HandyStep® touch
HandyStep® touch *S*

Gebrauchsanleitung · Operating Manual · Mode d'emploi
Instrucciones de manejo · 说明书

BRAND

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BRAND GMBH + CO KG
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Patents:
HandyStep® touch is made in Germany under BRAND patents and patents application:
EP1177831B1
US6,841,129B2
DE102017103745A1
DE202017101007U1
WO2018/153986A2
DE102017103748A1
DE202017101009U1
WO2018/153830A1
DE102017103744A1

The use of dispenser tips with a specific coding on the plunger head is subject to the BRAND patents USD825,750S and CN304542771S, CH143377 as well as European Design Patents EM003763564, EM004045847

U.S. Patents: www.brand.de/ip
Link in Quick Response Code: www.brand.de/ip

Operating Manuals
Link in Quick Response Code: www.brand.de/om

Standard Operating Procedures
Link in Quick Response Code: www.brand.de/sop

Language Contents

EG-Konformitätserklärung
EC-Conformity Declaration

Das bezeichnete Gerät entspricht den einschlägigen Anforderungen der aufgeführten EG-Richtlinien und Normen. Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller. Bei einer nicht mit uns abgestimmten Änderung des Gerätes verliert die Erklärung ihre Gültigkeit.

The device named below fulfills the relevant fundamental requirements of the EC directives and standards listed. This declaration of conformity is issued under the sole responsibility of the manufacturer. In case of unauthorized modifications to the device, the declaration becomes invalid.

Gerätebezeichnung / Device name:	HandyStep® touch/ HandyStep® touch S (Kennnummer/ Identification number 705200 - 705210)
Gerätetyp / Product Type:	Mehrfachdispenser/ Multiple delivery dispenser *
*Zubehör/ Supplied Accessories:	Ladeständer/Charging stand: not covered by the defined cert #. Universalnetzteil/ Universal adapter: not covered by the defined cert #.
Hersteller / Manufacturer:	BRAND GMBH + CO KG
Adresse / Address:	Otto-Schott-Str. 25 97877 Wertheim - Germany

Der oben beschriebene Gegenstand der Erklärung erfüllt die einschlägigen Harmonisierungsrechtsvorschriften der Union: The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:				**Harmonisierte Normen: Harmonized standards:**
RoHS	2011/65/EU incl. 2015/863/EU	ABl. L 174 vom / dated 1.7.2011 S. / page 88		DIN EN IEC 63000: 2019-05
RED	2014/53/EU	Article 3.1a:		Safety and Health: EN 61010-1: 2010 EN 62311: 2008
		Article 3.1b:		EMC: EN 301489-1 (V2.1.1) EN 301489-3 (V2.1.1) EN 61326-1: 2013
		Article 3.2: Fequency: 110 kHz -205 kHz Communication 2 kHz (AM)	Power <3.5 W	RF Spectrum Efficiency EN 303417 (V1.1.1)

The NOTIFIED BODY: EMCCons Dr. RAŠEK GmbH & Co. KG, Stoernhofer Berg 15, 91364 Unterleinleiter-Germany; EU Identification Number: 0678; performed a conformity assessment according Annex III, Module B and issued the EU Type # Examination Certificate: G111071L

Wertheim 22.07.2019 / July 22 2019

Hans-Walter Kern
Geschäftsführer Logistik und Produktion
Managing Director Logistics and Production

06.01.02.01

i.V. Dr. Antonio Romaguera
Produktmanagement
Product Management

BRAND

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Harmonisierungsvorschriften, beinhaltet jedoch keine Zusicherung von Eigenschaften.
This document declares the accordance with the named harmonized regulations, but does NOT assure specific properties.

DECLARATION OF CONFORMITY – China RoHS 2

BRAND GMBH + CO KG has made reasonable efforts to ensure that hazardous materials and substances may not be used in BRAND products.
In order to determine the concentration of hazardous substances in all homogeneous materials of the subassemblies, a “Product Conformity Assessment” (PCA) procedure was performed. As defined in GB/T 26572 the “Maximum Concentration Value” limits (MCV) apply to these restricted substances:

- Lead (Pb): 0.1%
- Mercury (Hg): 0.1%
- Cadmium (Cd): 0.01%
- Hexavalent chromium (Cr(+VI)): 0.1%
- Polybrominated biphenlys (PBB): 0.1%
- Polybrominated diphenyl ether (PBDE): 0.1%

Environmental Friendly Use Period (EFUP)

EFUP defines the period in years during which the hazardous substances contained in electrical and electronic products will not leak or mutate under normal operating conditions. During normal use by the user such electrical and electronic products will not result in serious environmental pollution, cause serious bodily injury or damage to the user’s assets.
The environmental Friendly Use Period for BRAND instruments is 40 years.

此表格是按照SJ/T 11364-2014中规定所制定的。
This table is created according to SJ/T 11364-2014.

MATERIAL CONTENT DECLARATION FOR BRAND PRODUCTS							
	有毒有害物质或元素 Hazardous substances						
部件名称 Part name	铅 Pb	汞 Hg	镉 Cd	六价铬 Cr(+VI)	多溴联苯 PBB	多溴二苯醚 PBDE	环保期限标识 EFUP
包装 / Packaging	O	O	O	O	O	O	
塑料外壳 / 组件 Plastic housing / parts	O	O	O	O	O	O	
电池 / Battery	O	O	O	O	O	O	
玻璃 / Glass	O	O	O	O	O	O	
电子电气组件 Electrical and electronic parts	X	X	X	O	O	O	
金属外壳 / 组件 Metal housing / parts	X	O	O	O	O	O	
电机 / Motor	X	O	O	O	O	O	
配件 / Accessories	X	O	O	O	O	O	

注释：此表格适用于所有产品。以上列出的元件或组件不一定都属于所附产品的组成。
Note: Table applies to all products. Some of the components or parts listed above may not be part of the enclosed product.

O: 表示该有毒有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。
O: Indicates that the above mentioned hazardous substance contained in all homogeneous materials of the part is below the required limit as defined in GB/T 26572.

X: 表示该有毒有害物质至少在该部件某一均质材料中的含量超出GB/T 26572规定的限量要求。
X: Indicates that the above mentioned hazardous substance contained in at least one of the homogeneous materials of this part is above the required limit as defined in GB/T 26572.

除上表所示信息外，还需声明的是，这些部件并非是有意用铅 (Pb), 汞 (Hg), 铬 (Cd), 六价铬 (Cr(+VI)), 多溴联苯 (PBB) 或多溴二苯醚 (PBDE) 来制造的。
Apart from the disclosures in the above table, the subassemblies are not intentionally manufactured or formulated with lead (Pb), mercury (Hg), cadmium (Cd), hexavalent chromium (Cr+VI), polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE).

Products manufactured by BRAND may enter into further devices or can be used together with other appliances. With these third party products and appliances in particular, please note the EFUP labeled on these products. BRAND will not take responsibility for the EFUP of those products and appliances.

Place, date: Wertheim, 25/02/2019

Hans-Walter Kern
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Josef Pfohl
(Quality Managment)

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BRAND®

Table of Contents

Scope of supply

- HandyStep® touch device
- USB cable
- Universal power adapter
- Retaining clips for rack mount
- 5 PD-Tips with 12.5 ml, 5 ml, 2.5 ml, 1.25 ml and 0.5 ml
- Operating manual with declaration of conformity
- Certificate of Performance
- Quick Start Guide

Terms of use

- Please carefully read the operating manual before using the device for the first time.
- The operating manual is part of the device and must be kept in an easily accessible place.
- Be sure to include the operating manual if possession of this device IS transferred to a third party.
- Up-to-date versions of the operating manual are available at: www.brand.de.

Hazard levels

The following signal words identify possible hazards:

Signal word	Meaning
DANGER	Will lead to serious injury or death.
WARNING	May lead to serious injury or death.
CAUTION	May lead to minor or moderate injuries.
NOTICE	May lead to property damage.

Symbols

Symbol	Meaning	Symbol	Meaning	Symbol	Meaning
	Danger area		Biohazard		Property damage warning
	Electric voltage		Explosive materials		Do not dispose of in household waste
	Hot surface		Magnetic fields	—	—

Icon

Icon	Meaning	Icon	Meaning
1. **Task**	Indicates a task.	➢	Indicates a condition.
a., b., c.	Indicates the individual steps of a task.	⇨	Indicates a result.

Terms

The term “device” is used to refer to both the HandyStep® touch and the HandyStep® touch S.
The term “tips” is used to refer to both PD tips with type coding and compatible dispenser tips.

Safety regulations

General safety regulations

Please read carefully.
This device can be used in combination with hazardous materials, work processes and equipment. However, the operating manual cannot cover all of the safety issues that may occur in doing so. It is the user’s responsibility to ensure compliance with the safety and health regulations and, to specify the corresponding restrictions before use. Every user must read and observe this operating manual before using the device.

