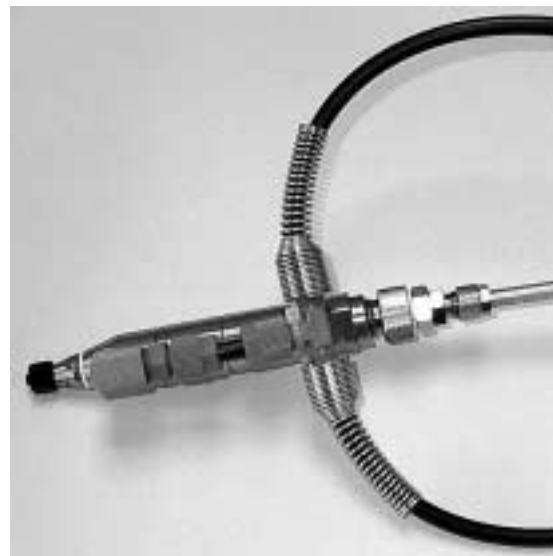


LOCTITE®

Operating Manual

VoluDrop Dispenser UV
97650



Contents

English3 - 16

Contents

1	Please observe the following	4
1.1	Emphasized Sections	4
1.2	Items Supplied.....	4
1.3	For Your Safety	5
1.4	Field of Application (Intended Usage)	5
2	Description	6
2.1	Theory of Operation	6
2.2	Operating Elements and Connections.....	6
3	Technical Data	7
4	Installation	8
4.1	Connecting to the Product Reservoir	8
4.2	Connecting to the Controller.....	8
4.3	Selection of the Required Dispensing Needle.....	10
5	Dispensing	11
5.1	Flushing.....	11
5.2	Adjusting the Dispensing Quantity	12
5.3	Shutdown	12
5.4	Returning to Operation	12
6	Maintenance	13
7	Troubleshooting	14
8	Annex	15
8.1	Accessories and Spare Parts	15
8.2	Manufacturer's Declaration	16
8.3	Warranty (excluding Germany)	16

1.1 Emphasized Sections



Warning!

Refers to safety regulations and requires safety measures that protect the operator or other persons from injury or danger to life.



Caution!

Emphasizes what must be done or avoided so that the unit or other property is not damaged.



Notice

Gives recommendations for better handling of the unit during operation or adjustment as well as for service activities.

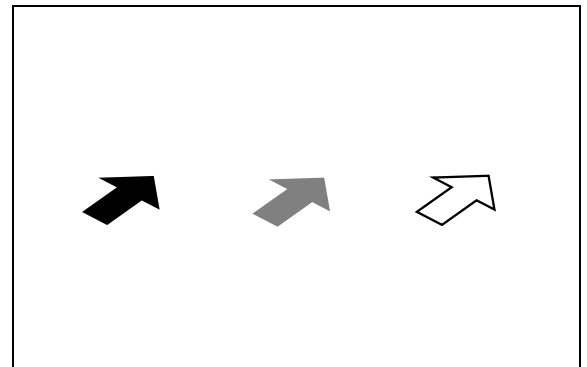
The numbers printed in bold in the text refer to the corresponding position numbers in the illustration on page 7.

- The point emphasizes an instruction step.

Instruction steps in the illustrations are indicated with arrows.

When several instruction steps are indicated in an illustration, the shading of the arrow has the following meaning:

- Black arrow = 1st step
- Grey arrow = 2nd step
- White arrow = 3rd step



1.2 Items Supplied

- 1 VoluDrop Dispenser 97650
- 1 Needle Variety Kit 97262;
- 1 Product Feedline, length 2 m, including Valve Fitting ¼”
- 1 Instruction Manual 97650
- 1 Assembly Tool for Maintenance
- 1 Air Pressure Hose OD 4 mm calibrated, length 1 m



As a result of technical development, the illustrations and descriptions in this operating manual can deviate in detail from the actual unit delivered.

1.3 For Your Safety



For safe and successful operation of the unit, read these instructions completely. If the instructions are not observed, the manufacturer can assume no responsibility.

Be sure to retain this manual for future reference.



When working with pressurized air, wear protective glasses!

Observe general safety regulations and manufacturer's instructions for the handling of chemicals.

If chemical products are not properly handled, damage to health can result!

Request a safety data sheet for the LOCTITE®-adhesive used!

1.4 Field of Application (Intended Usage)

The VoluDrop Dispenser is suitable only for the exact drop application of LOCTITE UV acrylics up to a viscosity of 15,000 mPas.

It is **not suitable** to dispense **UV acrylics with anaerobic component, cyanoacrylates, abrasive adhesives and anaerobics.**

Only drop dispensing is possible.

Up to a viscosity of 5,000 mPas the dispenser is able to spit adhesives.

Spitting is possible from 3 µl up to 15 µl, non-spitting from 0.8 µl up to 3 µl.

Within a distance of 50 mm a feed motion of the workpiece is not necessary. The dispenser should be mounted with the dispensing needle downwards.

The dispenser is used as a stationary applicator unit. It is mounted directly at the dispensing position. The free end of the product feedline is connected to the product reservoir.

For product reservoirs, 0.5 l and 2 l versions are available.

The control of the dispenser is provided by a control unit of the LOCTITE equipment line.

