

FTA-1, FTA-2i Aspirators with trap flask



User instructions

If you have any feedback on our products or services, we would like to hear from you.
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1. About this edition of user instructions

1.1 The current edition of the user instructions applies to the following models:

Model and name	Version
FTA-1, aspirator with trap flask	V.5AW
FTA-2i, aspirator with trap flask	V.1A01

1.2 Edition 1.-5.01 – March of 2023

2. Safety precautions

2.1 Symbols used in these user instructions.



Caution! Make sure you have fully read and understood the present Manual before using the equipment. Please pay special attention to sections marked by this symbol.

2.2 Icons used on the unit and packaging.

	CE marking, manufacturer affirms conformity with European health, safety, and environmental protection standards, see 12.1
	WEEE directive marking, see 12.1
	Polarity of the power connector
	Equipment uses direct current
	Microtube placements on FTA-1 , see fig. 1/3
	Pump exhaust on FTA-2i , connect to the means of air filtration, see 8.1

2.3 General safety

- The protection provided can be ineffective if the operation of the appliance does not comply with the manufacturer's requirements.
- Save the unit from shocks and falling.
- Store and transport the unit as described in section **Storage and transportation**.
- Use only original parts and accessories, provided by manufacturer for this product.
- Before using any cleaning or decontamination methods except those recommended by the manufacturer, check with the manufacturer that the proposed method will not damage the equipment.
- Do not make modifications in design of the unit.

2.4 Electrical safety

- Connect only to the mains with voltage listed on the serial number label.
- Use only the external power supply provided with this product.
- Ensure that the power plug is easily accessible during use.
- Disconnect the unit from the mains before moving.
- If liquid penetrates into the unit, disconnect it from the mains and have it checked by a repair and maintenance technician.
- Do not operate the unit in premises where condensation can form. Operating conditions of the unit are defined in section **Specifications**.

2.5 During operation

- Do not operate the unit in environments with aggressive or explosive chemical mixtures. Please contact manufacturer for possible operation of the unit in specific atmospheres.
- Do not operate the unit if it is faulty or has been installed incorrectly.
- Do not use outside laboratory rooms.
- Do not use the unit for aggressive organic compounds, chlorinated solvents and strong conjugated acids, see section **Chemical compatibility**.

2.6 Biological safety

- The user is responsible to carry out appropriate decontamination if hazardous material spills on or penetrates into the equipment.
- Empty the trapping flask when the liquid level reaches maximum. Take necessary precautions utilizing waste liquid in accordance with general laboratory standards.

3. General information

FTA-1 & FTA-2i aspirators with trapping flask have been designed for liquid removal from micro-test tubes (e.g., for supernatant removal during DNA/RNA extraction), ELISA plates (e.g., performing several repeated well washing cycles), cell culture flasks (cell media exchange and washing during cell growth) and other vessels during various laboratory techniques.

Model **FTA-1** has a 1 L glass trapping flask and is designed to be a low-cost solution. Aspiration is possible with a single standard 200 μ L tip and the 8-tipped **MA-8** adapter.

Model **FTA-2i** comes with a 2 L polypropylene trapping flask and a liquid overflow sensor that stops collected material from damaging the filter. Aspiration is possible with single 200 and 1000 μ L tip using the **MA-U** adapter or with the handheld vacuum controller **HAS-1** with different attachments such as 8-channel adapter with stainless steel tips, 8-channel adapter for 200 μ L tips, single channel adapter for 200 μ L tips and others.

Microbiologic suction filter eliminates risks of contamination caused by bacteria, viruses, and infected particles from samples. Such contamination can be distributed by suction pump or central vacuum units. Microbiological suction filter is hydrophobic and has very high contamination removal bacterial efficiency – up to 99.99% of particles bigger than 0.027 micrometres (e.g., Hepatitis A, B and C, HIV, etc.).