1. Follow the general hazard instructions and safety regulations, e.g.wear protective clothing, eye protection and protective gloves.
2. When working with infectious or hazardous samples, all appropriate regulations and precautions must be adhered to.
3. Follow the instructions given by the reagent manufacturer.
4. Do not operate the device in potentially explosive atmospheres.
5. Do not pipette highly flammable media.
6. Use the device only for pipetting liquids and only within the defined Operating Exclusions and Limitations. Observe the operation exclusions, see section *„Operating Exclusions“ → 57*. In case of doubt, contact the manufacturer or dealer.
7. Always perform work in a manner that does not endanger the user or other people. Avoid splashing. Use only suitable vessels.
8. When a tip is inserted, it is automatically locked in place. When inserting a previously used tip, ensure that it does not contain any residual liquid.
9. Press the STEP button of the device only when it can be ensured that the dispensed liquid does not pose a risk.
10. Avoid touching the tip opening when working with aggressive media.
11. Never use force on the instrument.
12. Use only original accessories and original replacement parts. Do not make any technical modifications. Disassembly of the device is not permitted.
13. Always check that the device is in proper working condition before use. If there is a sign of a device malfunction, stop pipetting immediately and follow the instructions in chapter *„Troubleshooting“ → 86*. Contact the manufacturer, if necessary.

Battery

1. Use only the USB cable included in delivery of the device. If other cables are used, damage to the device and charging stand can occur.
2. The device and power adapter may become very hot when charging. Do not cover these devices.
3. If the device overheats in the area of the charging socket, the USB cable could be defective; replace the USB cable with a new OEM cable.
4. In applications that require a lot of battery power, the device can occasionally become very hot (e.g. when working with high-volume tips). In this case, pause pipetting and only resume once the device has cooled.
5. Never use non-original or damaged power supplies, charging stands or batteries. Non-approved power supplies or cables can cause the battery to explode or lead to damage of the device.

Inductive charging

1. Use only the original charging stand for inductive charging.
2. During inductive charging, do not place electrically conductive or magnetic objects between the device and the charging stand.
3. The device, charging stand and power adapter may become hot during inductive charging. Do not cover these devices.
4. Do not operate the charging stand outside.
5. People with medical implants are advised to consult with a doctor before using the charging stand, in order to determine whether the charging stand poses a potential health risk. Please also observe the applicable regulations regarding the handling of medical implants and radio wave sources (charging stand).
6. Other devices can be affected during the inductive charging process if they are in close proximity to the charging stand.
7. Radio waves can be emitted during inductive charging. If the device is not used as described in the operating manual, harmful interference cannot be excluded.

Touchscreen display

The touchscreen display can crack if exposed to extreme pressure. Discontinue use of a device with a cracked display and send it in for repair. Apply tape to the display before sending. Please also observe the transport regulations, see *„Repairs“ → 94*.

Usage limits

See *„Usage limits“ → 89*

Operating Exclusions

- When the device is operated properly, the pipetted liquid comes in contact only with the tip and not with the device itself.
- The user is responsible for checking the suitability of the device for the intended use. This presumes that the user is sufficiently trained for the tasks described in this instruction manual.
- Do not use the device to pipet liquids that corrode polypropylene, polyethylene (piston) or polycarbonate (housing).
- Avoid aggressive vapors (risk of corrosion).
- The device must not be used for oxidizing acids since metal parts and the electronics can be corroded.
- If the device is modified by the user, it must no longer be operated. All modifications must be expressly authorized by the manufacturer.

Materials used

See *„Materials used“ → 89*.

Type plate and marking

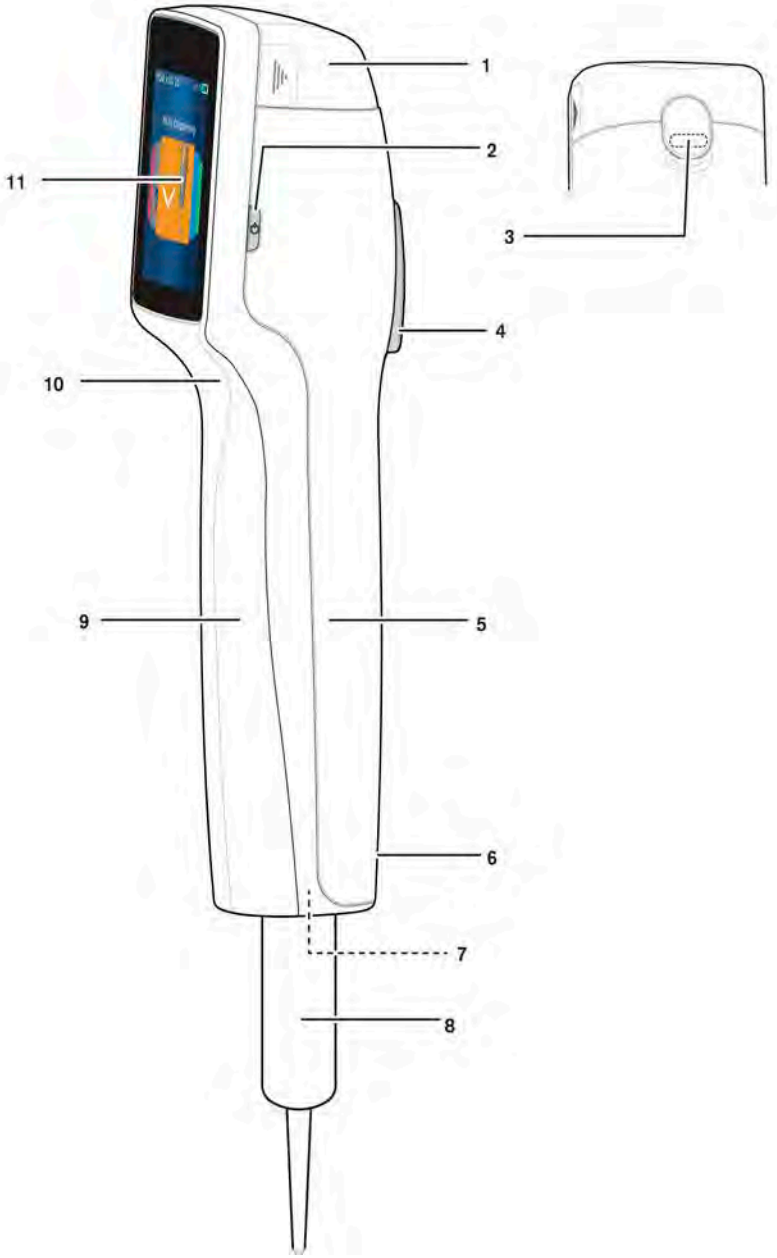
See *„Technical data“ → 88*

Transport and storage

The device, battery, power adapter and charging stand must be stored and transported in dry conditions; avoid exposure to direct sunlight.

Intended use

The HandyStep® touch and the HandyStep® touch S are microprocessor-controlled, battery-powered hand dispensers operated by touchscreen. BRAND precision dispenser tips (PD tips) with type coding are automatically recognized by the device according to their nominal volumes and allow quick volume selection. Compatible dispenser tips from other manufacturers can also be used after manually selecting the corresponding volume.


1
2
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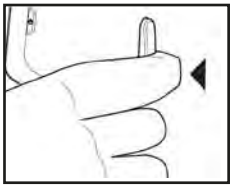
11

Diagram of functions and controls:

1. Battery compartment cover
2. Power button
3. Multifunction jack (USB)
4. STEP button
5. Handle piece, rear side
6. Markings
7. Tip adapter
8. Precision dispenser tip
9. Handle piece, front side
10. Grip recess
11. Touchscreen display

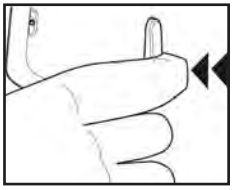
STEP button

Depending on the mode, the STEP button initiates liquid dispensing and liquid aspiration. The device outputs messages to the touchscreen display on how to operate the STEP button. Operation of the STEP button can vary depending on which operating mode you have chosen. The entire surface of the STEP button can be pressed. The following actions can be distinguished:



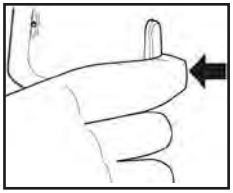
Briefly pressing the STEP button (“click”).

Example application:
Aspirating liquid, dispensing liquid, interrupting liquid aspiration (mode-dependent).



Briefly pressing the STEP button twice (“double click”)

Example application:
Refilling a tip.



Pressing and holding the STEP button

Example application:
Completely emptying a tip, automatically dispensing liquid (in Auto-Dispensing mode), manual titrating (in Titrating mode).

⚠ WARNING

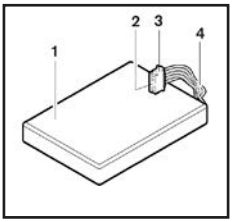
Damaged or incorrect battery

Possible personal injury

- Use only the original battery.
- Use only the original power adapter.
- Do not puncture, bend, ignite, compress, short circuit or overheat.
- Do not touch a leaking battery.
- Dispose of damaged batteries in accordance with legal requirements.
- Do not store or operate the battery at a temperature above 60 °C (140 °F).
- Follow the instructions on the battery.

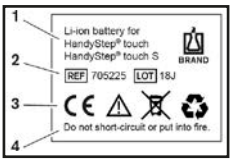
NOTICE

- Charge the battery completely before the first use or if you have not used the device for an extended time. This prevents premature wear of the battery.
- Replace the battery after its service life has been exceeded (~ 3 years), in case of deformation or in the event of extremely short charging cycles and a resulting shorter duration of use.
- When storing the device for extended periods, disconnect the battery plug.



Components

1. Battery
2. Contacts
3. Reverse polarity protected plug
4. Cable

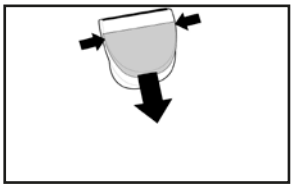


Label, rear side

1. Battery type and use
2. Part identification
3. CE marking
4. Warning label

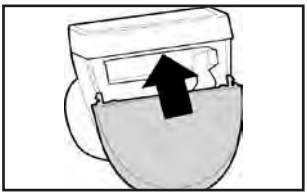
Connecting the battery

a.



