

HumaPette Smart-Line

| User Manual



REF 19500L/1

Human

Diagnostics Worldwide

REVISION

Revision History	
Rev./DATE	REVISION DESCRIPTION
01/2009-06	First Edition
02/2010-01	Second edition, error correction
03/2014-12	Correction Table of Content
04/2017-08	Added Autopipette
05/2019-01	Increment of Pipette Volumes added
06/2022-01	Added 1.5 fully autoclavable
07/2022-05	Intended purpose for AutoHumaPette
08/2022-05	Repositioning CE/IVD and remove of chapter 1.5 fully autoclavable

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Service and support

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1 SAFETY INSTRUCTIONS

1.1 Introduction

This manual is considered as a part of the instrument; it has to be at the operator's hand as well as at the maintenance operator's availability. For accurate installation, use and maintenance, please read the following instructions carefully. In order to avoid instrument or personal damages, carefully read the "GENERAL SAFETY WARNINGS", describing the suitable operating procedures. In case of breakdowns or any troubles with the instrument, apply to the local Technical Service.

1.2 User warranty

HUMAN warrants that instruments sold by one of its authorised representatives shall be free of any defect in material or workmanship, provided that this warranty shall apply only to defects which become apparent within one year from the date of delivery of the new instrument to the purchaser. The HUMAN representative shall replace or repair any defective item at no charge, except for transportation expenses to the point of repair.

This warranty excludes the HUMAN representative from liability to replace any item considered as expendable in the course of normal usage, e.g.: lamps, valves, syringes, glassware, fuses, diskettes, tubing etc.

The HUMAN representative shall be relieved of any liability under this warranty if the product is not used in accordance with the manufacturer's instructions, altered in any way not specified by HUMAN, not regularly maintained, used with

equipment not approved by HUMAN or used for purposes for which it was not designed.

Note: GLP-guidelines require regular examinations of your volumetric instruments. We recommend to check the volume every 3–12 months. The interval depends on the specific requirements on the instrument. For instruments frequently used or in use with aggressive media, the interval should be shorter.

1.3 Safety instructions

1. Observe general hazard prevention instructions and safety regulations; e.g. wear protective clothing, eye protection and gloves.
2. Observe the reagent manufacturer's information.
3. Read this Operating Manual carefully.
4. Always use the instrument in such a way that neither the user nor any other persons are endangered.
5. Only use manufacturer's original parts.
6. Operate only with tip attached.
7. Use original pipette tips, or make sure that the tips to be used are compatible.

1.4 Intended use of the instrument

The instrument has to be used for the expected purposes and in perfect technical conditions, by qualified personnel, in working conditions and maintenance operations as described in this manual, according to the GENERAL SAFETY WARNINGS. This manual contains instructions for professional qualified operators.

1.5 Disposal

For the disposal of instruments and tips, please observe the disposal regulations valid in your area.

1.6 Instrument disinfection

Instruments or parts which may come in contact with biological samples (patient specimens, controls etc.) should be considered at least potentially infectious.

Before doing any servicing on the instrument it is very important to thoroughly disinfect all possibly contaminated parts. Before the instrument is removed from the laboratory for disposal or servicing, it must be decontaminated/disinfected. Decontamination/disinfection should be performed by authorised well trained personnel, observing all necessary safety precautions. Instruments to be returned have to be accompanied by a disinfection certificate completed by the responsible laboratory manager. If a disinfection certificate is not supplied, the returning laboratory will be responsible for charges resulting from non-acceptance of the instrument by the servicing centre, or from authority's interventions.

1.7 Notice

Every effort has been made to avoid errors in text and diagrams, however, HUMAN GmbH assumes no responsibility for any errors which may appear in this publication. It is the policy of HUMAN GmbH to improve products as new techniques and components become available. HUMAN GmbH therefore has to reserve the right to change specifications if necessary in the course of such improvements.

2 SYSTEM DESCRIPTION

2.1 Intended purpose for AutoHumaPette

AutoHumaPette is an adjustable volume pipette with a trigger switch with LEMO FFA 0S connector for e.g. HumaClot Duo Plus Model HC2 and HumaClot Quattro Model HC4. It is used in combination with HUMAN's different hemostasis reagents. For laboratory professional use only.



FIGURE 1

2.2 General information

Your new hand-held HumaPette is a general purpose pipettor for the accurate and precise sampling and dispensing of liquid volumes. The HumaPette operates on the air displacement principle and uses disposable tips.

The range of HumaPettes covers a volume range from 0.1 μ l to 5 ml.