2.1 Theory of Operation

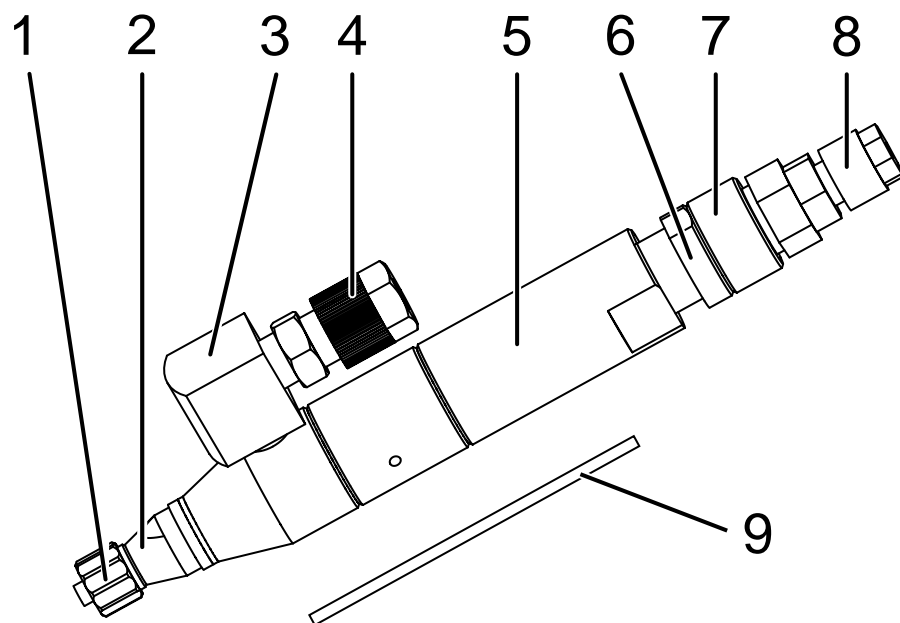
The LOCTITE adhesive is transported through a product feedline to the dispenser by the dispensing pressure in the product reservoir. This feedline has a PTFE-liner to prevent curing of adhesives in this area.

When the ejector piston moves back the dispensing chamber will be filled. The adhesive is spat under high pressure by very fast movement of the piston. During dispensing a non-return valve prevents back-flow of adhesive to the reservoir.

The amount of product dispensed is controlled by the volume of the dispensing chamber. Via a stroke adjustment the amount can be limited between 0.8 μl to 15 μl per shot.

As a matter of principle, spitting is possible with each LOCTITE dispensing needle. An exact spitting is only possible with the conical needles. Generally, the size of the needle should be adapted to the required amount.

2.2 Operating Elements and Connections



- 1 **Luer-Lock Adapter** to mount a dispensing needle.
- 2 **Integrated Non-Return Valve** prevents dripping of adhesive due to the reservoir pressure.
- 3 **Non-Return Valve** to prevent back-flow of adhesive to the reservoir during dispensing.
- 4 **Feedline Connector** to connect a feedline (OD 1/4" or 6 mm) to the reservoir.
- 5 **Dispenser**
- 6 **Lock Nut** to fix the stroke adjustment knob.
- 7 **Stroke Adjustment Knob** to reduce stroke and therewith the dispensed quantity.
- 8 **Compressed Air Connector**, to connect pneumatic tube, OD see section 3.
- 9 **Assembly Tool** for maintenance, see section 6

3

Technical Data

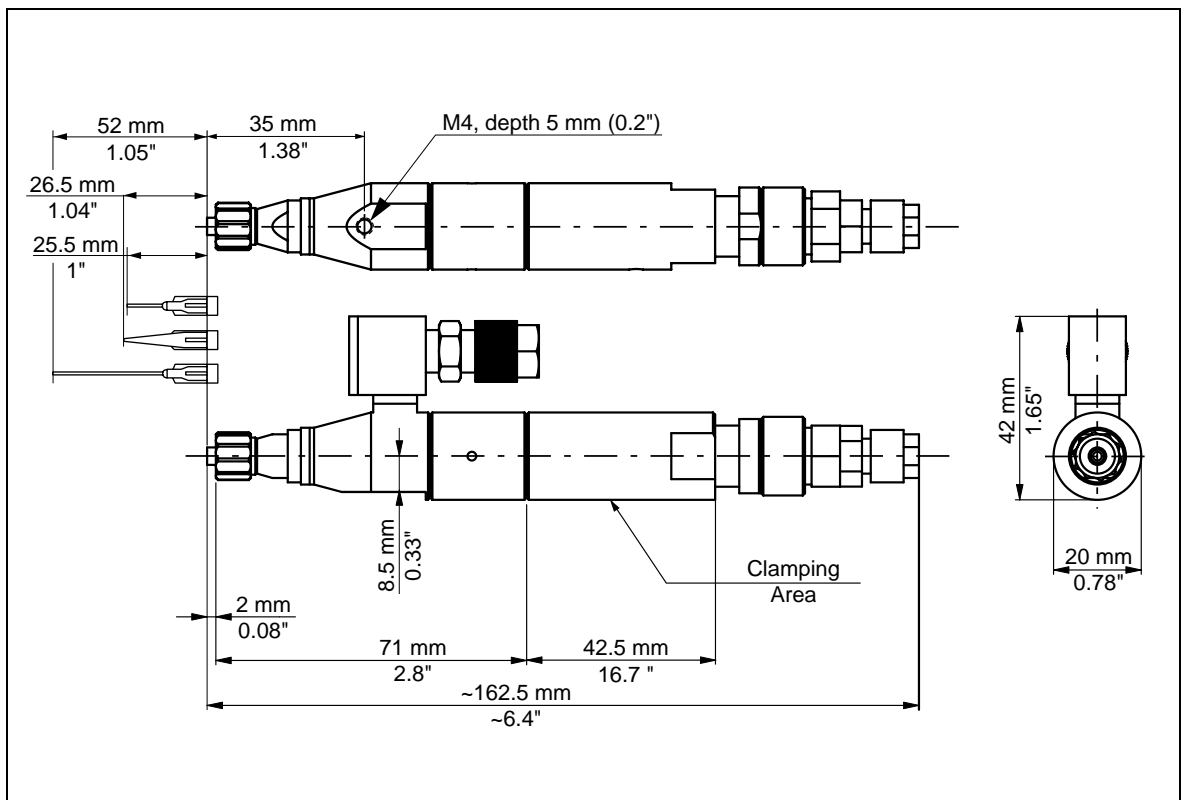
Pneumatic supply	min. 6 bar (87 psi)
Quality If required quality is not achieved, install a LOCTITE filter regulator	Filtered 10 µm, oil-free, non-condensing Accessory Order No. 97120
Pneumatic hose size, control air connection	External dia. 4 mm calibrated; Internal dia. 2.5 mm
Dispensing Rate	4 shot/s, depends on viscosity of adhesive, in continuous mode up to 15 µl.

