



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

Operating Manual

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1. About this edition of the Manual

1.1. The current edition of the Manual applies to the following models and versions:

Model	Version
FTA-1, Aspirator with Trap Flask	V.4GW
FTA-2i, Advanced Aspirator with Trap Flask	V.1G01

2. Safety precautions



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.

2.1. 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 at ambient temperatures between -20°C and +60°C and maximum relative humidity of 80%.
- After transportation or storage and before connecting it to the electric circuit, keep the unit under room temperature for 2-3 hrs.
- 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.

2.2. Electrical safety

- Connect only to the mains with voltage corresponding to that 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 the **Specifications** section.

2.3. 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.

2.4. Biological safety

- It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilt 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 trap 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 trap flask and is designed to be a low-cost solution. Aspiration is possible with a single standard 200 µL tip and the 8-tipped **MA-8** adapter.

Model **FTA-2i** comes with a 2 L polypropylene trap flask and a liquid overflow sensor that stops collected material from damaging the filter. Aspiration is possible with single 200 and 1000 µL 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 µl tips, single channel adapter for 200 µl 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 1 pce.
- Aspiration tips, 200 μ L50 pcs.
- Holder tubes (1.5 ml)10 pcs.
- Spare hydrophobic filter..... 1 pce.
- External power supply 1 pce.
- Operating Manual1 copy
- **MA-8**, 8-channel aspiration tip with holder on request

4.2.2. FTA-2i:

- FTA-2i, aspirator with flask trap 1 pce.
- **MA-U**, universal adapter..... 1 pce.
- Hydrophobic filter 1 pce.
- Aspiration tips, 200 μ L50 pcs.
- Aspiration tips, 1000 μ L10 pcs.
- Holder tubes (2 ml) 5 pcs.
- Spare hydrophobic filter..... 1 pce.
- External power supply 1 pce.
- Operating Manual1 copy
- **MA-8**, 8-channel aspiration tip with holder on request
- **HAS-1**, hand operator set with SH-6 stand on request