All pipettors have been quality tested according to ISO 8655/DIN 12650. The quality control according to ISO 8655/DIN 12650 involves gravimetric testing of each pipettor with distilled water (quality 3, DIN ISO 3696) at 22 °C using the manufacturer's original tips.

2.3 Unpacking

The HumaPette contains the following items:.

- HumaPette
- Calibration / Opening tool
- Instructions for use
- HumaPette holder
- Tip
- Performance certificate according to ISO 8655/DIN 12650.

3 INSTALLING THE HUMAPETTE HOLDER

For convenience and safety always keep the HumaPette vertically in its own holder when not in use. When installing the holder, please follow the instructions below:

1. Clean the shelf surface with ethanol.
2. Remove the protective paper from the adhesive tape.
3. Install the holder as shown in Figure 2 (make sure the holder is pressed against the edge of the shelf).
4. Place the HumaPette in the holder as shown in Figure 3.



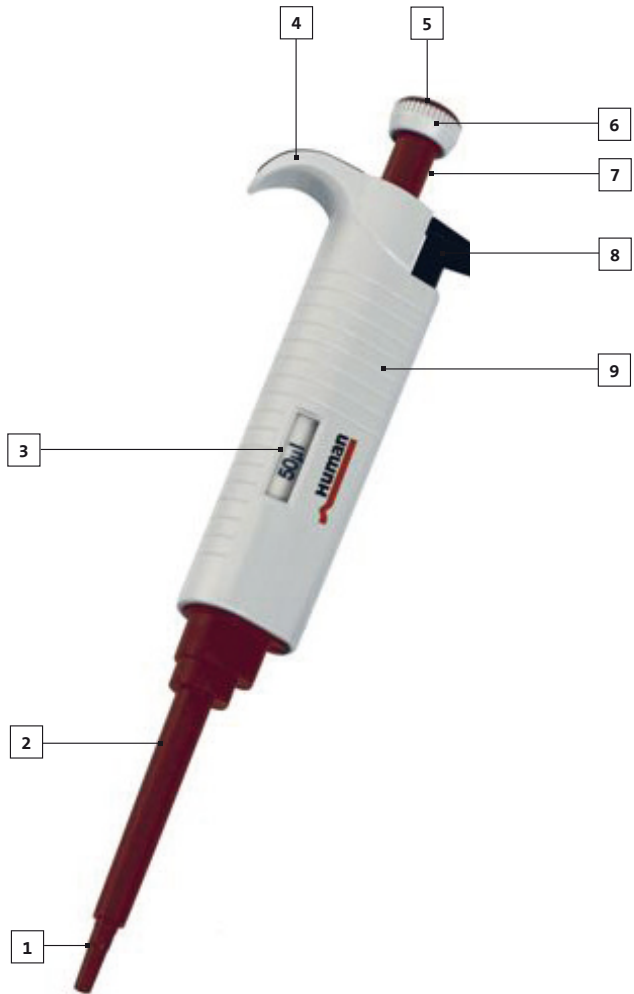
FIGURE 2



FIGURE 3

FIGURE 4

- 1 Tip cone
- 2 Tip ejector collar
- 3 Display
- 4 Finger rest
- 5 Cap
- 6 Push button
(thumb button)
- 7 Push button rod
- 8 Tip ejector
- 9 Grip



4 HUMAPETTE OPERATION

4.1 Volume setting

The volume of the HumaPette is clearly shown through the handle grip window. The delivery volume (variable volume HumaPettes only) is set by turning the thumb button clockwise or anticlockwise (Figure 5).



FIGURE 5

When setting the volume, please make sure that:

- The desired delivery volume clicks into place.
- The digits are completely visible in the display window.
- The selected volume is within the pipettor's specified range.

Using excessive force to turn the push button outside the range may jam the mechanism and damage the HumaPette.

4.2 Sealing and ejecting tips

Before fitting a tip make sure that the HumaPette tip cone is clean. Press the tip onto the cone of the HumaPette firmly to ensure an airtight seal. The seal is tight when a visible sealing ring forms between the tip and the black tip cone.

Each HumaPette is fitted with a tip ejector to help eliminate the safety hazards associated with contamination. The tip ejector needs to be pressed firmly downwards to ensure proper tip ejection. Make sure that the tip is disposed of into a suitable waste container.

5 PIPETTING TECHNIQUES

5.1 Forward pipetting

Make sure that the tip is firmly attached to the tip cone. For best results the thumb button should be operated slowly and smoothly at all times, particularly with viscous liquids.

Hold the HumaPette vertically during aspiration. Make sure that the liquid and container vessel are clean and that the HumaPette, tips and the liquid are at the same temperature.