Product Feedline Standard: ¼" OD, or 6 mm OD

Reservoir Pressure 0.6 bar (8.7 psi) - 0.8 bar (11.6 psi)

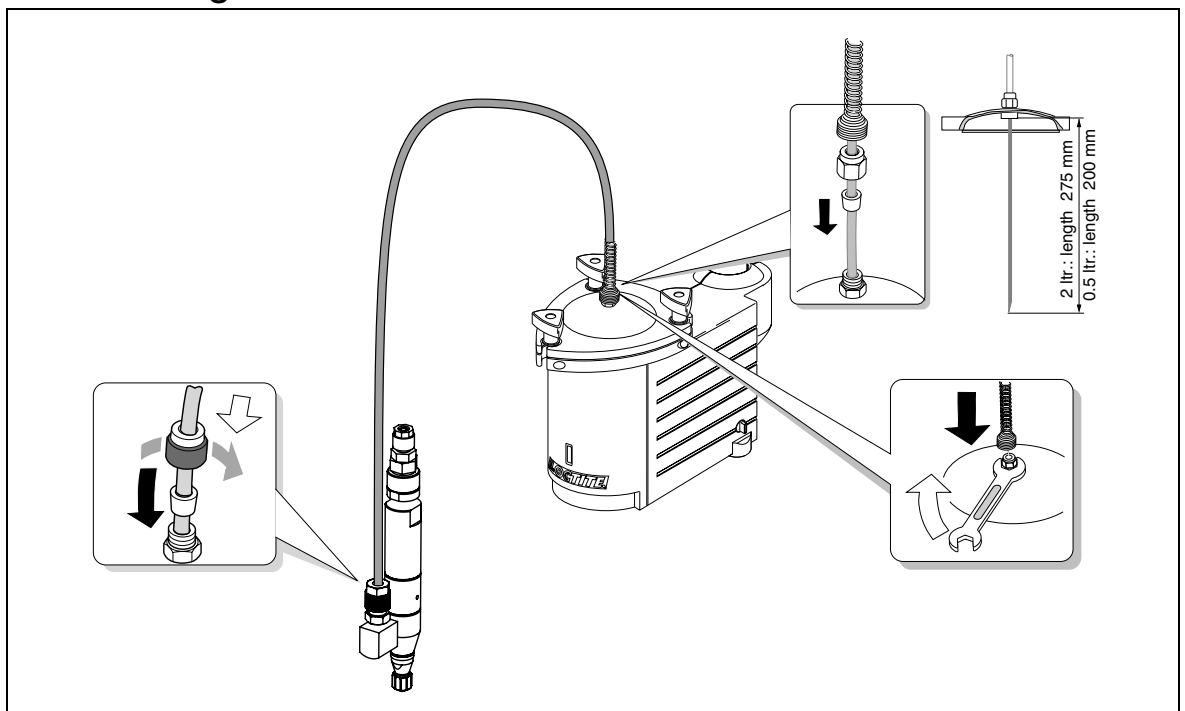
Flushing Pressure > 7 bar (100 psi) < 8 bar (116 psi)

Weight 260 g



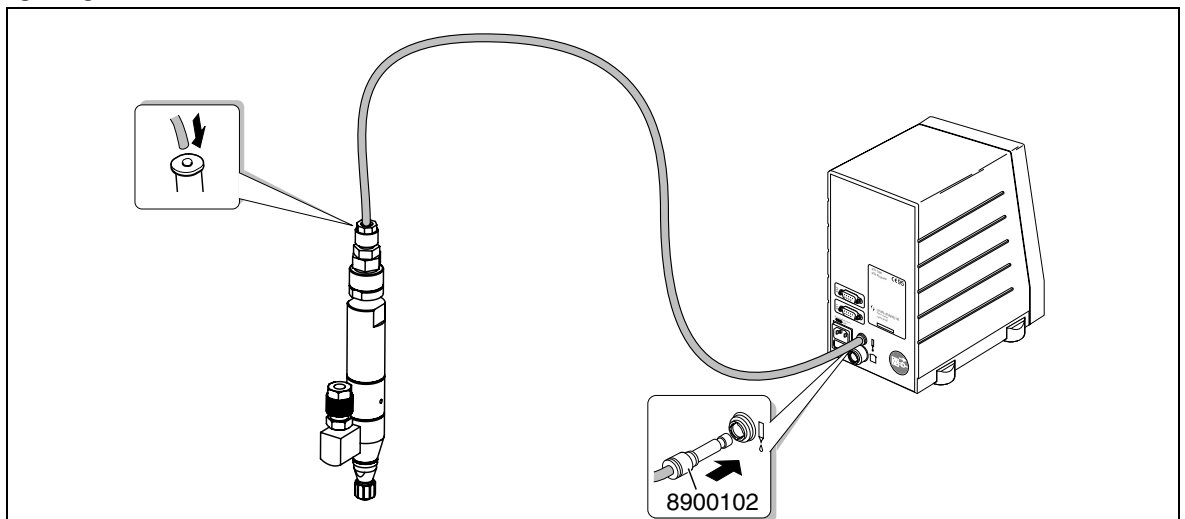
- Keep the pressure hose as short as possible. Short switch-on and switch-off times for the dispenser are within reach.
- Keep product feedlines as short as possible. The shorter the feedline the smaller the specific resistance and the lower the dispensing pressure can be.
- Avoid kinking of feedlines and pressure hoses.
- Typically, the pressure hose and product feedline should not be longer than 2 m.
- Do not use inflexible hoses and feedlines, so that unnecessary loads on the fittings will be avoided.
- Keep all fittings tight.
- No direct sunlight; no UV light!