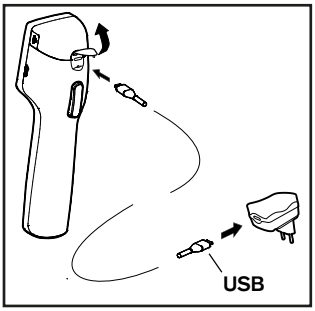
b.

c.



Open the cover and connect the battery's reverse polarity protected plug firmly and straight into the socket. The device switches on when you have connected the battery. Then close the cover.

Charging the battery



Indicators on the display


Battery is ready for operation.


Battery is almost empty.


Battery is charging.

Exiting Standby mode

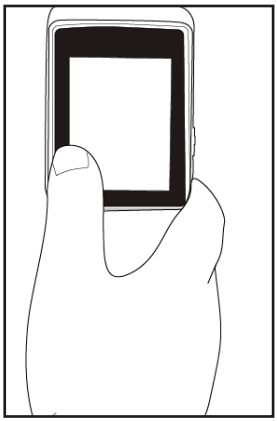
If the touchscreen display remains black when the battery is connected, the device is in Standby mode. To exit Standby mode, perform one of the following actions:

- Press the power button.
- Press the STEP button.
- Insert a tip.
- Plug in the USB cable.
- Place the device in the charging stand.

Working while charging

It is possible to operate while the device is charging. To do this, plug the USB cable into the multifunction jack on the device. The charging time is prolonged as a result. Working with the USB cable plugged-in is only possible if the battery is connected to the device.

Controls



Touchscreen display

Operate the touchscreen display with your thumb to set the required values.

STEP button

Operate the STEP button with your index finger.

Power adapter and charging adapter

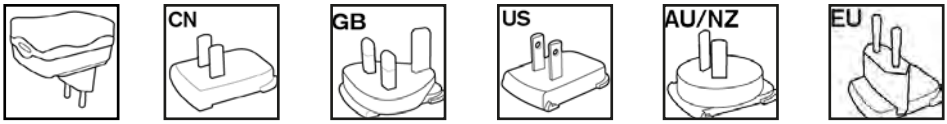
⚠ WARNING

Possible personal injury caused by damaged or incorrect power adapter

- Use only the original universal power adapter and the corresponding charging adapter.
- Do not cover the power adapter during use.
- Do not use a damaged power adapter.

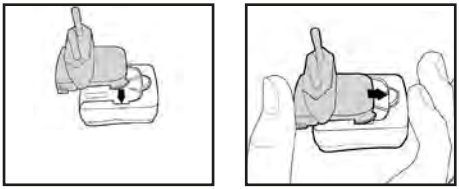
Power adapter

Charging adapter

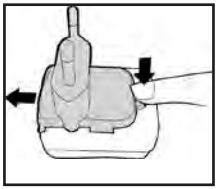


Connecting the power adapter

a. b.



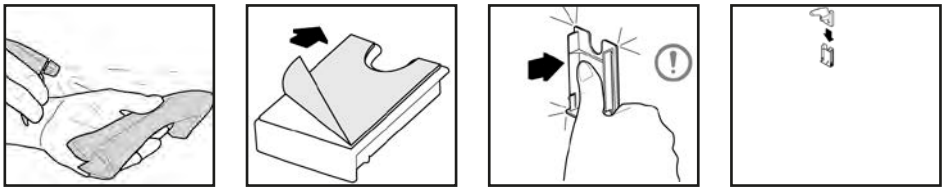
Detaching the charging adapter from the power adapter



Device holder

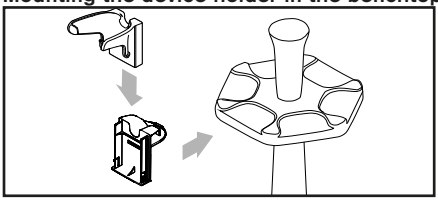
Mounting the device holder with tape

a. b. c. d.



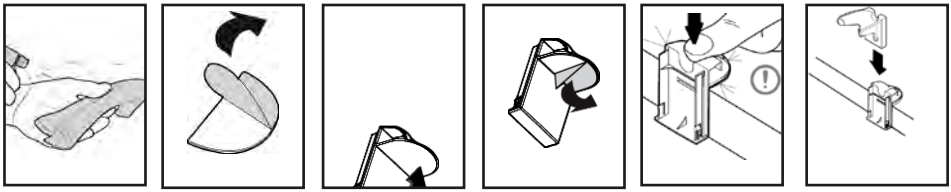
Clean the mounting surface and the rear side of the holder with a suitable cleaner (no moisturizing household cleaners) and a lint-free cloth, allowing it to dry thoroughly. Peel off the protective film from the adhesive strips, and using your thumb **firmly** press the rear side of the holder onto the cleaned surface. Wait **72 h** before first use. Slide the universal holder onto the rear side of the holder.

Mounting the device holder in the benchtop rack



Mounting the device holder to the edge of the racks

a. b. c. d. e. f.



Clean the mounting surface and the rear side of the holder with a suitable cleaner (no moisturizing household cleaners) and a lint-free cloth, allowing it to dry thoroughly. Peel off the protective film from one side of the adhesive tape and stick it onto the rear side of the holder. Then peel off the protective film from the other side and stick the rear side of the holder onto the desired mounting edge. Using your thumb, press the rear side of the holder **firmly** onto the tape. Wait **72 h** before first use. Slide the universal holder onto the rear side of the holder.

Charging stand (accessory)

⚠ WARNING

Possible personal injury caused by induction

- People with medical implants (e.g. pacemakers, pump implants) must maintain a safe distance. The Health Industry Manufacturers Association recommends that pacemakers maintain a distance of at least 15 cm from the radio wave source (charging stand).
- People with medical implants must consult a doctor before using the charging station.
- If you suspect your implant is affected, increase the distance away from the charging station and consult a doctor.

NOTICE

Inductive charging via the charging stand

The charging stand can charge inductively as soon as the power adapter is connected. Do not place any magnetic data media (e.g. credit cards) near the charging stand.

Using the charging stand

The charging stand requires the power adapter and the USB cable of the HandyStep® touch or the HandyStep® touch S.

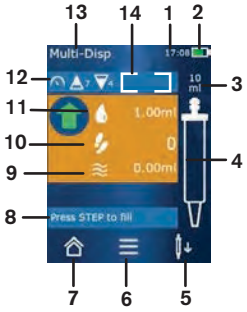
Charging stand indicators

- Charging stand light is blue: the battery is charging.
- Charging stand light is off: the battery is charged or there is no device in the charging stand.
- Charging stand lights up intermittently: the battery cannot charge. Place the device in the charging station again.

Holding stand

The holding stand is used to safely store the device. The holding stand does not function as a charger.

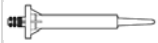
Layout of the touchscreen display (work area)

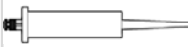


1. Time
2. Charging status
3. Nominal volume of the inserted tip
4. Fill level of the tip
5. Eject ( ) or insert ( ) tip.
6. Open options
7. Open main menu (Home)
8. Information field
9. Available volume
10. Available STEPs in relation to the available volume
11. STEP volume
12. Aspiration and dispensing speed
13. Mode name
14. Area for specific functions.

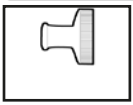
PD-Tips (precision dispenser tips)

The device automatically recognizes the coded tips.

Volume [ml]	Order no. Non-sterile	Pack of [pieces]	Order no. BIO-CERT	Pack of [pieces]	Display
0.1	705700	100	705730	100	
0.5	705702	100	705732	100	
1	705704	100	705734	100	
1.25	705706	100	705736	100	
2.5	705708	100	705738	100	
5	705710	100	705740	100	

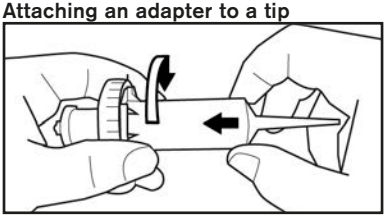
Volume [ml]	Order no. Non-sterile	Pack of [pieces]	Order no. BIO-CERT	Pack of [pieces]	Display
10	705712	100	705742	100	
12.5	705714	100	705744	100	
25	705716	50+1 adapter	705746	25+1 adapter	
50	705718	25+1 adapter	705748	25+1 adapter	
Set PD tips *II* 0.5 ml ... 12.5 ml	705720	20 per set	—	—	—

Adapter suitable for 25 ml and 50 ml PD tips



Volume [ml]	Order no.	Pack of	Feature
25 ml and 50 ml	702398	10	Non-sterile
	702399	5	BIO-CERT®

Attaching an adapter to a tip



Overview of modes

NOTICE

The device saves the settings in each mode, so that the next time the mode is opened the previously activated settings can be used again. Settings can be saved in a list of favorites.