In order to prolong performance and efficiency of device it is not allowed to use aggressive organic compounds (e.g., phenol) and strong conjugated acids (e.g., guanidine) for aspiration. Please, contact manufacturer in case of any questions regarding operation of device.

4. Getting started

4.1 **Unpacking.** Remove packing materials carefully and retain them for future shipment or storage of the unit. Examine the unit carefully for any damage incurred during transit. The warranty does not cover in-transit damage. Warranty covers only the units transported in the original package.

4.2 **Complete set.** Package contents:

4.2.1 FTA-1:

- FTA-1, aspirator with trap flask 1 pce.
- Hydrophobic filter set 1 set
- Aspiration tips, 200 μ L 50 pcs.
- Holder tubes (1.5 ml) 10 pcs.
- Spare hydrophobic filter 1 pce.
- External power supply 1 pce.
- Operating instructions, certificate 1 copy
- **MA-8**, 8-channel aspiration tip with holder 1 set, on request

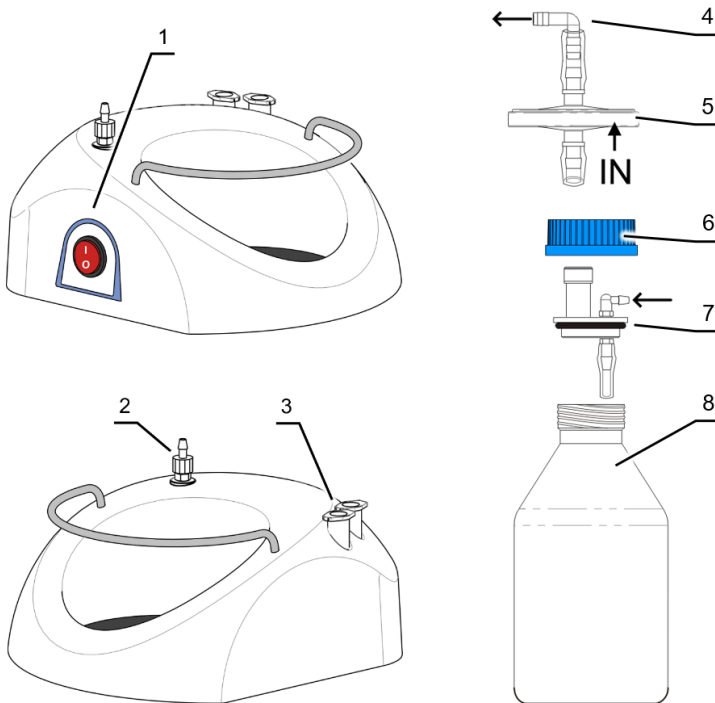


Figure 1. FTA-1, base and bottle.

1. Power button. 2. Filter-to-bottle tube adapter. 3. Tip holder microtubes.
4. Filter-to-bottle tube adapter. 5. Hydrophobic filter set, note the IN marking.
6. Lid with centre opening. 7. Lid insert, with tip-to-bottle tube adapter.
8. Glass trapping flask.



Figure 2. FTA-1, aspiration tip.

4.2.2 FTA-2i:

- FTA-2i, aspirator with flask trap..... 1 pce.
- **MA-U**, universal adapter 1 pce.
- Hydrophobic filter set 1 set
- Aspiration tips, 200 μ L..... 50 pcs.
- Aspiration tips, 1000 μ L..... 10 pcs.
- Holder tubes (2 ml) 5 pcs.
- Spare hydrophobic filter 1 pce.
- External power supply 1 pce.
- Operating instructions, certificate 1 copy
- Extended tubing (2 m), with fittings and **MA-U** adapter 1 set, on request
- **MA-8**, 8-channel aspiration tip with holder 1 set, on request
- **HAS-1**, hand operator set with SH-6 stand 1 set, on request

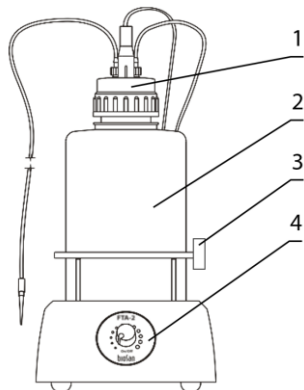


Figure 3. FTA-2i front view.