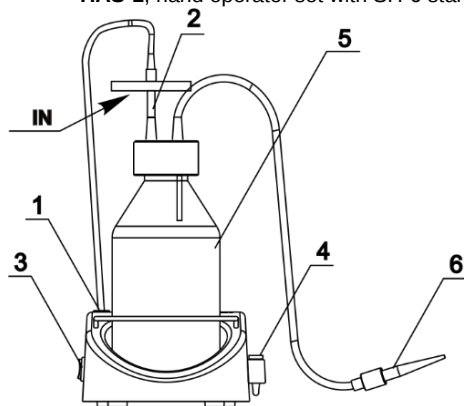


Figure 1. Assembled FTA-1

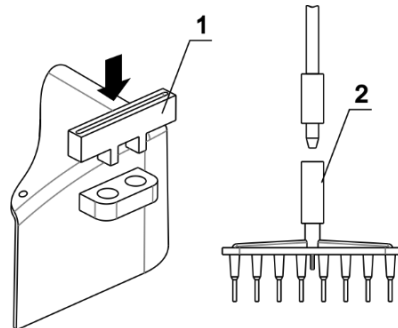


Figure 2. Installation of MA-8 aspiration tip

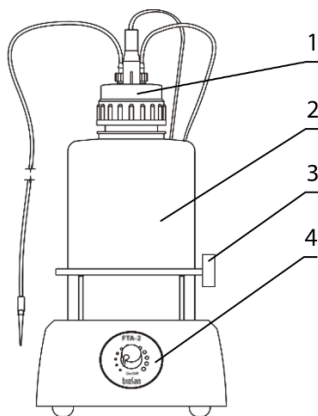


Figure 3. FTA-2i front view

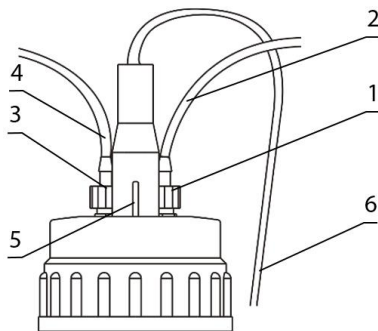


Figure 4. FTA-2i lid with sensor and tubing



Figure 5. MA-U, universal adapter

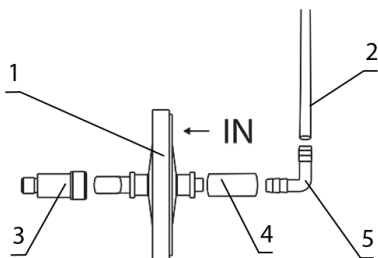


Figure 6. FTA-2i filter setup

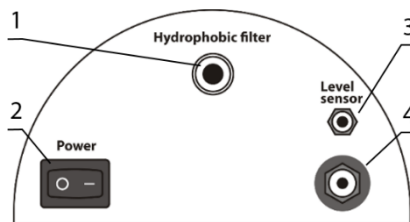


Figure 7. FTA-2i rear panel

4.3. FTA-1 setup.

- Place the unit on horizontal even working surface.
- Install the trapping flask (fig. 1/5) on the unit.
- Assemble the lid, aspiration tubing and filter set (fig. 1/2). Attach aspiration tip (fig. 1/6) to the tubing.



Caution! Position the filter with the **IN** marking pointing towards the unit (fig. 1/2).

- Screw on the lid with the filter set and aspiration tubing to trap flask. Ensure that the filter set is tightly inserted.
- Connect the filter tubing to the pump (fig. 1/1) located at the top of the base behind the trap flask, by turning the fitting clockwise.
- Place the microtubes for aspiration tip into the holder (fig. 1/4).
- 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 holder (fig. 1/4). Place MA-8 storing holder (fig. 2/1) into the holder. Remove aspiration tip (fig. 1/6) from the aspiration tubing and connect the **MA-8** aspiration tip (fig. 2/2). 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) 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 (fig. 5/3).
- 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. 7/4) 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.** Replace microtubes and aspiration tip from the holder (fig. 3/3) with **MA-8** holder (fig. 8/2). Remove the aspiration tip (fig. 5/1) from the **MA-U** adapter and connect the **MA-8** aspiration tip (fig. 8/1).

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. 8/6) 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. 1/3 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. 1/6, 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 **5.7**.



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.

5.5. (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.

5.6. After finishing the operation, switch off the **Power** switch and disconnect the external power supply from the mains.

5.7. **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 on autoclaving procedures, see **7.4**.

6. Specifications

The unit is designed for operation in cold rooms and closed laboratory rooms at ambient temperature from +4°C to +40°C in a non-condensing atmosphere and maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.

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

Model	FTA-1	FTA-2i
Aspiration speed	up to 1.7 mL/s	up to 27.8 mL/s
Vacuum regulation	None	Yes
Working vacuum pressure	-500 mbar	-200 ... -800 mbar
Overflow protection sensor	None	Yes, invasive
Overflow protection actions	None	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	
Operating voltage and current	12 V=, 300 mA	12 V=, 1 A
Power consumption	3.6 W	10.8 W
External power supply	input 100–240 V~, 50/60 Hz; output 12 V=	
Dimensions	160x210x340 mm	185x290x390 mm
Weight ²	1.7 kg	1.85 kg