1. Depress the operating button to the first stop.
2. Place the tip(s) just under the surface of the liquid (2–3 mm) and smoothly release the operating button. Carefully withdraw the tip from the liquid, touching it against the edge of the container to remove the excess.
3. Liquid is dispensed by gently depressing the thumb button to the first stop. After a short delay continue to depress the thumb button to the second stop. This procedure will empty the tip(s) and ensure accurate delivery.
4. Release the thumb button to the ready position. If necessary change the tip(s) and continue with pipetting.

5.2 Reverse pipetting

The reverse technique is suitable for dispensing liquids that have a tendency to foam or have a high viscosity. This technique is also used for dispensing very small volumes when it is recommended that the tip is first primed with the liquid before pipetting. This is achieved by filling and emptying the tip(s).

1. Depress the thumb button all the way to the second stop. Place the tip(s) just under the surface of the liquid (2–3 mm) and smoothly release the thumb button.
2. Withdraw the tip(s) from the liquid touching it (them) against the edge of the container to remove excess.
3. Deliver the preset volume by smoothly depressing the thumb button to the first stop. Hold the operating button at the first stop. The liquid that remains in the tip(s) should not be included in the delivery.
4. The remaining liquid should now be discarded with the tip(s) or delivered back into the container vessel.

6 PIPETTING RECOMMENDATIONS

- Hold the HumaPette vertically when aspirating the liquid and place the tip only a few millimetres into the liquid.
- Pre-rinse the tip before aspirating the liquid by filling and emptying the tip 5 times. This is important especially when dispensing liquids which have a higher viscosity and density than water.
- Always control the push button movements with the thumb to ensure consistency.
- When pipetting liquids at a temperature different from ambient, prerinse the tip several times before use.

7 STORAGE

When not in use it is recommended that your HumaPette be stored in a vertical position. See “Installing the pipette holder” (Chapter 3).

8 PERFORMANCE TEST AND RECALIBRATION

Each HumaPette has been factory-tested and certified at 22 °C according to ISO 8655/Din 12650. The following table shows the maximum permitted errors (Fmax) for manufacturers given in DIN 12650, which further advises each user to establish their own maximum permitted errors (Fmax user).

Note: HumaPette specifications are guaranteed only with the manufacturer's tips.

	Nominal volume	Maximum permitted errors (Fmax)	Nominal volume	Maximum permitted errors (Fmax)
HumaPette	5 µl	± 0.3 µl	200 µl	± 2 µl
Smart-Line	10 µl	± 0.3 µl	250 µl	± 2.5 µl
	20 µl	± 0.4 µl	500 µl	± 5 µl
Fixed volume	25 µl	± 0.5 µl	1000 µl	± 10 µl
	50 µl	± 0.8 µl	2000 µl	± 20 µl
	100 µl	± 1.5µl	5000 µl	± 50 µl

8.1 Performance test (checking calibration)

- Weighing should take place at 20 – 25 °C, constant to ±0.5 °C.
 - Avoid drafts.
1. Set the desired testing volume of your HumaPette.
 2. Carefully fit tip onto the tip cone.
 3. Pre-rinse tip with distilled water by pipetting the selected volume 5 times.
 4. Carefully aspirate the liquid, keeping the HumaPette vertical.

5. Pipette distilled water into a tared container and read the weight in mg. Repeat at least five times and record each result. Use an analytical balance with a readability of 0.01 mg. To calculate the volume, divide the weight of the water by its density (at 20 °C: 0.9982). This method is based on ISO 8655/DIN 12650.
6. Calculate the F-value by using the following equation:
$$F = | \text{inaccuracy } (\mu\text{l}) | + 2 \times \text{imprecision } (\mu\text{l})$$
Compare the calculated F-value to the corresponding $F_{\text{max user}}$. If it falls within the specifications, the HumaPette is ready for use. Otherwise check the accuracy and precision and, if necessary, proceed to the recalibration procedure.

8.2 Recalibration procedure

1. Place the calibration tool into the holes of the calibration adjustment lock (under the thumb button) (Figure 6).
2. Turn the adjustment lock anticlockwise to decrease and clockwise to increase the volume.
3. Repeat performance test (checking calibration) procedure from step 1 until the pipetting results are correct.

FIGURE 6



9 MAINTENANCE

To maintain the best results from your HumaPette each unit should be checked every day for cleanliness.

Particular attention should be paid to the tip cone(s).

9.1 Cleaning your HumaPette

To clean your HumaPette use ethanol and a soft cloth or lint-free tissue. It is recommended to clean the tip cone regularly.