1. Lid (see fig. 4).
2. Trap flask.
3. Tip holder microtubes.
4. Regulator knob

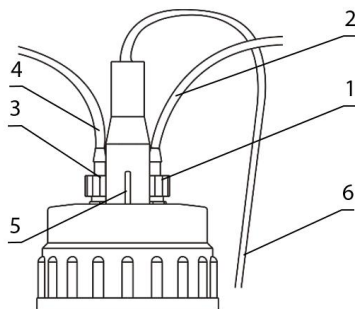


Figure 4. FTA-2i lid with sensor and tubing

1. White ring valve to filter.
2. Tube to filter.
3. Blue ring valve to tip.
4. Tube to tip.
5. Sensor port.
6. Sensor cable to unit



Figure 5. MA-U, universal adapter.

1. Replaceable aspirator tip.
2. MA-U.
3. Tube to the unit

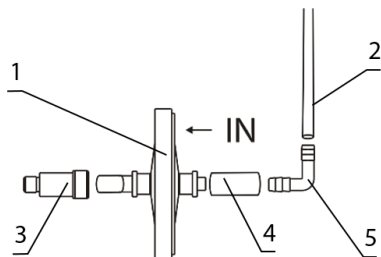


Figure 6. FTA-2i filter setup.

1. Hydrophobic filter, note the IN marking.
2. Tube to the bottle.
3. Adapter to the unit.
4. and 5. Fittings

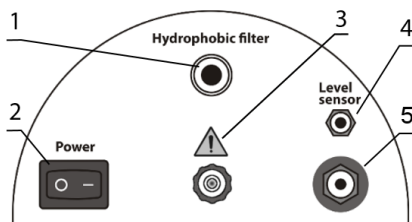


Figure 7. FTA-2i rear panel.

1. Slot for filter adapter.
2. Power switch.
3. Pump exhaust.
4. Sensor port.
5. Power cable port.

4.3 FTA-1 setup.

- Place the unit base on horizontal even working surface.
- Install the trapping flask (fig. 1/8) on the unit.
- Check that the insert (fig. 1/7) is in the lid (fig.1/6). Secure the lid onto the trapping flask. Insert the hydrophobic filter set (fig. 1/5) into the lid.



Caution! Position the filter with the **IN** marking pointing towards the unit.

- Check the tube connections: filter to bottle (fig. 1/2 and 1/4), bottle to aspiration tip (fig. 1/7 and fig. 2).
 - Place the microtubes for aspiration tip into the holder (fig. 1/3).
 - Connect the external power supply unit into the socket at the rear side of the unit and position the unit for an easy access to the external power supply and the power switch.
- 4.3.1 **Optional MA-8 aspiration tip installation.** Remove microtubes and aspiration tip from the holders on the base (fig. 1/3). Place MA-8 storing holder into the unit base. Replace the aspiration tip with the **MA-8** aspiration tip. Store the aspiration tip in the new holder.

4.4 FTA-2i setup.

- Place the unit on horizontal even working surface.
- Install the trapping flask (fig. 3/2) on the unit.
- Screw on the lid with the sensor needles and valves for tubing (fig. 3/1) to trapping flask.
- Assemble the filter set (figure 6) and connect it to the port on the rear panel of the unit (fig. 7/1).



Caution! Position the filter with the **IN** marking pointing away from the unit (fig. 6/1).