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

² Accurate within ±10 %

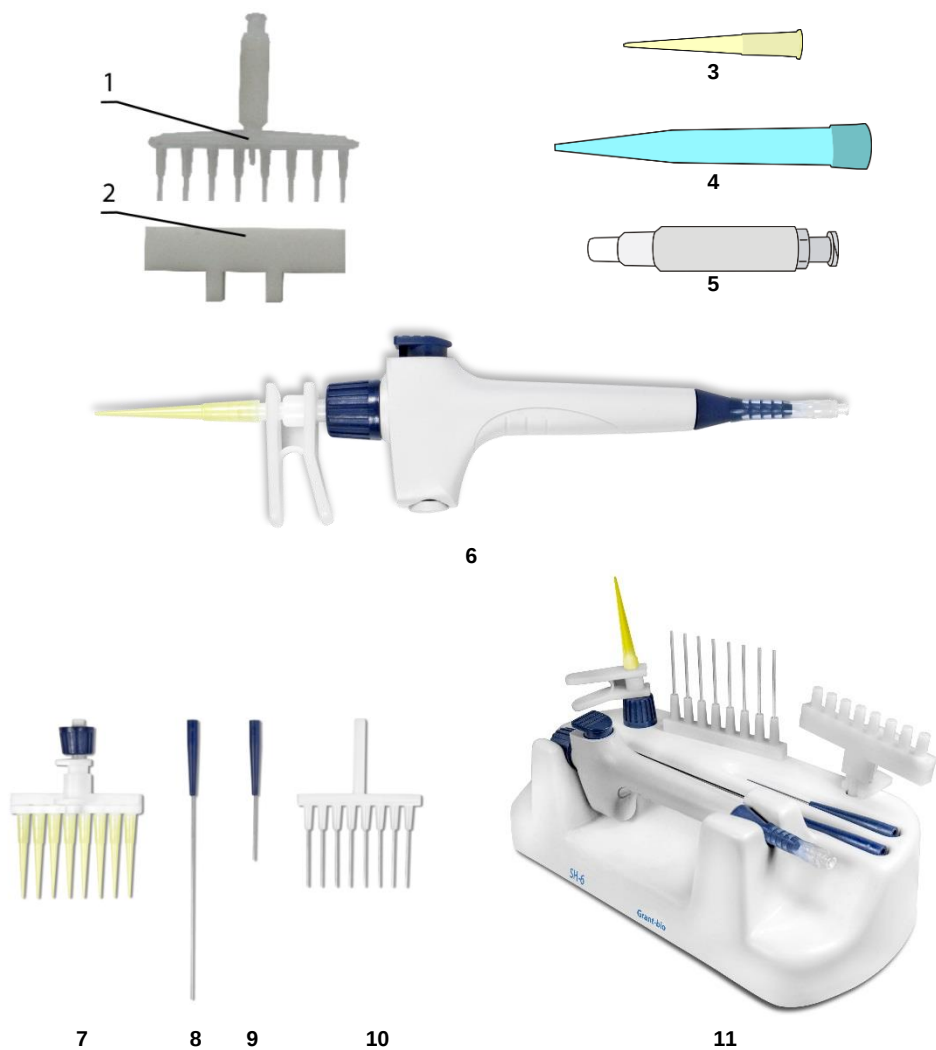


Figure 8. Optional accessories and replacement parts

7. Ordering information

7.1. Models and versions available:

Model	Version
FTA-1	V.4GW
FTA-2i	V.1G01

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

7.2.1. Optional accessories:

Description
MA-8 , 8-channel aspiration tip (fig. 8/1) with holder (fig. 8/2)
HAS-1 , hand operator set (only for FTA-2i). Set includes: Handheld vacuum controller with 1-channel adapter (fig. 8/6), 8-channel adapter (with ejector) for 200 µL tips (fig. 8/7), 1-channel adapter with 125 mm stainless steel pin (fig. 8/8), 1-channel adapter with 40 mm stainless steel pin (fig. 8/9), 8-channel adapter with 35 mm stainless steel pin (fig. 8/10), Stand SH-6 for hand operator parts (fig. 8/11)
Extended tubing (2 m), with fittings and MA-U adapter

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

Description
Hydrophobic filter
Aspiration tip, 200 µL, 1000 pcs. (fig. 8/3)
Aspiration tip, 8 channels, for MA-8 (fig. 8/1)
Trapping flask, 1 L, glass, with lid, inserts and sealing ring
Tubing and fitting set