4.1 Connecting to the Product Reservoir

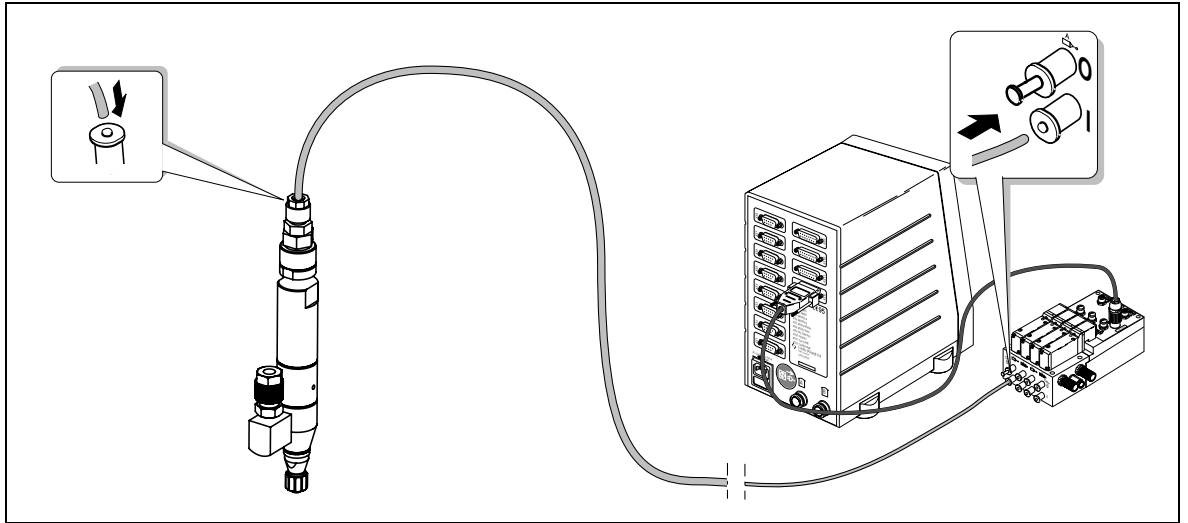


4.2 Connecting to the Controller

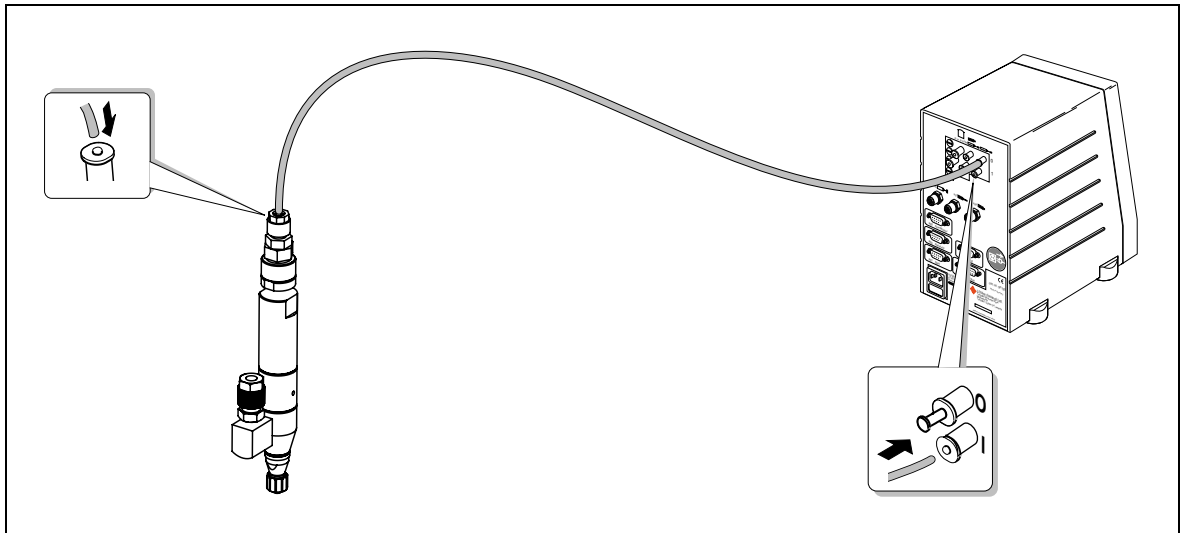
97102



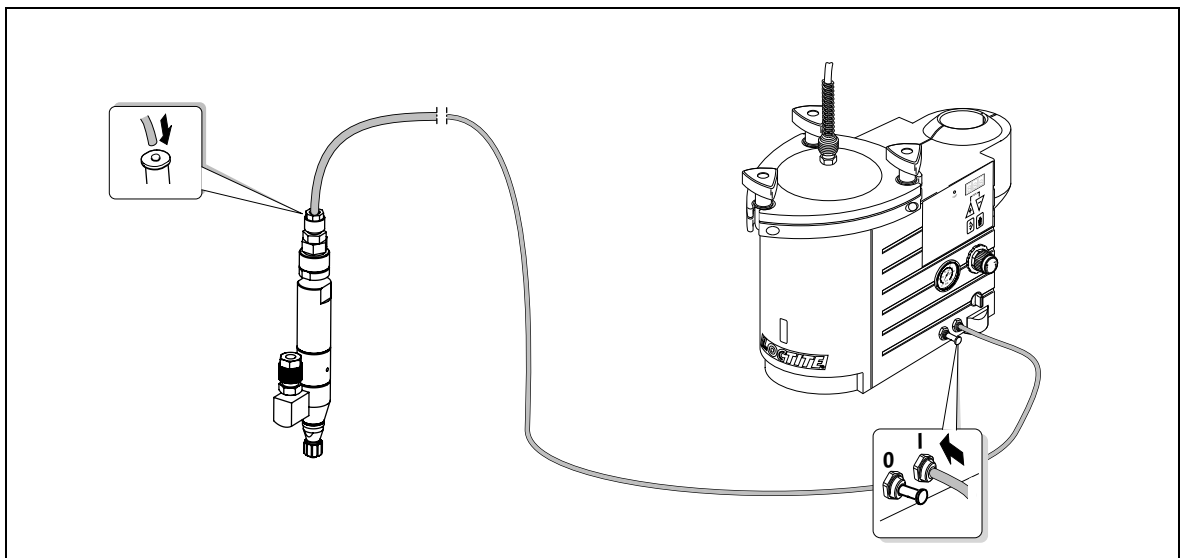
97103/97204



97123



97009



4.3 Selection of the Required Dispensing Needle


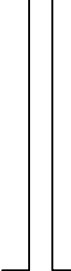
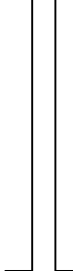
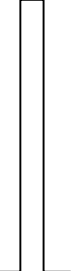





For each product and corresponding application of the dispenser, various dispensing needle types and sizes are available:

- Conical dispensing needles of polyethylene for viscous products and large dispensed quantities.
- Stainless steel needles for thin fluids and UV curing products (especially suitable for spot applications).
- Flexible dispensing needles of polypropylene (especially for dispensing on damageable surfaces).
- PTFE-lined stainless steel needles (especially for fast curing products).

As a matter of principle, spitting is possible with each LOCTITE dispensing needle. An **exact spitting** is **only** possible with the **conical dispensing needles**.

With same dispensing quantity certain correlation determines the selection of the needle.

The table below shows these correlation.

Dispensing Needle	Pressure Loss along the Needle	Risk of Dripping	Spitting
Conical dispensing needles PE 97221 – 97224 	small 	small 	possible 