- Attach the fitting (fig. 4/1) of the tubing to the filter (fig. 4/2) to the valve with **white** ring on the lid.
 - Ensure that the filter set is tightly fixed in the slot (fig. 7/1).
 - Assemble the **MA-U** aspiration tip set (figure 5).
 - Attach the fitting (fig. 4/3) of the tubing for liquids (fig. 4/4 and 5/3) to the valve with the **blue** ring on the lid.
 - Connect the sensor cable (fig. 4/5) to the lid of the unit and to the port on the rear panel of the unit (fig. 7/4).
 - Place the microtubes for aspiration tip into the holder (fig. 3/3).
 - Connect the external power supply unit into the socket at the rear side of the unit (fig. 7/5) and position the unit for an easy access to the external power supply and the power switch.
- 4.4.1 **Optional MA-8 aspiration tip installation.** Remove microtubes and aspiration tip from the holder (fig. 3/3). Remove the aspiration tip (fig. 5/1) from the **MA-U** adapter and connect the **MA-8** aspiration tip (fig. 8/1A).
- 4.4.2 **Optional HAS-1 hand operator installation.** Unscrew the **MA-U** adapter from the aspiration tube (fig. 5/3) and connect the **HAS-1** hand operator (fig. 8/5) by screwing it to the fitting.

5. Operation

- 5.1 Connect the external power supply to the mains.
- 5.2 Turn the **Power** switch (fig. 1/1 or 7/2) to the position **I** (on). The pump starts working.
- 5.3 (For model **FTA-2i**) Regulate the aspiration intensity with the regulator knob on the front panel of the unit (fig. 3/4). Clockwise turning direction increases power, counter clockwise – decreases. Current intensity is indicated by a light ring around the regulator knob.
- 5.4 Touch the surface of the liquid with the aspiration tip (fig. 2, fig. 5/1 or **MA-8**) to remove the liquid.



Caution! During operation, do not allow the collected liquid to exceed the maximum level. Empty the trapping flask when the liquid level reaches maximum allowed level, according to **5.6**.



Note. In model **FTA-2i**, when collected liquid exceeds the maximum level, the sensor turns off the pump and produces sound and light warning signals.

- 5.4.1 (For model **FTA-2i**) When using the optional **HAS-1** hand regulator, touch the liquid with the aspiration tip, then press and hold the blue button on the regulator to collect.
- 5.5 After finishing the operation, switch off the **Power** switch and disconnect the external power supply from the mains.
- 5.6 **Emptying the trapping flask.** Turn off the unit. Remove the tubings and cables from the lid. Remove the closed flask from its place. Unscrew the lid and empty the trapping flask. Screw the lid back on and return the trapping flask on the unit. Replace the tubings and the cables.



Caution! Take necessary precautions in utilizing waste liquid in accordance with general laboratory standards. For information regarding autoclaving procedures, see **9.2.4**.

6. Specifications

6.1 Biosan is committed to a continuous programme of improvement and reserves the right to alter design and specifications of the equipment without additional notice.

6.2 Aspiration specifications.

Model	FTA-1	FTA-2i
Aspiration speed	up to 1.7 mL/s	up to 27.8 mL/s
Vacuum regulation	–	Yes
Working vacuum pressure (at sea level)	-500 mbar	-200 ... -800 mbar
Overflow protection sensor	–	Yes, invasive
Overflow protection actions	–	Pump stop, sound and light signals
Trapping flask	1 L, glass	2 L, polypropylene (PP)
Air filtration	Hydrophobic microbiologic air filter 2200/02 ¹	
Filter pore diameter	0.027 µm	

6.3 General specifications.

Model	FTA-1	FTA-2i
Operating voltage	12 V=	
Operating current	300 mA	1 A
Power consumption	3.6 W	10.8 W
External power supply	input 100–240 V~, 50/60 Hz; output 12 V=	
Dimensions (W×D×H)	186×213×327 mm	185×290×390 mm
Weight, accurate within ±10%	1.80 kg	1.85 kg