9.2 In-house maintenance

1. Hold down the tip ejector.
2. Place the tooth of the opening tool between the tip ejector and the tip ejector collar to release the locking mechanism (Figure 7).
3. Carefully release the tip ejector and remove the ejector collar.
4. Place the wrench end of the opening tool over the tip cone, turning it anti-clockwise. Do not use any other tools. The 5 ml tip cone is removed by turning it anti-clockwise. Do not use any tools.
5. Wipe the piston, the O-ring and the tip cone with ethanol and a lint-free cloth.
6. Therefore, the O-ring cannot be accessed for maintenance.
7. Before replacing tip cone it is recommended to grease the piston slightly.
8. After reassembling use the HumaPette (without liquid) several times to make sure that the grease is spread evenly.
9. Check the HumaPette calibration.

! Note: Models up to 10 μ l have a fixed O-ring located inside the tip cone.

FIGURE 7



10 TROUBLESHOOTING

Trouble	Possible cause	Solution
Droplets left inside the tip	Unsuitable tip	Use original tips
	Non-uniform wetting of the plastic	Attach new tip
	Tip incorrectly attached	Attach firmly
Leakage or pipetted volume too small	Unsuitable tip	Use original tips
	Foreign particulates between tip and tip cone	Clean the tip cone, attach new tip
	Insufficient amount of grease on piston and O-ring	Clean and grease O-ring and piston, clean the tip cone
	O-ring not correctly positioned or damaged	Change the O-ring
	Incorrect operation	Follow instructions carefully
	Calibration altered or unsuitable for the liquid	Recalibrate according to instructions
	Instrument damaged	Send for service
Push button jammed or moves erratically	Piston contaminated	Clean and grease O-ring and piston, clean the tip cone
	Penetration of solvent vapours	Clean and grease O-ring and piston, clean the tip cone
Pipettor blocked, aspirated volume too small	Liquid has penetrated tip cone and dried	Clean and grease O-ring and piston, clean the tip cone
Tip ejector jammed or moves erratically	Tip cone and/or ejector collar contaminated	Tip cone and/or ejector collar contaminated

11 APPENDIX A: SPECIFICATIONS HUMAPETTE SMART-LINE

Adjustable volume HumaPette

Cat. no.	Volume range	Volume	Inaccuracy ±	Imprecision	Increment
19110L	0.5 – 10 µl	10 µl	1.00 %	0.80 %	0.1 µl
		5 µl	1.50 %	1.50 %	
		1 µl	2.50 %	1.50 %	
19120L	5 – 50 µl	50 µl	0.60 %	0.30 %	0.5 µl
		25 µl	0.90 %	0.60 %	
		5 µl	2.00 %	2.00 %	
19125L	10 – 100 µl	100 µl	0.80 %	0.15 %	1 µl
		50 µl	1.00 %	0.40 %	
		10 µl	3.00 %	1.50 %	
19130L	20 – 200 µl	200 µl	0.60 %	0.15 %	1 µl
19130A*		100 µl	0.80 %	0.30 %	
19140L	100 – 1000 µl	1000 µl	0.60 %	0.20 %	5 µl
		500 µl	0.70 %	0.25 %	
		100 µl	2.00 %	0.70 %	
19150L	1000 – 5000 µl	5000 µl	0.50 %	0.15 %	50 µl
		2500 µl	0.60 %	0.30 %	
		1000 µl	0.70 %	0.30 %	

* AutoHumaPette with trigger switch with LEMO FFA 05 connector for e.g. HumaClot Duo Plus Model HC2 and HumaClot Quattro Model HC4

Fixed volume HumaPette

Cat. no.	Volume	Inaccuracy ±	Imprecision
19500L	5 µl	1.30 %	1.20 %
19505L	10 µl	0.80 %	0.80 %
19510L	20 µl	0.60 %	0.50 %
19515L	25 µl	0.50 %	0.30 %
19520L	50 µl	0.50 %	0.30 %
19525L	100 µl	0.50 %	0.30 %
19530L	200 µl	0.40 %	0.20 %
19535L	250 µl	0.40 %	0.20 %
19540L	500 µl	0.30 %	0.20 %
19545L	1000 µl	0.30 %	0.20 %

Liquid:	Distilled water (quality 3, DIN ISO 3696)
Reference temperature:	22 °C, constant to ± 0.5 °C
Tested:	According to ISO 8655/DIN 12650 using original manufacturer's tips

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The logo graphic consists of a stylized, three-dimensional red and white shape that resembles a folded ribbon or a series of overlapping planes, positioned to the left of the word 'Human'.

Human

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