Stainless Steel needle SSS 97225 - 97228 			
Flexible dispensing needles PP 97229 – 97232 			



Important for spitting applications:

- conical needles are recommended
- smallest dispense volume is about 3 µl
- inner needle diameter must be adapted to the product viscosity

5.1 Flushing

To avoid troubles caused by air bubble the product feedline and the VoluDrop Dispenser must be filled and then purged of air.

Generally, flushing has to be done for the initial startup and also, depending on the adhesive, in regularly time lags.

Air bubbles can result in the following troubles:

- no or too little product or
- dispenser does not spit.

For easier handling an external possibility of switching between the reservoir pressure and the necessary flushing pressure should be implemented. It consists of 1 manual actuated switch-over valves (5/2-way valves, button actuated, fumbling, not resting) and a connection to the pressure supply of more than 7 bar (100 psi).

See also pneumatic diagram section 8.

The 5/2-way valve is used as a switch-over valve for switching between the product pressure (reservoir pressure 0.6 - 0.8 bar / 8.7 - 11.6 psi) and the flushing pressure min. 7 bar (100 psi), max. 8 bar (116 psi).

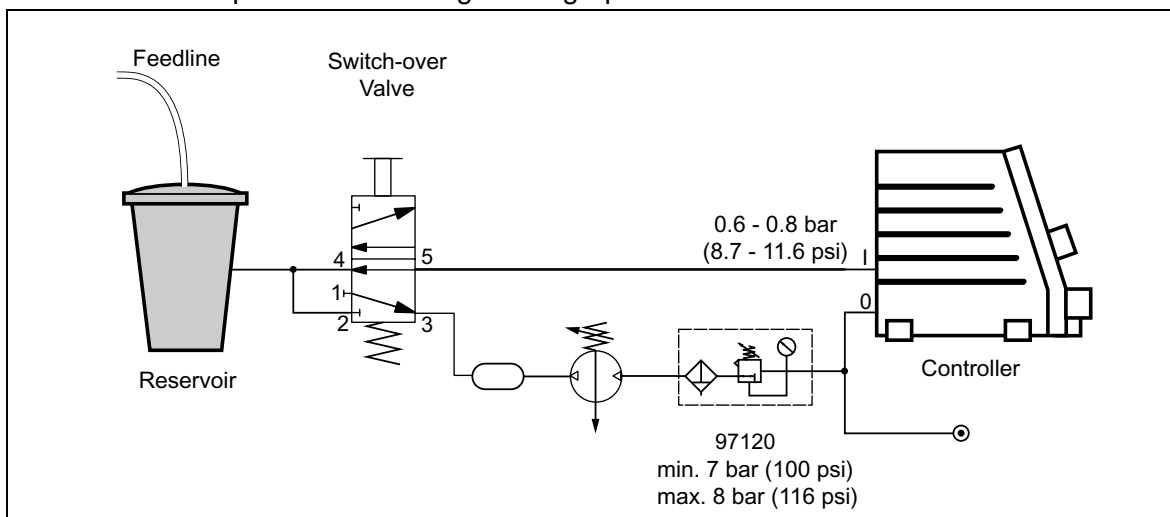
Basic position of the switch-over valve is in position

reservoir pressure from the controller 0.6 - 0.8 bar.