6.4 Workroom requirements.

Workroom description	Cold rooms and closed laboratory rooms
Temperature range	+4 °C ... +40 °C
Humidity requirements	Maximum of 80% RH at 31 °C, decreasing linearly to 50% RH at 40 °C. Non-condensing atmosphere.
Operating height, maximum	2000 m ASL

¹ Eliminates risk of contamination from the trapping flask with bacteria, viruses, and infected particles

7. Ordering information

7.1 Models and versions available:

Model	Version	Catalogue number
FTA-1, aspirator with trap flask	V.5AW	BS-040108-AAG
FTA-2i, aspirator with trap flask	V.1A01	BS-040120-A02

7.2 To inquire about or order the optional accessories or the replacement parts, contact Biosan or your local Biosan representative.

7.2.1 Optional accessories:

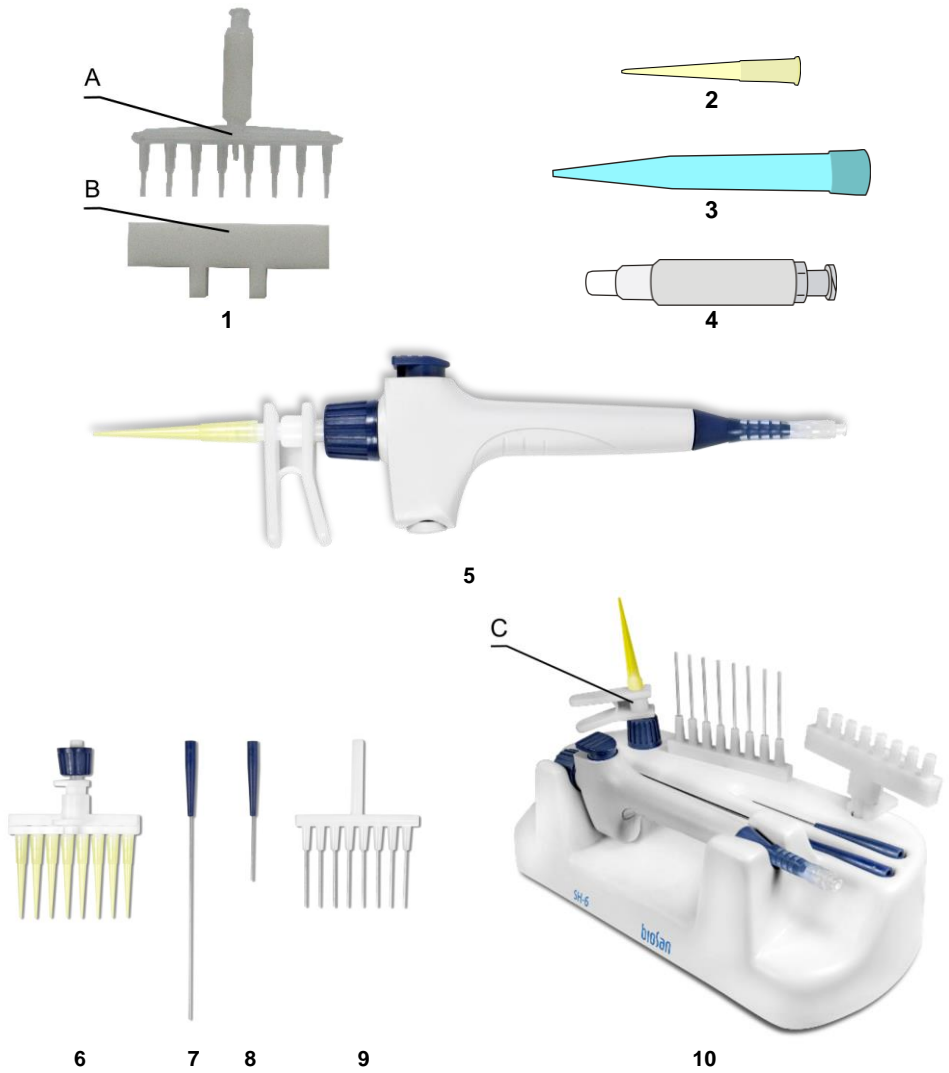
Description	Catalogue number
MA-8 , 8-channel aspiration tip (fig. 8/1A) with holder (fig. 8/1B)	BS-040108-BK
HAS-1 , hand operator set (only for FTA-2i). Set includes: Handheld vacuum controller with adapter (fig. 8/5), 8-channel adapter (with ejector) for 200 μ L tips (fig. 8/6), 1-channel adapter with 125 mm stainless steel pin (fig. 8/7), 1-channel adapter with 40 mm stainless steel pin (fig. 8/8), 8-channel adapter with 35 mm stainless steel pin (fig. 8/9), 1-channel adapter (with ejector) for 200 μ L tips (fig. 8/10C), Stand SH-6 for hand operator parts (fig. 8/10)	BS-040118-PK
Extended tubing (2 m), with fittings and MA-U adapter	BS-040120-DK