Modes	HandyStep® touch	HandyStep® touch S
Settings	+	+
Multi-Dispensing (MULTI-DISP)	+	+

Modes	HandyStep® touch	HandyStep® touch S
Auto-Dispensing (AUTO-DISP)	+	+
Pipetting (PIP)	+	+
Sequential Dispensing (SEQ-DISP)	–	+
Multi-Aspiration (MULTI-ASP)	–	+
Titration	–	+
Favorites	+	+

Modes in main menu	Description
	**Settings** In Settings mode the device settings can be changed, e.g. time, display brightness. See *„Settings" → 73*.
	**Multi-Dispensing** In Multi-Dispensing mode, an aspirated volume is gradually dispensed again. Example application: dividing an aspirated volume into STEPs. See *„Multi-Dispensing (MULTI-DISP)" → 75*.
	**Auto-dispensing** In Auto-Dispensing mode, a volume is aspirated and gradually automatically dispensed over a previously set time interval. Example application: automatically dividing an aspirated volume into numerous STEPs. See *„Auto-Dispensing (AUTO-DISP)" → 76*.
	**Pipetting** In Pipetting mode, a previously selected volume is aspirated once and dispensed again. See *„Pipetting (PIP)" → 79*.
	**Sequential Dispensing** In Sequential Dispensing mode, an aspirated volume is dispensed over several, preset STEPs of varying volume. Example application: dilution series. See *„Sequential Dispensing (SEQ-DISP)" → 80*.
	**Multi-Aspiration** In Multi-Aspiration mode, several STEPs are collected in a tip and aspirated and dispensed as a total volume. Example application: removing residual volumes. See *„Multi-Aspiration (MULTI-ASP)" → 82*.

Modes in main menu	Description
	**Titrating** In Titrating mode, a single volume is aspirated and either quickly or slowly dispensed. The dispensed volume can be read on the display. Example application: determining pH values. See *„Titration" → 84.*
	**Favorites** In Favorites, you can save frequently used settings. You can reopen these favorites using this menu.

Operation

⚠ WARNING

Possible damage to health caused by pathogenic liquids or infectious germs.

- ➢ Wear appropriate protective gear.
- ➢ When handling the above-mentioned media, please observe the appropriate regulations, safety data sheets, the protection level of your laboratory and safe working measures.

NOTICE

Device damage caused by incorrect use.

- ➢ Submerge only the tip into a liquid.
- ➢ If the device comes into contact with a liquid, clean it immediately.
- ➢ Hang the device upright in the holders provided.

Symbol reference

See *„Symbol reference" → 97.*

Device navigation

See *„Device navigation" → 96.*

Switching on the device

a. Press the power button.

⇨ *The start screen appears briefly.*

⇨ *The device moves the tip adapter into working position. An inserted tip is ejected.*

⇨ *The main menu opens.*

Switching off the device

NOTICE

Device behavior in unusual operating conditions

In unusual operating conditions (The system is no longer responding. The battery is damaged.), the device restarts itself.

- ➢ A message then appears stating that the device cannot start until the tip has been ejected.
- ➢ Hold the device over a appropriate vessel. The tip is emptied automatically and ejected when you acknowledge the message. After this, the device starts normally.

a. Empty and eject the tip, see *„Switching to emtying“ → 71* and *„Ejecting the tip“ → 72*.

b. Press the power button.

⇨ *A message appears asking if you would like to switch off the device. Confirm by tapping ✓. Cancel by tapping X.*

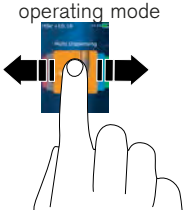
⇨ *If the power button is pressed for approx. 1 s, the device goes into standby. Longer than 1 s: the device switches off.*

c. Hang the device upright in the holders provided. If the device is placed in the charging stand, charging begins. In doing so, the LED of the charging stand lights up.

Opening an operating mode

Select an operating mode from the main menu. The actual task (e.g. dispensing) is carried out in the operating mode.

a. Swipe to select the operating mode



b. Open the operating mode by tapping once

⇨ The operating mode appears:

Exiting an operating mode

a. In the operating mode, tap the ⌂ button.

⇨ *The main menu appears.*
If there is any liquid left in the tip, you will be asked if you would like to drain the tip or continue working in another operating mode with the remaining volume.

Opening Context Help

The Context Help window helps you answer questions about functionality in the respective operating mode or menu.

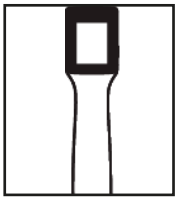
Open Context Help with ? .
To scroll through text in the Context Help window, swipe up or down.
Close Context Help with ✓.

Inserting tips

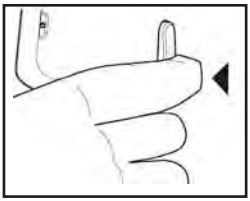
Inserting BRAND PD tips

➢ a. b. ⇨

The operating mode has been selected



Insert the tip.



Press the STEP button. The tip is connected to the device and the volume is set.

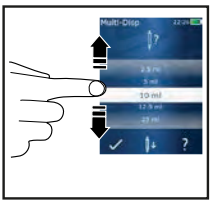
The operating mode appears again.
The liquid can be aspirated.

Inserting compatible third-party tips (without coding)

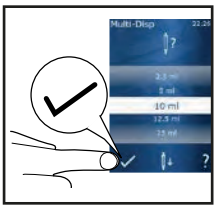
➢ a. b. c. ⇨

The operating mode has been selected

Insert the tip.



Set the volume.



Confirm the selection by tapping the ✓ button.

The operating mode appears again.
The liquid can be aspirated.

Inserting tips without an operating mode selected

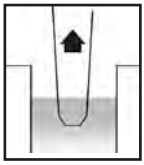
You can also insert tips before you select an operating mode. In order to set the volume or to have the PD-Tip automatically recognized, an operating mode must be selected.

Aspirating liquid

Fill the tip if empty

Condition

- ➢ An operating mode has been selected.
- ➢ On the touchscreen display, the message ‚Press STEP to fill' appears.



a. Hold the tip vertically in the vessel.
b. During aspiration, make sure that the tip opening is always covered by liquid, in order to prevent air bubbles in the tip.
c. Press the STEP button.
⇨ The tip is filled until the set volume or the nominal volume is reached.

NOTICE

Reverse stroke (play compensation)

During filling, the device performs a reverse stroke, which guarantees accuracy of the STEP volume setting. This way, the first STEP does not have to be discarded.

Interrupting filling of the tip

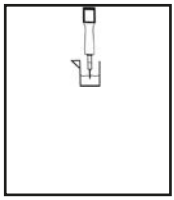
a. To interrupt filling of the tip, press the STEP button.
⇨ *Filling is suspended immediately. You can dispense the aspirated volume again with the STEP button, drain the tip or resume the filling process.*

Filling a partially emptied tip

a.

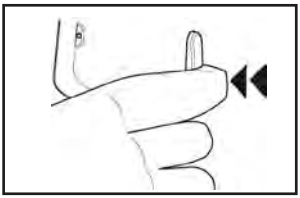
Switch to refill.

b.



Hold the tip vertically in the liquid.

c.



Press the STEP button 2 times in quick succession. The liquid is aspirated until the nominal volume has been reached. To stop filling the tip, press the STEP button.

⇨

The operating mode appears again. You can continue dispensing.

NOTICE

Reverse stroke (play compensation)

During filling, the device performs a reverse stroke, which guarantees accuracy of the STEP volume setting. This way, the first STEP does not have to be discarded.

Automatically switching to filling

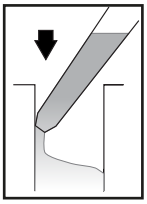
After dispensing all of the requested STEPs, liquid with a volume of less than 1 STEP remains in the tip (residual volume). The device automatically switches into the mode, in which you can fill the tip again.

a. Press the STEP button 2 times in quick succession.

⇨ *Liquid is aspirated until the tip is completely filled.*

Dispensing liquid

Dispensing volumes or individual STEPs



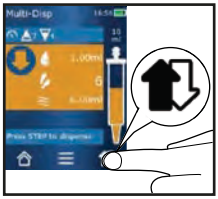
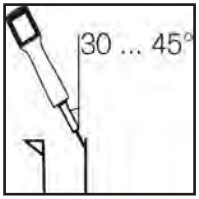
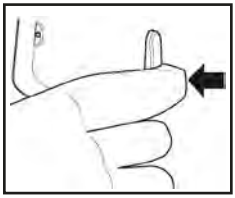
Condition

➢ An operating mode has been selected.
➢ A volume has been aspirated.

a. Place the tip on the vessel wall.
b. Hold the device at an angle of 30 ... 45° to the vessel wall.
c. Press the STEP button.
⇨ Depending on the operating mode selected, either one STEP or the entire volume is dispensed.

To stop dispensing, tap on the X button.

Switching to emtying

➢	a.	b.	⇨
			
Switch to refill.	Hold the device at an angle of 30 ... 45° to the vessel wall.	Press and hold the STEP button. Liquid is dispensed; the tip is emptied completely.	The operating mode appears again. You can aspirate new liquid or eject the tip.

Discarding the residual volume

After dispensing all of the available STEPs, liquid with a volume of less than 1 STEP remains in the tip. The device automatically switches into the mode, in which you can discard the remaining volume.

a. Press and hold the STEP button.

⇨ *The tip is emptied completely.*

Ejecting the tip

Condition

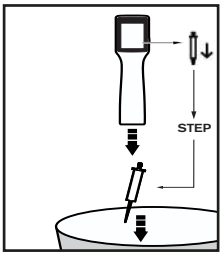
➢ You have emptied the tip

a. Hold the device with the tip over the waste bin.

b. Tap on , then press the STEP button.

⇨ The tip is ejected.

⇨ The device moves into tip loading position.