A compressed air pressure of 7 - 8 bar (100 - 116 psi) is necessary to override the integrated non-return valve **2**. If it is not available an additionally pressure multiplier has to be used. To limit the pressure at 8 bar a LOCTITE filter regulator order no. 97120 or a comparable one is necessary. Otherwise the integrated burst plate of the reservoir can burst (lower burst limit 8.8 bar / 125 psi).

Flushing Procedure

- Mount the components according to the graphic below.



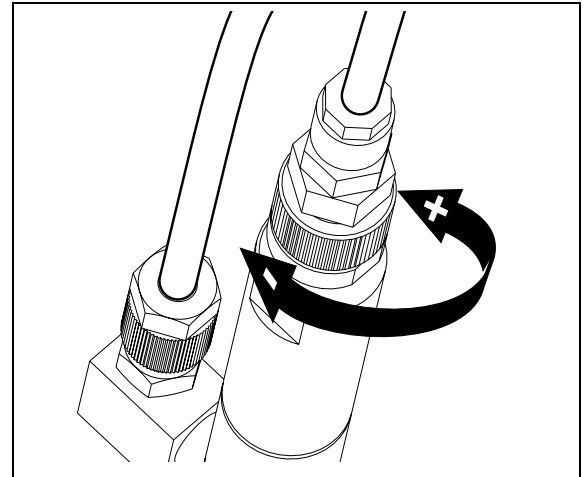
Place a container under the dispenser. Product will flow out!

- Press switch-over valve and keep it pressed. The reservoir will be pressurized with min. 7 bar.
- Start dispensing for several times.
- Switch over to 0.6 – 0.8 bar by releasing the valve.
- The reservoir will be vented due to the pressure regulator of the controller.
- Wait a short time till the correct pressure 0.6 – 0.8 bar is present. Dispensing can be continued.

5.2 Adjusting the Dispensing Quantity

The dispensed quantity is adjusted by setting the size of the dispensing chamber in the dispenser.

- Adjust the required amount of adhesive by turning the stroke adjustment knob **7** clockwise or counter-clockwise to decrease or increase the effective size of the chamber.
- Start dispensing to check the dispensed amount.
- Go further with this procedure till the amount is reached.
- Protect the adjustment with the lock nut **6**.



5.3 Shutdown

For short idle periods, 24 hours or less, the system can be left idle without any special preparations.

It is necessary to change the dispensing needle against the luer-lock tip cap to prevent curing of the adhesive.

For periods 1 week or longer remove the adhesive from the reservoir and purge the system with fresh acetone to clear feedline, dispenser and fittings of adhesive.

5.4 Returning to Operation

- Insert product bottle into the reservoir.
- Possibly replace the Luer-Lock tip cap with a new dispensing needle.
- Purge the Dispenser until product runs out bubble free out of it, see section 5.1.

?

Check the adjustment of the dispensing quantity according to of the operating manual of the used controller.

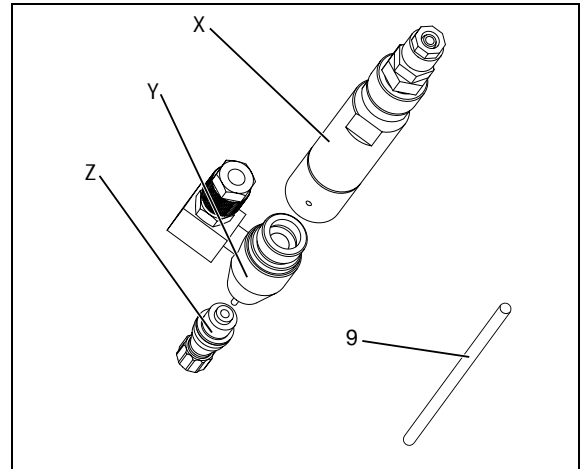
The VoluDrop Dispenser requires no special care.

As maintenance only a sealing ring inside has to be replaced regularly.

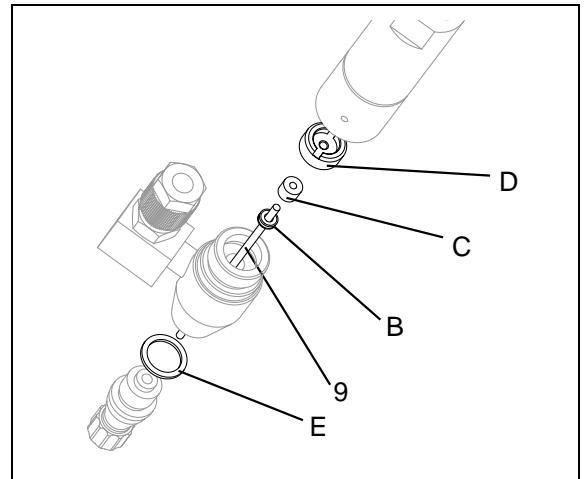
The dispenser has to be cleaned, if it is dismantled for replacing the sealing rings, see section 5.1.