7.2.2 Replacement parts for **FTA-1**.

Description	Catalogue number
Hydrophobic filter	BS-040108-S25
Aspiration tip, 200 μ L, 1000 pcs. (fig. 8/2)	BS-000001-S04
Aspiration tip, 8 channels, for MA-8 (fig. 8/1A)	BS-040108-S24
Trapping flask, 1 L, glass, with lid, inserts and sealing ring	BS-040108-S11
Tubing and fitting set	BS-040108-S22

7.2.3 Replacement parts for **FTA-2i**.

Description	Catalogue number
MA-U , universal adapter for 200/1000 μ L single use tips (fig. 8/4)	BS-040118-AK
Hydrophobic filter set	BS-040120-S10
Aspiration tip, 200 μ L, 1000 pcs. (fig. 8/2)	BS-000001-S04
Aspiration tip, 1000 μ L, 1000 pcs. (fig. 8/3)	BS-000001-S05
Aspiration tip, 8 channels, for MA-8 (fig. 8/1A)	BS-040108-S24
Trapping flask, 2 L, polypropylene, with lid, inserts and sealing ring	BS-040120-S11
Tubing and fitting set	BS-040120-S14
Sensor cable	BS-040120-S12



8. Chemical compatibility

8.1 Different aerosols and vapours from volatile and hazardous agents can have a damaging effect on the specific parts of the units. Please see below for **FTA-1** and **FTA-2i** material compatibility tables 1 and 2 with different common laboratory chemicals. It is required to use the **FTA-2i** pump's exhaust (fig. 7/3) by connecting it to the means of required filtration through a tube or, alternatively, by placing the unit in a fume hood when working with volatile and hazardous agents. **FTA-1** does not have pump exhaust connector available; therefore, it is obligatory to place the unit in a fume hood. It is suggested to test the compatibility of related parts to a specific chemical prior to extensive use. Biosan does not warrant that the data in the tables is correct or comprehensive and that any material is fit for any purpose.

8.2 Resistance grades used in tables:

- **1** (Excellent) – at ambient temperature and pressure, the material should not be affected.
- **2** (Good) – the material is slightly affected but not to the point of being unsuitable.
- **3** (Fair) – a degree of reaction that is generally considered unsuitable and should not be used.
- **4** (Severe) indicates that the material should not be used under any circumstances.

