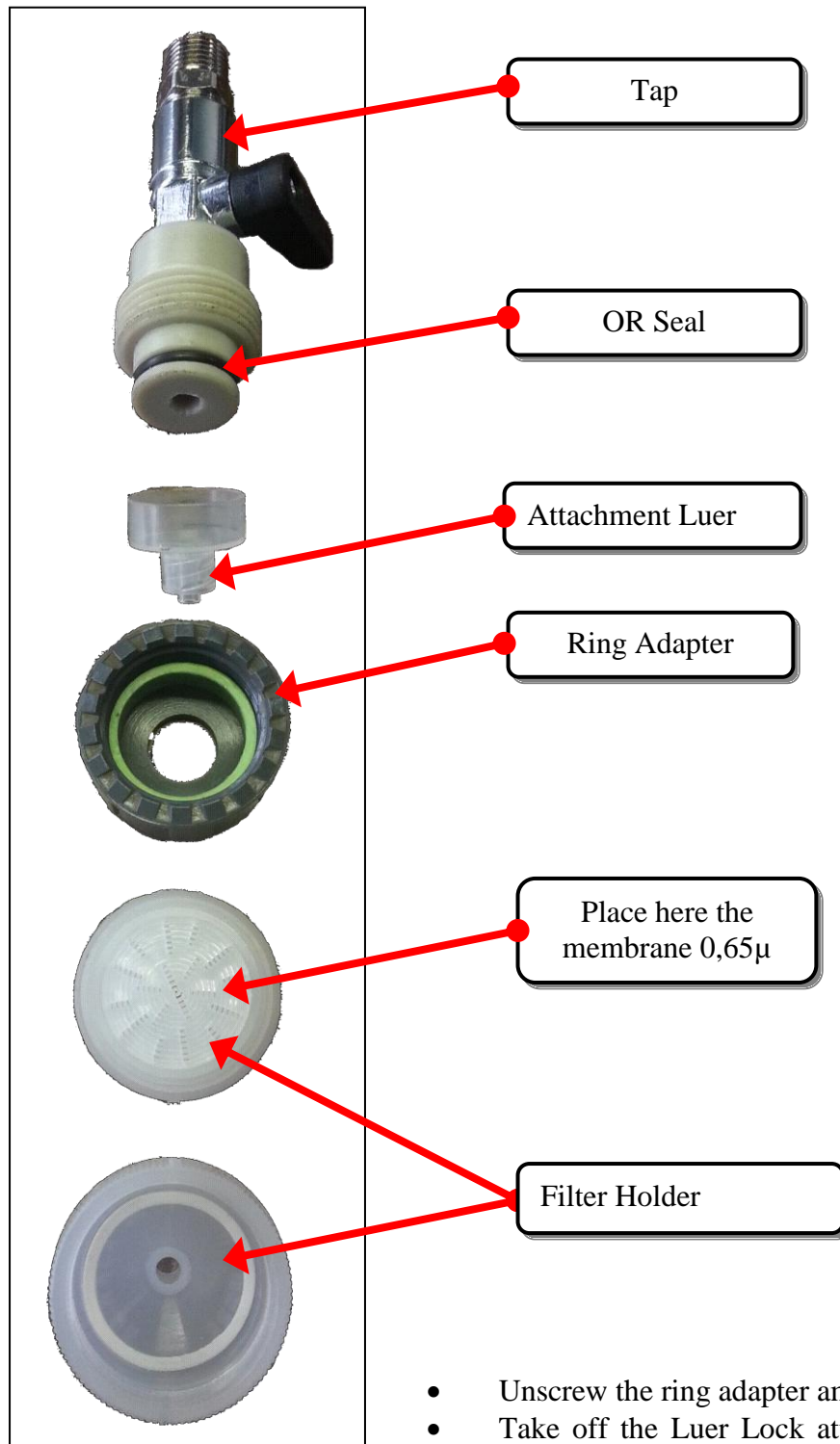
- Close the filter holder.
- Attach the filter holder with the membrane to Luer Lock.
- Now it is possible to perform filtration and calculate the filterability index.



After completing the test, it will be necessary to take out the used membrane and clean all components of the device with distilled water.

Do as follows:

- Take off the filter holder by unscrewing from the Lower Lock attachment.
- Open the filter holder
- Take out the used membrane
- Clean the filter holder.