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

Description
MA-U , universal adapter for 200/1000 µL single use tips (fig. 8/5)
Hydrophobic filter
Aspiration tip, 200 µL, 1000 pcs. (fig. 8/3)
Aspiration tip, 1000 µL, 1000 pcs. (fig. 8/4)
Aspiration tip, 8 channels, for MA-8 (fig. 8/1)
Trapping flask, 2 L, polypropylene, with lid, inserts and sealing ring
Tubing and fitting set
Sensor cable

8. Chemical compatibility

- 8.1. Different aerosols and vapors 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 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. Grant 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) indicates that at ambient temperature and pressure, the material should not be affected.
 - **2** (Good) indicates that the material is slightly affected but not to the point of being unsuitable.
 - **3** (Fair) indicates 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	Polystyrene	4	3	2	1	2	3
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. Guarantee and Service

- 9.1. **Guarantee.** When used in laboratory conditions and according to this Operating Manual, this product is guaranteed for TWO YEARS (excluding items mentioned in the Option-al Accessories table) against faulty materials or workmanship.
- 9.2. **Service.** There are no user-serviceable parts inside the unit. For all maintenance and repairs (except as defined below) return to our service department in the UK or in other countries, our distributor.
- 9.3. **Cleaning and disinfection.**
- 9.3.1. **Cleaning the outside parts.** 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.
- 9.3.2. **Disinfecting the exterior plastic and glass parts.** Use 75% ethanol or DNA/RNA removing solution (e.g., PDS-250). After disinfecting it is necessary to wipe the surfaces dry.
- 9.3.3. **Cleaning silicone and internal parts.** Rinse only with distilled water, no less than 0.5 L.
- 9.3.4. **Hydrophobic filter.** The filter cannot be cleaned and is replaced instead, see 9.5.

9.3.5. Autoclaving.

	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; it deteriorates after frequent autoclaving and should be replaced.

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

9.5. **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.

9.5.1. Changing procedure. Remove the filter (fig. 1/2 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).

9.6. 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 5.7 .
	(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 9.3.3 .
	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.

10. Compliance

EU Declaration of Conformity

All the products covered by this Manual comply with the requirements of the EU harmonised legislation verified using the following standards

Low Voltage Directive (2014/35/EC) for Electrical safety.	LVS EN 61010 Part 1
EMC directive (2014/30/EC) for Electromagnetic compatibility	LVS EN 61326-1
RoHS Directive (Directive 2011/65/EC including 2015/863) for Hazardous substances	LVS EN 50581

UK Declaration of Conformity

All the products covered by this Manual comply with the requirements of UK statutory requirements verified using the following standards.

Electrical Equipment (Safety) Regulations 2016	BS EN 61010 Part 1
Electromagnetic Compatibility Regulations 2016	BS EN 61326-1
The Restriction of the Use of Certain Substances in Electrical and Electronic equipment Regulations 2012	BS EN 50581

Waste Electrical and Electronic Equipment (WEEE)



All the products covered by this Manual are marked with the crossed-out wheeled bin symbol indicating they must not be disposed of with unsorted waste. Safe recycling of WEEE helps conserve natural resources and protect human health.

Grant Instruments complies fully with the UK Waste Electrical & Electronic Equipment (WEEE) regulations 2013. We are a member of the B2B compliance scheme (Scheme Approval Number WEE/MP3338PT/SCH), which handle our WEEE obligations on our behalf.

Grant Instruments have been issued with a unique registration number by the Environmental Agency, this reference number is WEE/GA0048TZ.

For information regarding WEEE collections in the UK please contact our B2B Compliance Scheme directly on 01691 676 124 or www.b2bcompliance.org.uk

In the EU, Grant Instruments complies with WEEE Directive 2012/19/EU. Contact your local equipment supplier for WEEE collections.

REACH Regulations

This product does not contain any Substances of Very High Concern (SVHCs) at greater than 0.1% that have to be identified in accordance with Regulation (EC) No 1907/2006 and therefore does not have an entry in the SCIP database.

Grant-bio

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