Table 1. FTA-1 chemical resistance chart

Parts	Material	Formaldehyde CH ₂ O	Acetic acid C ₂ H ₄ O ₂	Hydrochloric acid HCl	Sodium hydroxide NaOH	Ethanol C ₂ H ₅ OH	Acetone (CH ₃) ₂ CO
Tubing	Silicone	2	2	3	3	1	3
Bottle 1L	Glass	1	1	1	1	1	1
Lid	Polypropylene	1	1	1	1	1	1
Lid seal	NBR	2	3	2	2	2	4
Fittings	Polypropylene	1	1	1	1	1	1
Quick couplings	Ertacetal POM	1	1	3	1	1	1
Housing	ABS	2	4	1	1	2	4
Pump head housing	Polycarbonate	1	2	4	4	2	4
Pump head membrane	EPDM	2	1	2	1	1	1
Pump valve	EPDM	2	1	2	1	1	1
Filter membrane	PTFE	1	1	1	1	1	1

Table 2. FTA-2i chemical resistance chart

Parts	Material	Formaldehyde CH ₂ O	Acetic acid C ₂ H ₄ O ₂	Hydrochloric acid HCl	Sodium hydroxide NaOH	Ethanol C ₂ H ₅ OH	Acetone (CH ₃) ₂ CO
Tubing	Silicone	2	2	3	3	1	3
Bottle 2L	Polypropylene	1	1	1	1	1	1
Lid	Polypropylene	1	1	1	1	1	1
Lid seal	TPE	1	3	1	1	1	1
Level detection pins	Stainless steel	3	3	3	2	1	1
Fittings	Polypropylene	1	1	1	1	1	1
Quick couplings	POM	1	1	3	1	1	1
Housing	ABS	2	4	1	1	2	4
Pump head housing	Nylon	4	4	4	3	1	1
Pump head membrane	EPDM	2	1	2	1	1	1
Pump valve	EPDM	2	1	2	1	1	1
Filter membrane	PTFE	1	1	1	1	1	1

9. Care and maintenance

9.1 Service.

9.1.1 If the unit is disabled (e.g., no aspiration, no reaction to key presses, etc.) or requires maintenance, consult the troubleshooting table in **9.5**. If the problem is not covered, disconnect the unit from the mains and contact Biosan or your local Biosan representative.

9.1.2 All maintenance and repair operations (except listed below) must be performed only by qualified and specially trained personnel.

9.1.3 Operating integrity check. If the unit follows the procedure described in section **Operation**, then no additional checks are required.

9.2 Cleaning and disinfection.

9.2.1 Use mild soap and water with a soft cloth or sponge for cleaning the exterior. Rinse remaining washing solution with distilled water. Wipe dry the excess water with clean, soft cloth or sponge.

9.2.2 To disinfect the plastic and glass parts, use 75% ethanol or DNA/RNA removing solution (e.g., Biosan PDS-250). After disinfecting, wipe the surfaces dry.

9.2.3 Silicone and fittings. Detach and disassemble the tubing. Use only distilled water, no less than 0.5 L, and air dry after rinsing.

9.2.4 Autoclaving procedures.

	Lid, fittings, tubing	Flask	Hydrophobic filter, cables, base pump
FTA-1	121°C and 1 atm., 15 min.	121°C and 1 atm., 55 min.	Do not autoclave
FTA-2i		121°C and 1 atm., 15 min.	



Caution! Do not put a closed flask in the autoclave, as it might irreversibly deform. Completely disengage the thread on the cap.



Note. Hydrophobic filter and sensor cable are sensitive to moisture and are not autoclavable. Tubing is made of silicone and deteriorate after frequent autoclaving and should be replaced.

9.3 **Tubing replacement.** Change the silicone tubing every 6 months.

9.4 **Filter replacement.** Replace the filter as soon as it accumulates visible traces of dirt, or when the liquid is sucked into it. Maximum working time for the filter is 30 days. When working with infected materials, replace the filter immediately after finishing the procedure to prevent the spread of infection.

9.4.1 Changing procedure. Remove the filter (fig. 1/5 or 6/1) by detaching it from adapters. Insert a new filter and reconnect the adapters.



Caution! Observe the orientation of the filter:

- For model **FTA-1**, the **IN** marking should be facing towards the unit (figure 1).
- For model **FTA-2i**, the **IN** marking should be facing away from the unit (figure 6).