Switching the operating mode with a filled tip

You can switch from one operating mode to another via the button or via operating mode options (specific operating modes only). In doing so, the device saves the activated settings (e.g. STEP volume, speed).
If you would like to switch to another operating mode with a filled tip via the button, you will be asked if would like to empty the tip before switching.

Setting the volume

Condition

➢ An operating mode has been selected.

a. Tap on the button.

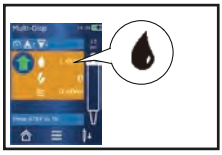
⇨ The volume setting appears.
Set the volume by selecting a volume from the range of values.

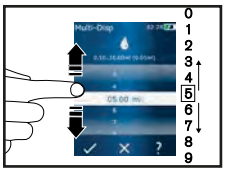
b. Swipe to the left or right to change the position.

c. Swipe upward or downward to set the value.

d. Confirm the setting by tapping the ✓ button. Discard the setting by pressing the **X** button.

⇨ The operating mode appears.





Setting the aspiration and dispensing speed

Adjust the speed to your respective application.

Condition

➢ An operating mode has been selected.

a. Tap on the ▲ ▼ button.

⇨ The speed setting appears.

b. Set the aspiration and dispensing speed by selecting a speed from the value range 1 ... 8.
1 = slow, 4 = medium, 8 = fast
You can set different speeds for aspiration and dispensing.

c. Confirm the selection by pressing the ✓ button. Discard the setting by pressing the **X** button.

➢ The operating mode appears again.

NOTICE

The device saves the speed settings for each tip size and mode. The speed settings can be adjusted again in the operating mode. By doing this, however, you change the previous speed setting for the tip size being used.

Settings

Configure your device for daily usage. Tap on 'Settings' in the main menu.

Language

Set the display language and the help language. The available languages are German, English, French, Spanish and Chinese.

Device

Set the device name. To select characters, drag these to the white bar with your index finger. To change position, swipe to the left or right. The device name can consist of letters, numbers and special characters.

To add uppercase letters, tap on the ABC button.

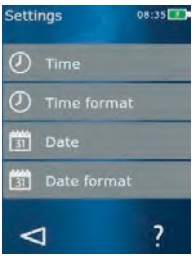
To add lowercase letters, tap on the abc button.

To add numbers and special characters, tap on the 123 button. The following special characters are available: plus, minus, underscore, comma, period, space (between the number 9 and minus)

Date / time

Set the date, time and the time and date format.

To exit this function, tap on the ◁ button.



The following abbreviations describe the time and date formats (value range in parentheses):

hh (00 ... 23)	h (0 ... 23)	Hour
mm (00 ... 59)	m (0 ... 59)	Minute
DD (01 ... 31)	d (1 ... 31)	Day
MM (01 ... 12)	M (1 ... 12)	Month
YYYY (2019 ... 2050)	YY (19 ... 50)	Year

Display & energy

'Brightness'	Adjust the brightness level via the switch.
'Display Time-out'	To conserve energy, set the amount of time before the display times out. The following values can be set: 30 s, 1 min, 2 min, 5 min. When the device has been idle for the set time, the display dims. The set time expires. The device then goes into Standby mode. Ending timeout, see *„Exiting Standby mode"* → *61*
'Auto Power Off'	Set whether the device shuts off automatically after 10 minutes.

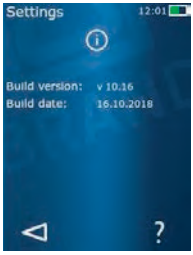
Sounds

Turn sounds (system/STEP button) on/off via the switch.

Firmware information (info/about)

Information about the firmware of the device can be found via this menu item.

The 'Build version' is the firmware version.
The 'Build date' is the date the firmware was created.



Regulatory notes

Information about approvals can be found via this menu item.

Calibration

Set the date of the next calibration.

Factory settings

The device can be reset to the factory settings in this menu item.

Multi-Dispensing (MULTI-DISP)

For information on the function of this mode, see *„Overview of modes“ → 65*. For information on setting the volume, speed, and other operating steps found in all modes, see *„Operation“ → 67*.

Aspirating liquid

Condition

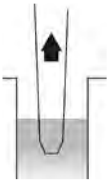
➢ The STEP volume has been set via the button.

a. Hold the tip vertically in the vessel. During aspiration, make sure that the tip opening is always covered by liquid, in order to prevent air bubbles in the tip.

b. Press the STEP button. The device aspirates the liquid until the set volume or the nominal volume is reached.

⇨ The icon displays the number of possible STEPs.

⇨ The ≋ icon displays the available volume.



Stopping and resuming liquid aspiration

Stopping liquid aspiration

a. To stop liquid aspiration, briefly press the STEP button.

Resuming liquid aspiration

a. Tap on the button.

b. Press the STEP button 2 times in quick succession.

⇨ *The device aspirates liquid.*

Dispensing liquid

Condition

➢ See *„Dispensing liquid“ → 71*

⇨ After pressing the STEP button, the number of STEPs to be dispensed ( ) decreases.

Handling residual volumes

For information on handling residual volumes, see *„Switching to emtying“ → 71* and *„Aspirating liquid“ → 70*.

Presetting the STEP count

See Options > ‘Preset Step Count’.

Options

a. In the operating mode, tap on the symbol .

⇨ *The Options menu appears.*

Option	Meaning
Favorites	Add active settings to Favorites. You can open these again from the main menu under Favorites.
‘Preset Step Count’	Preset the STEP count.
‘Go To Auto-Disp’	Switch to Auto-Disp mode. The volume set in Multi-Disp mode is also set in Auto-Disp mode.
‘Help Work Mode’	Shows the help text for the mode.

Auto-Dispensing (AUTO-DISP)

For information on the function of this mode, see *„Overview of modes“ → 65*. For information on setting the volume, speed, and other operating steps found in all modes, see *„Operation“ → 67*.

Automatically dispensing liquid

Condition

➢ You have set the pause time (an interval between liquid dispensing steps) manually or automatically.

a. Press and hold the STEP button.

⇨ *Liquid is dispensed automatically, as long as the STEP button is held down or as long as enough liquid is present in the tip.*

⇨ *While liquid is being dispensed, the pause time counts down on the touchscreen display.*

b. On the touchscreen display, you see the remaining STEPs.

Optimizing the dispensing duration

The liquid dispensing duration consists of the dispensing interval that you define and the dispensing speed. To optimize liquid dispensing, you adjust both parameters.

- For the dispensing speed, see *„Setting the aspiration and dispensing speed“ → 73.*
- *For the dispensing interval, see „Setting the pause time manually“ → 77.*

Setting the pause time manually

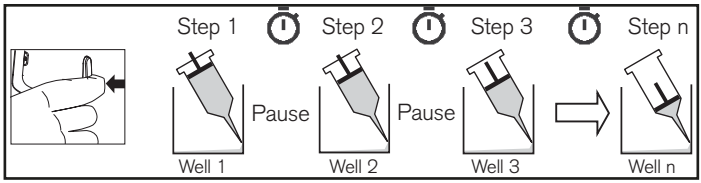
When the STEP button is pressed and held, the device dispenses liquid automatically. To manually adjust the pause time, proceed as follows:

a. Tap on the 0.56s button.
b. Set the pause time.
c. Confirm the setting by tapping the ✓ button.
⇨ The pause time is set. By holding down the STEP button the next time you dispense a liquid, the liquid will be dispensed after the pause time has expired.

Alternatively, you can also use the learn function

Setting the pause time automatically (learn function)

With the learn function, the device determines the average pause time after dispensing 3 or more times. When the user holds the STEP button down after the learn function has ended, the device automatically dispenses liquid after the determined pause time has expired. This way, repetitive pipetting tasks can be more easily managed by the user. Setting the pause time is also easier since it is calculated for the current pipetting task.



Executing the learn function

➢ You have already filled the tip.

a. Tap on the ☰ button, then ‚Setting interval time' and navigate back using the ◁ button.

⇨ The learn function is active.

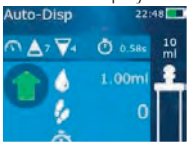
b. Dispense liquid at least 3 times, by briefly pressing the STEP button.

c. Afterwards, the average time appears next to the ⏱ icon.

⇨ The learn function is completed.

⇨ You can immediately dispense liquid by holding down the STEP button.

Initial display:



Learn function OFF:

Learn function ON:

Learn function active:

Alternative access to the learn function

Tap on the 0.58s button, then swipe the switch to the right.

Confirm the setting by tapping the ✓ button.

Restarting the learn function

If you notice that the pause time is too long or too short while operating the device, you can restart the learn function. Alternatively, you can also adjust the pause time manually.

Stopping the learn function prematurely

The first time the STEP button is pressed, a 10 s countdown begins. After it expires, the learn function ends automatically.
To stop the learn function beforehand, tap on the X button.
To use the calculated pause time immediately, hold down the STEP button.

Exiting the learn function

a. Tap on the ⏱ button.

b. Swipe the switch to the left.

c. Confirm the setting by tapping the ✓ button.

⇨ *The learn function is exited.*

⇨ *The operating mode appears.*

⇨ *The current interval remains set.*

Handling residual volumes

For information on handling residual volumes, see *„Switching to emtying"* → *71* and *„Aspirating liquid"* → *70*.

Options

a. In the operating mode, tap on the symbol ☰.

⇨ *The Options menu appears.*

Option	Meaning
'Edit Pause Time'	Edit the time between the individual dispensing steps.
'Setting interval time'	Start the learn function.