- ? The maintenance interval is at a dispensing rate of :
- 10 shots/minute (smallest amount) every 7 days.
 - 4 shots/minute (biggest amount) every 2-3 weeks.
- Dismantle the dispenser according to the right graphic.

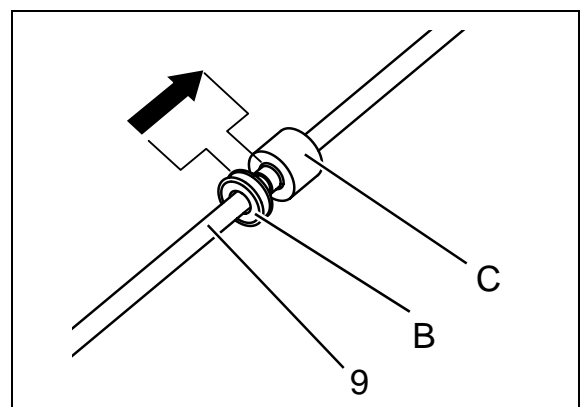
The number **9** shows the supplied assembly tool for maintenance.



- ? • Unscrew thread disk **D** with the help of a screwdriver.
- Remove the shim rings **E** and keep them ready
 - Use the assembly tool **9** to dismantle the gasket **C** and the sealing ring **B**.
 - Replace the sealing ring **E**.



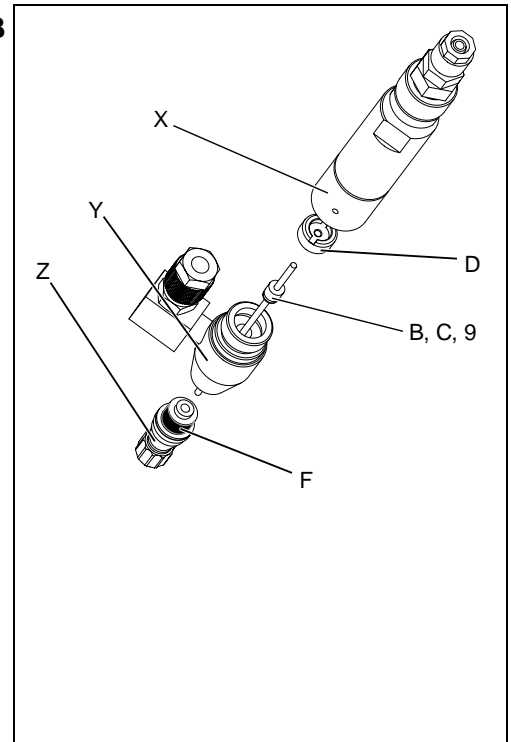
- Replace the gasket **C** and the sealing ring **B** and mount the new one's with the help of the assembly tool **9**.



6

Maintenance

- ?
- Mount the preassembled gasket/ assembly tool **B C 9** together with two shim rings **E** to the shut-off assembly **Y** without removing the ass. tool **9**.
 - Screw thread disk **D** with the help of a screwdriver into the shut-off assembly.
 - In order to check the tightness of the gasket **C** check the mobility of the assembly tool **9**. The gasket must keep the ass. tool in place, but the ass. tool must be smooth running.
 - If the gasket is too tight then remove a shim ring. Repeat this until the ass. tool is smooth running.
 - If the gasket is too loose then add a shim ring. Repeat this until the ass. tool is smooth running.
 - Mount the actuator **X** to the preassembled shut-off assembly. The ass. tool **9** will be pressed out.
 - Remove the assembly tool **9**.
 - Wrap a PTFE sealing tape round the thread **F** of the integrated non-return valve **Z**.
 - Mount the non-return valve to the shut-off assembly.



7

Troubleshooting

Type of malfunction	Possible causes	Correction
No liquid flow or too little flow.	<ul style="list-style-type: none"> – Product feedline and/or pneumatic hose not connected correctly or kinked. – Control pressure not adequate. □ Control pressure must be min. 6 bar. – Curing in the product feedline or in the dispensing needle. – Curing in the VoluDrop Dispenser. – Controller incorrectly adjusted. – Product reservoir not switched on, depressurized or pressure is too low. – Piston stroke set too small or to 0. 	<ul style="list-style-type: none"> • Connect the product feedline correctly. If kinked, replace it. • Check and adjust the control pressure. • Replace the product feedline and/or the dispensing needle. • Loctite Service • Check the controller setting (see operating manual of the controller). • Check the reservoir (see operating manual of the product reservoir). • Turn the adjustment knob 7 anti-clockwise.
Product drips after dispensing, eventually stopping	<ul style="list-style-type: none"> – Air is trapped in the Dispenser and/or in the product feedline and/or in the dispensing needle 	<ul style="list-style-type: none"> • Purge the product feedline, dispenser and dispensing needle of air (section 5.1).
VoluDrop Dispenser does not open.	<ul style="list-style-type: none"> – Actuator of the dispenser is contaminated with product. 	<ul style="list-style-type: none"> • Loctite Service
Air bubbles in the product being dispensed.	<ul style="list-style-type: none"> – Compressed air being dissolved into the product. 	<ul style="list-style-type: none"> • Purge the product feedline, dispenser and dispensing needle of air (section 5.1). If possible, reduce the product pressure.


8.1 Accessories and Spare Parts



Also see the illustration on page 7.