9.5 Troubleshooting.

Problem	Possible reason	Troubleshooting
Unit not working	No power	Check external power supply and connector
	(FTA-2i) Trapping flask full	Sensor shut down the motor. Empty the trapping flask according to 5.6 .
	(FTA-2i) Sensor not connected properly	Check sensor cable and attachments
Aspiration slow or absent	(FTA-2i) Aspiration intensity set to small	Turn the regulator knob clockwise to increase aspiration.
	Breach in the system	Check all the tubing and fittings. Tightly close the lid of the unit
	Dirt in the tubing	Clean the tubing, see 9.2.3 .
	Liquid in the filter	Replace the filter
(FTA-2i) Sensor activated, but the flask is not full	Foam in the trapping flask activated the sensor	Do not use the unit with a foaming liquid or use antifoaming agent.

9.6 **Disposal.** Disposal of the appliance requires special precautions and must be carried out at an appropriate disposal site, separate from normal household waste. To prevent pollution of the environment, all waste resulting from the disposal of the product must be collected and disposed of in the country of use, in accordance with the applicable requirements for the handling of electronic waste.

10. Storage and transportation

- 10.1 Store and transport the unit in a horizontal position (see package label) at ambient temperatures between -20°C and +60°C and maximum relative humidity of 80%.
- 10.2 After transportation or storage and before connecting it to the electric circuit, keep the unit under room temperature for 2-3 hrs.
- 10.3 For extended storage, disassemble and clean according to **9.3**. Empty the trap flask. The unit does not require special procedures.

11. Warranty

- 11.1 The Manufacturer guarantees the compliance of the unit with the requirements of Specifications, provided the Customer follows the operation, storage and transportation instructions.
- 11.2 The warranted service life of the unit from the date of its delivery to the Customer is 24 months. For extended warranty, see **11.6**.
- 11.3 Warranty for the unit does not cover optional accessories or replacement parts listed in **7.2**.
- 11.4 Warranty covers only the units transported in the original package.
- 11.5 If any manufacturing defects are discovered by the Customer, an unsatisfactory equipment report shall be compiled, certified and sent to the local distributor address. To obtain the claim form, visit **Technical support** page on our website at link below.
- 11.6 Extended warranty.
 - For **FTA-2i**, the *Premium* class model, one year of extended warranty is available free of charge after registration, during 6 months from the date of sale. Online registration form can be found in section **Warranty registration** on our website at the link below.
 - For **FTA-1**, the *Basic Plus* class model, extended warranty is a paid service. Contact your local Biosan representative or our service department through the **Technical support** section on our website at the link below.
- 11.7 Description of the classes of our products is available in the **Product class description** section on our website at the link below.

Technical support



biosan.lv/en/support

Registration



biosan.lv/register-en

Product class description



biosan.lv/classes-en

- 11.8 The following information will be required in the event that warranty or post-warranty service comes necessary. Complete the table below and retain for your records.

Model	Serial number	Date of sale
FTA-1, FTA-2i, Aspirators with trap flask		

- 11.9 **Production date.** Production date is placed in the serial number, on the label of the unit. Serial number consists of 14 digits styled XXXXXXYYMMZZZZ, where XXXXXX is model code, YY and MM – year and month of production, ZZZZ – unit number.

12. EU Declaration of conformity

12.1 Aspirators with trap flasks **FTA-1** and **FTA-2i** are in conformity with the following relevant Union legislations:

LVD 2014/35/EU	LVS EN 61010-1:2011 Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements.
EMC 2014/30/EU	LVS EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements.
RoHS3 2015/863/EU	Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
WEEE 2012/19/EU	Directive on waste electrical and electronic equipment.

12.2 Declaration of Conformity is available for download on the page for the relevant model on our website by links below, in the **Downloads** section:



[FTA-1](#)



[FTA-2i](#)

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