Option	Meaning
'Go To Multi-Disp'	Switches to the Multi-Disp operating mode. The volume set in Auto-Disp operating mode is also set in the Multi-Disp operating mode.
'Help Work Mode'	Shows the help text for the mode.

Pipetting (PIP)

For information on the function of this mode, see *„Overview of modes" → 65*. For information on setting the volume, speed, and other operating steps found in all modes, see *„Operation" → 67*.

Setting the volume

Condition

➢ See *„Setting the volume" → 72*.

a. Tap on the button.
b. Set the volume.

Filling a tip

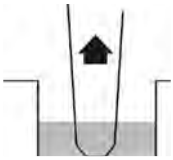
Condition

➢ The volume is set.
➢ On the touchscreen display, the message ‚Press STEP to fill' appears.

a. Hold the tip vertically in the vessel. During aspiration, make sure that the tip opening is always covered by liquid, in order to prevent air bubbles in the tip.
b. Press the STEP button.

⇨ The tip is filled until the set STEP volume or the nominal volume of the tip is reached.

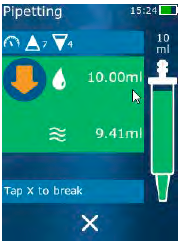
To stop filling the tip, press the STEP button.



Emptying the tip and stopping liquid dispensing

a. Press the STEP button.

⇨ The tip is emptied. To stop dispensing liquid, tap on the X button.



Handling remaining liquids

If the entire volume has been dispensed, a volume remains in the tip. You can then decide whether to drain the tip or continue filling. For information on handling residual volumes, see *„Switching to emtying“ → 71* and *„Aspirating liquid“ → 70*.

Sequential Dispensing (SEQ-DISP)

For information on the function of this mode, see *„Overview of modes“ → 65*. For information on setting the volume, speed, and other operating steps found in all modes, see *„Operation“ → 67*.

Sequential Dispensing in detail

1. Total volume of the aliquot list.
2. STEP previously dispensed.
3. STEP now being dispensed.
4. STEP to be dispensed next.
5. STEP number to be dispensed next.
6. Number of STEPs that you have designated in the aliquot list.
7. Present volume in the tip.

In the Sequential Dispensing operating mode, you dispense a defined sequence of different or equal volumes of liquid. These volumes are called aliquots and are defined via the aliquot list (1 ... 10 aliquots). In the operating mode, you then see up to 3 entries of the aliqout list. These entries – specifically, the previous, current and next entry – are indicated by a number sign (#). If an aliquot is dispensed, the display moves down the list (**1**, #2, ⇨ #1, **2**, #3 ⇨ #2, **3**, #4 ... #10). It can only be dispensed if a sufficient volume has been aspirated.

If the aliquot amount exceeds the tip volume, you can aspirate liquid again and then continue dispensing.

If the aliquot amount is less than the tip volume, as much liquid is aspirated as is needed for the given aliquot list.

If you cancel an aliquot (X button on the display), this aliquot is counted as not dispensed. In this case, an event message is output. The program jumps to the next aliquot in the list. If there is not enough liquid in the tip at the end of aliquoting, the device aspirates exactly the required amount of liquid, in order to complete aliquoting.

The aliquot list can no longer be changed when the first aliquot has been dispensed. You can edit the aliquot list again only after you have completed dispensing.

Creating an aliquot list

You can create 1 ... 10 aliquots.

➢ You are in the operating mode.

a. Tap on the button.

⇨ The aliquot list appears.

b. Tap on the '+' symbol.

⇨ One aliquot is added to the list.

Editing an aliquot list

a. Tap on a list entry.

⇨ *The context menu appears.*

Context menu:

'Edit'	Edits the selected list entry. Operation similar to *„Setting the volume" → 72.*
'Add'	Add a list entry to the end of the list. The value of the previous list entry is preset as the aliquot value.
'Insert'	Insert a list entry in place of the selected list entry. The list entry is inserted above the selected list entry. The value of the selected list entry is preset as the aliquot value. This value can be added via the 'Edit' function.
'Delete'	Deletes the selected list entry. You can delete all but one of the entries in the list. Alternatively, you can clear the list via Options > 'Delete all', but again one list entry must remain.

Dispensing liquid

➢ You are in the operating mode.

a. Press the STEP button.

⇨ *The volume from the first aliquot list entry is dispensed.*

⇨ *Simultaneously, the next volume is selected from the aliquot list. This volume is dispensed the next time you press the STEP button.*

Interrupting and ending aliquoting

a. Tap on the or the button.

⇨ *The current aliquoting is ended.*

Canceling a single aliquot

Tap on the X button while dispensing liquid.

Options

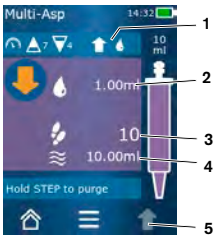
a. In the operating mode, tap on the symbol ☰.
⇨ *The Options menu appears.*

Option	Meaning
'Edit Aliquots'	Edit an aliquot list.
'Help Work Mode'	Shows the help text for the mode.

Multi-Aspiration (MULTI-ASP)

For information on the function of this mode, see *„Overview of modes" → 65*. For information on setting the volume, speed, and other operating steps found in all modes, see *„Operation" → 67*.

Multi-Aspiration in detail



1. Switch to filling mode. The selected filling mode is displayed here.
2. Set volume
3. Possible STEPs
4. Aspirated volume
5. Switch between dispensing and aspirating liquid. You can also switch to dispensing if the nominal volume has not been reached. In addition, you can also continue filling the tip after an interruption.

Preparing liquid aspiration

Condition

➢ Tip is empty and outside the liquid

a. Press the STEP button.

⇨ The piston of the tip moves to the start position.

b. Select filling mode.

c. Press and hold the STEP button.

⇨ Liquid is aspirated.

Filling modes

In the Multi-Aspiration operating mode, you can aspirate the same liquid or different liquids with the same tip. There are 3 modes available for aspiration:

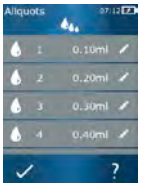
'Manual' filling mode

In 'Manual' filling mode, you control liquid aspiration using the STEP button. Liquid is aspirated while you hold down the STEP button. Liquid aspiration stops when you let go of the STEP button or when the nominal volume is reached.

'STEP Volume' filling mode

In 'STEP Volume' filling mode, you specify the STEP volume before liquid aspiration. Each time the STEP button is pressed, the set volume is aspirated, and this continues until the nominal volume is reached.

'Sequential' filling mode



In 'Sequential' filling mode, you control liquid aspiration using an aliquot list (1 ... 10 aliquots). In this table, different volumes can be defined, which are aspirated successively in this operating mode. Each time the STEP button is pressed, the current volume is aspirated. The program then switches to the next volume in the aliquot list, and this continues until all preset aliquots are aspirated. In the operating mode, you then see up to 3 entries of the aliqout list. These entries – specifically, the previous, current and next entry – are indicated by a number sign (#). If an aliquot is aspirated, the display moves down the list (**1**, #2, ⇨ #1, **2**, #3 ⇨ #2, **3**, #4 ... #10). The device automatically switches to liquid dispensing when the desired volume or the nominal volume is reached.

Dispensing liquid

You can switch back and forth between liquid aspirating and dispensing using the ⇧ and ⇩ buttons.

a. Tap on the ⇩ button.
⇨ *The message ‚Hold STEP to purge' appears.*
b. To dispense liquid, hold down the STEP button.

To cancel liquid dispensing, press the **X** button. If the tip is emptied, the program switches back to liquid aspiration.

Creating and editing an aliquot list for liquid aspiration

a. Select ‚Sequential' filling mode.
b. Select Options > 'Edit Aliquots' or tap on #1 ... #10.
c. Create and edit the aliquot list as described in the *„Sequential Dispensing (SEQ-DISP)" operating mode in the section „Creating an aliquot list"* → *81* *and the section „Editing an aliquot list"* → *81*.

Switching the operating mode

a. Tap on the ⌂ button.
b. If the tip is filled, a message appears asking if you would like to switch modes with the filled tip.
c. If only a residual amount is still present, a message then appears asking if you would like to discard the liquid. Once you confirm the message, the liquid is dispensed.

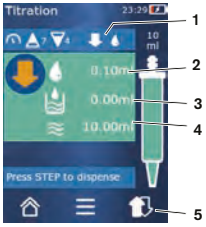
Options

a. In the operating mode, tap on the symbol ☰.
⇨ *The Options menu appears.*

Option	Meaning
'Edit Aliquots'	Edit an aliquot list.
'Select Fill Mode'	Select a filling mode.
'Help Work Mode'	Shows the help text for the mode.

For information on the function of this mode, see *„Overview of modes“ → 65*. For information on setting the volume, speed, and other operating steps found in all modes, see *„Operation“ → 67*.

Titration in detail



1. Switch between ‘Manual‘ and ‘STEP Volume’ titration mode.
2. Set the STEP volume. This is possible in the ‘STEP Volume’ titration mode.
3. Volume already titrated.
4. Amount remaining in the tip.
5. Discard remaining amount or aspirate liquid.

In the Titration operating mode, you dispense liquid (standard solution) into another liquid (sample), e.g. to observe a color change. There are 2 different titration modes available for this task:

‘Manual’ titration mode

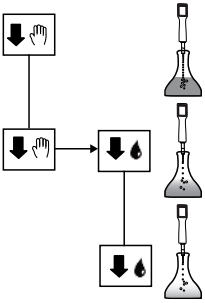
In ‘Manual’ titration mode, you control liquid dispensing using the STEP button. Liquid is dispensed while you hold down the STEP button. Liquid dispensing stops when you let go of the STEP button or when the existing volume in the tip is dispensed.