- Unscrew the ring adapter and clean
- Take off the Luer Lock attachment and clean it.
- Be careful with the OR seal

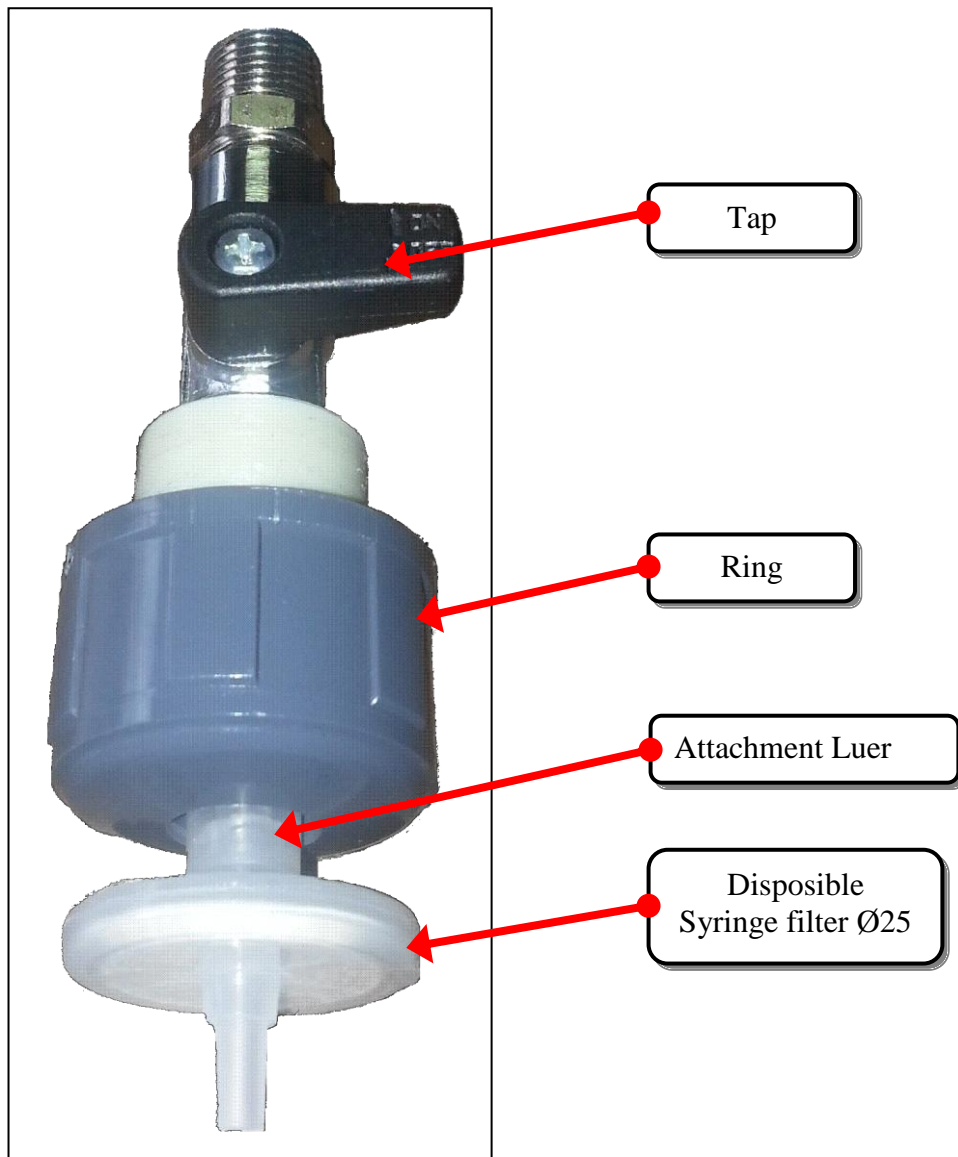
- Once all the components have been cleaned and dried, put in a new membrane.



8.2.2 Optional kit with syringe filter type Ø25 porosity 0,65 µ disposable.

As previously mentioned, this option is suggested for those who do a lot of measurements for the filterability index.

The device is shown in the figure below:



After finishing the filtration test, The syringe is unscrewed from the Luer Lock attachment and can be disposed of (This is a throw away type attachment). For cleaning and other, follow instructions as described in the previous pages.



9 Shipping of device with a courier

To ship the **β2014 WLF/3**, use the packing materials supplied with the device.

The correct address is:

DELTA ACQUE del Dr. A. Cavallucci
Via della Treccia, 37 - 50145 FIRENZE

NB: IT IS IMPORTANT TO OBSERVE THE INSTRUCTIONS FOR PACKING TO AVOID DAMAGE DURING TRANSPORT.

10 Numbers and addresses - Assistance

For technical support or assistance, contact our technician at the following numbers and addresses:

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