Pos. No.	Description	Loctite Order No.
1	Luer-Lock-Adapter Kit	97233
2	Integrated Non-return Valve 6 bar	8964738
3	Non-return Valve 0.4 bar	8964737
	Sealing Rings Repair Kit	8964709
–	Reservoir Fitting ¼" * ⅛"	8900064
–	Product Fitting, SO 31121-6-1/8 PA, Serto jacob GmbH, 34277 Fuldaabrück ...	–
–	Tubing, PTFE-lined, OD ¼", length 10 m	97972
–	Dispense Needle, Polyethylene – Conical (PPC), especially for viscous products and large dispensing quantities: Dispense Needle PPC16GA (50 pcs/box), ID Size 1.19 mm, grey	97221
	Dispense Needle PPC18GA (50 pcs/box), ID Size 0.84 mm, green	97222
	Dispense Needle PPC20GA (50 pcs/box), ID Size 0.58 mm, pink	97223
	Dispense Needle PPC22GA (50 pcs/box), ID Size 0.41 mm, blue	97224
–	Dispense Needle, Stainless Steel – Standard (SSS), especially for low viscosity and UV curing products: Dispense Needle SSS15GA (50 pcs/box), ID Size 1.35 mm, amber	97225
	Dispense Needle SSS18GA (50 pcs/box), ID Size 0.84 mm, green	97226
	Dispense Needle SSS20GA (50 pcs/box), ID Size 0.58 mm, pink	97227
	Dispense Needle SSS25GA (50 pcs/box), ID Size 0.25 mm, red	97228
–	Dispense Needle, Polypropylene – Flexible (PPF), especially for fast curing products: Dispense Needle PPF15GA (50 pcs/box), ID Size 1.24 mm, amber	97229
	Dispense Needle PPF18GA (50 pcs/box), ID Size 0.81 mm, green	97230
	Dispense Needle PPF20GA (50 pcs/box), ID Size 0.48 mm, pink	97231
	Dispense Needle PPF25GA (50 pcs/box), ID Size 0.36 mm, red	97232
–	Dispense Needle, Stainless Steel – PTFE-lined (SSTL), especially for fast curing products: Dispense Needle SSTL25GA (50 pcs/box), ID Size 0.15 mm, pink	97238
–	Luer-Lock Tip Caps	97248
–	Sealing Ring G1/8", O-1/8, Festo AG	–

8.2 Manufacturer's Declaration

The Manufacturer according to the EC regulations	Henkel Loctite Deutschland GmbH Arabellastraße 17 D-81925 München
declares that the unit designated in the following is, as a result of its design and construction, in accordance with the European regulations, harmonized standards and national standards listed below.	
Designation of the unit	VoluDrop Dispenser UV
Unit number	97650
Applicable EC Regulations	EC-Machine Directive 98/37/EEC
Applicable harmonized standards	DIN EN 292 Part 1; DIN EN 292 Part 2 11.1991
Date / Manufacturer's signature	12/06/2002
Information regarding the Signer	General Manager  (F. Löhr)
For changes to the unit that were not approved by Loctite, this declaration loses its validity.	

8.3 Warranty (excluding Germany)

Loctite expressly warrants that all products referred to in this Operating Manual under VoluDrop Dispenser 97650 (hereafter called "Products") shall be free from defects in materials and workmanship. Loctite's liability shall be limited, at its option, to replacing those Products which are shown to be defective either in materials or workmanship or to credit to the purchaser the amount of the purchase price thereof (plus freight and insurance charges paid therefore by the user). The purchaser's sole and exclusive remedy for breach or warranty shall be such replacement or credit. A claim of defect in materials or workmanship in any Products shall be allowed only when it is submitted to Loctite in writing within one month after discovery of the defect or after the time the defect should reasonably have been discovered [and in any event within six months after the delivery of the Products to the purchaser]. No such claim shall be allowed in respect of Products which have been neglected or improperly stored, transported, handled, installed, connected, operated, used or maintained or in the event of unauthorized modification or the Products [including, where products, parts or attachments for use in connection with the Products are available from Loctite, the use of products, parts or attachments which are not manufactured by Loctite.]

No Products shall be returned to Loctite for any reason without Loctite's prior written approval. Products shall be returned freight prepaid, in accordance with Loctite's instructions.

EXCEPT FOR THE EXPRESS WARRANTY CONTAINED IN THIS SECTION, LOCTITE MAKES NO WARRANTY OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, WITH RESPECT TO THE PRODUCTS.

ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND OTHER WARRANTIES OF WHATEVER KIND (INCLUDING AGAINST PATENT OR TRADEMARK INFRINGEMENT) ARE HEREBY DISCLAIMED BY LOCTITE AND WAIVED BY THE PURCHASER.

THIS SECTION SETS FORTH EXCLUSIVELY ALL OF LOCTITE'S LIABILITY TO THE PURCHASER IN CONTRACT, IN PART OR OTHERWISE IN THE EVENT OF DEFECTIVE PRODUCTS.

WITHOUT LIMITATION OF THE FOREGOING, TO THE FULLEST EXTENT POSSIBLE UNDER APPLICABLE LAWS, LOCTITE EXPRESSLY DISCLAIMS ANY LIABILITY WHATSOEVER FOR ANY DAMAGES INCURRED DIRECTLY OR INDIRECTLY IN CONNECTION WITH THE SALE OR USE OF, OR OTHERWISE IN CONNECTION WITH, THE PRODUCTS, INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS AND SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER CAUSED BY LOCTITE'S NEGLIGENCE OR OTHERWISE.

Henkel Loctite Deutschland GmbH
Arabellastraße 17 Telefon 0 89/92 68-0
D-81925 München Telefax 0 89/9 10 19 78