‘STEP Volume’ titration mode

In STEP titration mode, you specify the STEP volume **before** dispensing liquid. Each time the STEP button is pressed, the set volume is dispensed. The dispensing speed is also reduced each time the STEP button is pressed.

Titration

This section explains how to use the titration operating mode using the color change of a pH value measurement as an example. You can switch the titration mode using the or button.



➢ You will need a transparent vessel, e.g. an Erlenmeyer flask, and the liquids required for the pH measurement.

a. Select the mode, in order to first dispense a large amount of liquid. Select the dispensing speed using the button.
b. Aspirate the liquid. Hold the device vertically over the Erlenmeyer flask.
c. Press and hold the STEP button.
d. Observe the immersion of the standard solution into the sample. As you near the color change point, switch to the mode. The color change point is identified by the first color streaks in the sample.
e. Tap on the button. Set a small volume.
f. Dispense the standard solution drop by drop until the color change is achieved.

Options

a. In the operating mode, tap on the symbol ☰.
⇨ *The Options menu appears.*

Option	Meaning
'Manually/STEP Volume'	Switch to titration mode
'Show last volumes'	Displays the last volumes titrated.
'Help Work Mode'	Shows the help text for the mode.

Favorites

You can save settings in Favorites, in order to open them again later, e.g. aliquot lists, volume settings.

Cleaning and disinfection

Cleaning

NOTICE

The device is not autoclavable.

The device is factory-calibrated and maintenance-free.

When the device is dirty, clean the outer surface with a moist cloth . Use water or a mild detergent solution. Avoid acidic or aggressive cleaners.

Disassembly of the device is not permitted.

UV disinfection

The device is resistant to normal exposure to a UV disinfection lamp. The device may change color due to the UV exposure.

UV disinfection recommendations:

Light spectrum	UV-C
Wave length	220 nm ... 270 nm
Exposure time per cm^2 and intended inactivation rate	2 s ... 300 s

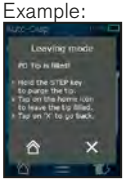
Device behavior

Problem	Possible cause	What to do
The battery charging cycle has been dramatically reduced.	The battery is old or damaged.	Replace the battery.
The device does not charge.	The battery cannot be charged when it is too cold or too warm.	Disconnect the battery plug. Let the battery warm up or cool down to room temperature. Connect the battery plug. Try charging again.
Duration of use without power connection has been dramatically reduced.	The battery is old or damaged.	Replace the battery.
The power adapter becomes extremely warm during charging.	The battery is old or damaged. The power adapter is damaged. The USB cable is damaged.	Replace the affected part.
The device does not charge.	The power adapter is damaged. The USB cable is damaged. The battery cable is broken. The distance from the device to the charging stand is too great	Replace the affected part. Insert the device into the charging station again.
The display is too bright or too dark.	The display brightness level has been adjusted.	Change the brightness level, see *„Settings" → 73*
No sounds are output when working with the device.	Sound notification is switched off.	Switch on sound notification, see *„Settings" → 73*
The touchscreen display no longer responds.	The program has crashed.	The device starts when the battery has been reconnected after the program crash. A message appears to warn that a tip may still be present in the device. Therefore, hang the device in the holder and place a suitable vessel under the tip, or hold the device over a suitable vessel when starting. Troubleshooting: Open the cover, disconnect the battery plug, and wait 5 s before reinserting it. The device starts when the battery is sufficiently charged.
The tip drips.	The tip has a leak.	Replace the tip.
The tip is not recognized.	Code is damaged. Tip without coding used.	Eject the tip and reinsert. Use a new or coded tip.

System messages

The device displays system messages to signal that certain program sequences were shortened. System messages inform the user about which options are available for further operation.

Example:



Event messages in the display

The device displays event messages to signal that the device has deviated from an intended state. Event messages inform the user about which options are available for further operation.

When the event message 'Notice' is displayed, you can continue working with the device. These event messages signal that the device was not able to execute a task as intended in the program. Example: battery is too weak.

When the event message 'Error' is displayed, a technical problem has occurred. If this event message is displayed again after a restart and when performing the same task, the accuracy and proper function of the device can no longer be guaranteed. Example: motor is blocked.

If the same event messages are repeatedly displayed, please contact BRAND.

Monitoring volumes

Testing instructions (SOP)

Link to quick response code: https://www.brand.de/sop

For additional information on calibration, see *„Calibration service“ → 95*.

Leak test of the PD tip

a. Insert a new PD tip.
⇨ *The PD-Tip is recognized automatically or, in the case of compatible dispenser tips, the volume size is manually selected.*
b. Change the volume to be dispensed.
c. Fill the PD-Tip.
d. Immerse the PD-Tip into the test liquid. The liquid must be evenly aspirated. Hold the device vertically for approx. 10 s: If a drop forms, then follow the instructions in the following table.

Possible malfunction	Cause	Solution
Tip drips	Tip leaky	Insert a new tip
Tip is not recognized	No coding or coding damaged or tip not inserted correctly	Insert a new tip or reinsert, select the volume size

Calibration

If the leak test (see *„Monitoring volumes“ → 87)* has been successfully completed, a gravimetric measurement can determine if the device is within the limits defined by ISO 8655. The test method required for this is described in the testing instructions (SOP).

Technical data

Accuracy table

The measurements were optained with PD-Tip *II* by BRAND.
Distilled water was used as the test liquid.

				Accuracy A* ≤ ± %				Coefficient of variation (CV)≤ %			
PD-Tip	Volume range	Volume increments		Nominal volume	50 %	10 %	1%	Nominal volume	50 %	10 %	1 %
0.1	1 µl ... 100 µl	1 µl ...100 µ	0.1 µl	1	1	1.6	8	0.5	1	2	12
0.5	5 µl ... 500 µl	5 µl ... 100 µl 100 µl ... 500 µl	0.1 µl 1 µl	0.9	0.9	1	5	0.3	0.6	1	5
1	10 µl ...1 ml	10 µl ... 1 ml	1 µl	0.6	0.9	1	5	0.3	0.5	0.8	4
1.25	12.5 µl... 1.25 ml	12.5 µl ... 100 µl 100 µl ... 1000 µl 1 ml ... 1.25 ml	0.5 µl 1 µl 10 µl	0.6	0.6	0.9	5	0.2	0.5	0.7	4
2.5	25 µl ... 2.5 ml	25 µl ... 1000 µl 1 ml ... 2.5 ml	1 µl 10 µl	0.5	0.6	0.7	3.5	0.15	0.3	0.6	3
5	50 µl ... 5 ml	50 µl ... 1000 µl 1 ml ... 5 ml	1 µl 10 µl	0.5	0.5	0.7	3.5	0.15	0.4	0.7	3
10	100 µl ... 10 ml	100 µl ... 10 ml	10 µl	0.4	0.5	0.7	3.5	0.15	0.5	0.8	4
12.5	125 µl ... 12.5 ml	125 µl ... 1000 µl 1 ml ...10 ml 10 m ...12.5 m	5 µl 10 µl 100 µl	0.5	0.5	0.8	3.5	0.15	0.6	1.4	6.5
25	250 µl ... 25 ml	250 µl ... 10 ml 10 ml ... 25 ml	10 µl 100 µl	0.5	0.5	0.6	3	0.15	0.3	1.0	6
50	500 µl ... 50 ml	500 µl ...10 ml 10 ml ... 50 ml	0 µl 100 µl	0.5	0.5	0.6	3	0.15	0.4	1.2	9

The nominal volume is the maximum volume printed on the PD-Tip.
The tolerances specified in ISO 8655 are not exceeded.

Usage limits

Operating range *)	15 °C ... 40 °C (59 °F ... 104 °F)
Vapor pressure	up to 500 mbar
Viscosity	20 mPa s at 50 ml PD-Tip 260 mPa s at 5 ml PD-Tip 977 mPa s at 1.25 ml PD-Tip

*) Additional temperatures upon request

Materials used

Device
PC/PBT, PP, silicone, glass, PEEK

Tips
PE/PP (size 0.1 mm LCP/PP)

Battery KPL803750

Type	Li-ion battery
Capacity	1650 mAh
Voltage	3.7 V
Power	6.11 Wh
Storage	0 °C ... 35 °C
Charging time	Approx. 6 h. Charging time may vary depending on whether the device is charged by the power adapter or the charging stand.
Weight	40 g

Charging stand

WPC* transmitter (charging stand):
Input: DC 5 V 1.4 A, 7 W
Transmission: < 3.5 W, 110 kHz ... 205 kHz

WPC* receiver (HandyStep® touch, touch S)
Reception: < 3.5 W, 110 kHz ... 205 kHz
Communication (receiver transmitter): AM, 2 kHz

*Wireless power charging

Universal power supply

Input: AC 100 ... 240 V ~ 50 Hz/60 Hz, 0.5 A
Output: DC 5 V 1.4 A, 7 W

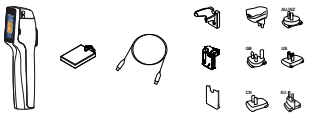
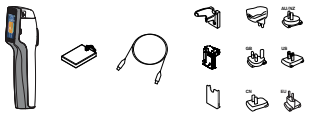
Markings on the product and the battery

CE	With this mark, we confirm that the product complies with the requirements set out in the EC Directives and has been subjected to the specified testing procedures.
DE-M 18	The device is marked in accordance with the German Weights and Measures Act and the Weights and Measures Ordinance. Character sequence DE-M (DE for Germany), framed by a rectangle, as well as the two last digits of the year the marking was added (here: 2018).
XXFFFFF	Serial number
	Follow the instructions listed on the device, the accessory parts and in the operating manual.
	The device or the battery should be disposed of properly.
 (Here: 40 years)	China RoHS (EFUP) EFUP defines the time period in years, in which the hazardous materials found in the electrical and electronic equipment should not leak or mutate under normal operating conditions. When used under normal conditions, such electrical or electronic products do not lead to severe environmental pollution, severe personal injuries or damage to the user's property.
	This electrical device may not be disposed of in household waste.

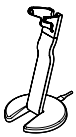
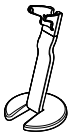
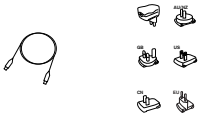
Ordering Information

Link to quick response code: https://shop.brand.de/en/

Devices

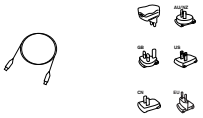
Description	Illustration	Order number
HandyStep® touch, universal holder, universal power adapter, charging adapter, lithium-ion battery pack		705200
HandyStep® touch S, universal holder, universal power adapter, charging adapter, lithium-ion battery pack		705210

Accessories

Description	Illustration	Order number
Charging stand		705220
Holding stand		705230
Universal power adapter for HandyStep® touch and HandyStep® touch S, including charging cable and charging adapter		705250
Battery pack for HandyStep® touch and HandyStep® touch S		705225

Description	Illustration	Order number
Universal holder HandyStep® touch and HandyStep® touch S		705235

Replacement parts

Description	Illustration	Order no.
Universal power adapter for HandyStep® touch, including charging cable and charging adapter		705250
Battery pack for HandyStep® touch and HandyStep® touch S		705225

Consumables

PD-Tip *II*

The device automatically recognizes the coded tips.

Volume [ml]	Order no. Non-sterile	Pack of [pieces]	Order no. BIO-CERT®	Pack of [pieces]
0.1	705700	100	705730	100
0.5	705702	100	705732	100
1	705704	100	705734	100
1.25	705706	100	705736	100
2.5	705708	100	705738	100
5	705710	100	705740	100
10	705712	100	705742	100
12.5	705714	100	705744	100
25	705716	50+1 adapter	705746	25+1 adapter
50	705718	25+1 adapter	705748	25+1 adapter
Set 0.5 ml ... 12.5 ml	705720	20 per set	—	—

Adapter for 25 ml and 50 ml PD tips

Volume [ml]	Order no.	Pack of	Feature
25 ml and 50 ml	702398	10	Non-sterile
	702399	5	BIO-CERT®

Sending for repair

NOTICE

Transporting hazardous materials without approval is prohibited by law.

Clean the device thoroughly and decontaminate.

- When returning products, please enclose a general description of the type of malfunction and the media used. The device cannot be repaired if information about the media used is not provided.
- Please only send the device without the battery.
- The device is returned at the risk and expense of the sender.

Outside USA and Canada

- Fill out the “Declaration of Health Safety” and send it together with the device to the manufacturer or dealer. Pre-printed forms can be requested at the dealer or manufacturer, or are available for download at www.brand.de.

Within USA and Canada

- Contact BrandTech Scientific, Inc. and obtain authorization for the return before sending your instrument for service.
- Send only cleaned and decontaminated devices to the address, which you received together with a Return Merchandise Authorization (RMA) number. Attach the RMA number in a clearly visible place on the package.

Contact addresses

BRAND GMBH + CO. KG
Otto-Schott-Str. 25
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Fax: +49 9342 808-98000
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Fax: +91 22 42957791
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Shanghai 200030 (P.R. China)
Tel.: +86 21 6422 2318
Fax: +86 21 6422 2268
E-mail: info@brand.cn.com
www.brand.cn.com

Calibration service

The ISO 9001 and GLP guidelines require regular inspection of your volume measuring devices. We recommend performing a volume check every 3 to 12 months. The cycle is dependent on the individual requirements of the device. Checks should be performed more frequently, in case of high frequency of use or the use of aggressive media. The detailed testing instructions are available for download on www.brand.de or www.brandtech.com.
BRAND also offers the possibility to have your devices calibrated by our factory calibration service or by the BRAND DAkkS laboratory.
Simply send us the device to be calibrated, accompanied by details about which type of calibration you would like. The device will be returned to you after a few days together with a test report (factory calibration) or a DAkkS calibration certificate. More information can be obtained from your dealer or directly from BRAND.
The order document is available for download on www.brand.de (see Technical Documents).

Warranty

We shall not be liable for the consequences of improper handling, use, servicing, operating or unauthorized repairs of the device or for the consequences of normal wear and tear, especially of wearing parts such as pistons, seals, valves and the breakage of glass. The same applies for failure to follow the instructions of the operating manual. We are not liable for damage resulting from disassembly beyond that described in the operating manual or if non-original spare parts or components have been installed.

USA and Canada
Find more warranty information on www.brandtech.com.

Disposal

The adjacent symbol means that at the end of their service life, batteries/accumulators and electronic devices must be disposed of separately from household waste (unsorted municipal waste).
Electronic devices must be disposed of in accordance with Directive 2002/96/EC of the European Parliament and of the Council from January 27, 2003 on waste from electrical and electronic equipment and in compliance with national disposal regulations.
Both batteries and accumulators (rechargeable batteries) contain materials that can be damaging to the environment and human health. Therefore, they must be properly disposed of in accordance with Directive 2006/66/EC of the European Parliament and of the Council from September 06, 2006 on batteries and accumulators and in compliance with national disposal regulations. Only dispose of fully discharged batteries and accumulators.

Battery disposal

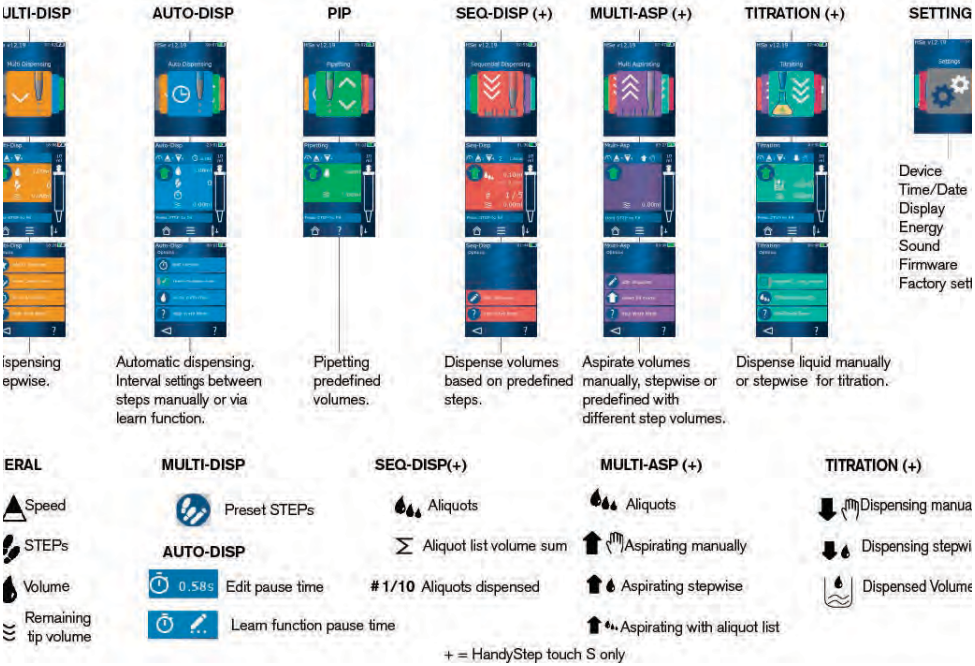
⚠ WARNING

Possible risk of explosion and fire due to overheated battery.

➢ Do not discharge the battery by short-circuiting.

- Wrap tape around the plug in order to prevent short-circuiting during disposal.
- Never disassemble the battery.

Device navigation



Symbol reference

Recurring symbols in all modes

?	Open help		Set the volume of a STEP		Available STEPs
✓	Confirm entries		Insert a tip	≋	Remaining volume
✕	Cancel		Eject a tip		The device is between liquid aspiration and liquid dispensing.
	Open main menu		Set speeds		Device ready for aspiration.
	Open options		Empty or fill tip		Device ready for dispensing.

Pipetting

	Set volume to be aspirated	≋	Remaining volume

Auto-dispensing

	Set the STEP volume	...s	Enter pause time
	Available STEPs		Remaining interval time is shown.
...	The learn function is active	/	Turn learn function on/off.

Multi-dispensing

	Set the STEP volume		Available STEPs

Sequential Dispensing

	Open aliquot list.	# 1/10	1 aliquot of 10 available in the aliquot list
∑	Sum total volume from the aliquot list	≋	Aspirated volume
#1 ... #10	Aliquot ID in the operating mode		Aliquot

Multi-Aspiration

	Filling mode is active.		Open aliquot list. Only in sequence filling mode
	STEP volume filling mode is active.		STEPs to be aspirated
	Sequence filling mode is active.		Set the volume of a STEP to be aspirated

Titration

	Manual titration mode is active.		Volume already dispensed.
	STEP titration mode is active.		Set the volume of a STEP to be dispensed

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