LOCTITE®

EQUIPMENT
Operation Manual

Loctite® Dispense Valve
Part Numbers 97113 and 97114

A Henkel Company

Contents

1. Please Observe the Following

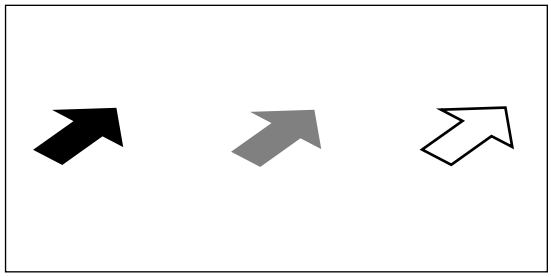
1.1 Emphasized Sections

⚠ **Warning!**
Refers to safety regulations and required 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.

- 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 Dispense Valve - 97113 (with 6.3 mm Product Feedline connection) or Dispense Valve - 97114 (with 9.5 mm Product Feedline connection);

1 Needle Kit

1 Instruction Manual

1 Anti-Bubbler Adapter & Sleeve

☞ As a result of technical development, the illustrations and descriptions in this instruction 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.

- Observe general safety regulations for the handling of chemicals!
- Observe manufacturer's instructions! Request a safety data sheet for the product used!
- When working with pressurized air, wear protective glasses!

1.4 Features

- Slim, lightweight, patented sealless dispense valve
- Used in semi or fully-automatic process applications
- Two-part, modular construction equipped with a patented quick disconnect for on-line serviceability
- Designed with a suck-back feature for dispensing accuracy and control
- Adaptable to optional reservoirs based on product package
- Dispenses Loctite innovative chemistries up to 80,000 cPs
- Worldwide Availability
- Worldwide Service
- Application support for integrating both the adhesive and equipment interface

1. Please Observe the Following (continued)

1.5 Usage

The Loctite® Dispense Valve is a slim, lightweight, and user-friendly valve that contains a “suck-back” feature that eliminates product dripping and stringing at the end of the dispense cycle.

It also features a two-part, modular construction for on-line serviceability.

The Dispense Valve applies Loctite® products in dots, drops, and beads by the process means of semi or fully automatic systems. The valve can be used in both stationary or advancing modes.

Recommended viscosity ranges: 97113 – up to 15,000 cPs
97114 – up to 80,000 cPs

2. Description

2.1 Operating Elements and Connections

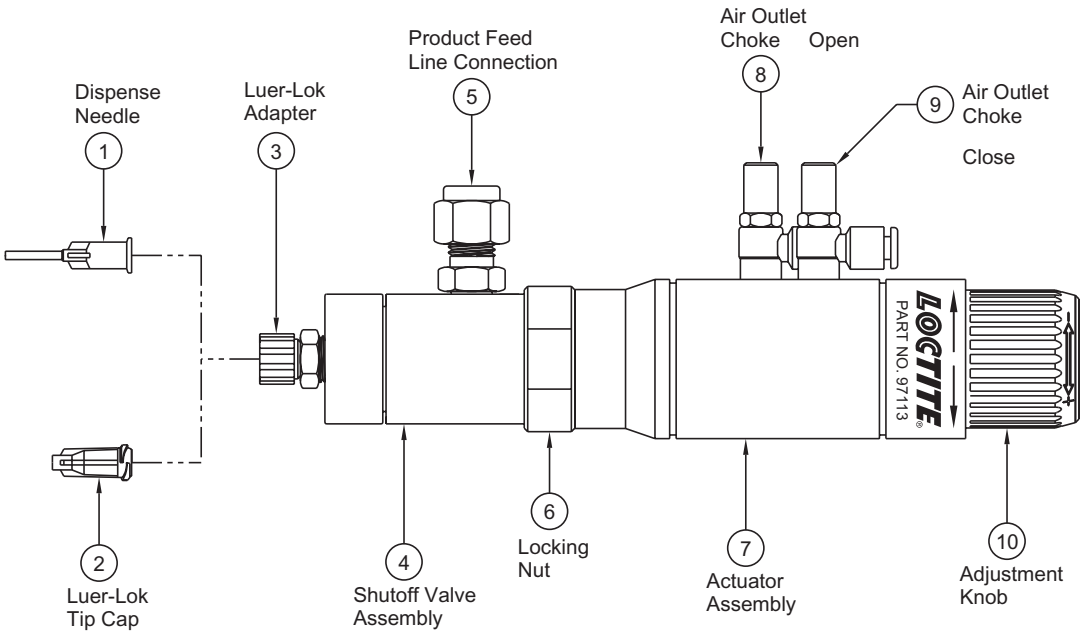


Figure 1. Component Identification

Locking nut
Locks the bayonet connection between the valve assembly **4** and the actuator assembly **7**.

Air outlet choke
Affects the opening speed of the dispensing valve.

Air outlet choke
Affects the closing speed of the dispensing valve.

Adjustment knob
For the stroke of the shutoff piston.

2.2 Theory of Operation

An uncovered bottle of Loctite® product is placed directly into the reservoir and the reservoir lid is clamped in place.

The reservoir is then pressurized from a Loctite controller using clean, filtered dry air. Air within the reservoir will push down on the liquid in the bottle and force it through the product feedline to the shutoff valve.

The amount of product dispensed is controlled by 3 main factors:

1. Amount of pressure in the reservoir.

2. Length of time the shutoff valve remains open.

3. Dispensing needle size.

With the closing of the piston in the Dispensing Valve, a negative pressure (suck-back effect) is produced that prevents the product from continuing to run or drip out of the dispensing needle **1**. This suck-back effect can be changed by adjusting the piston stroke with the adjustment knob **10**.

☞ The main purpose of the adjusting knob is to control the amount of suck-back. There is a small amount of flow control in the first 1/2 turn of the adjusting knob - after that point, the adjusting knob only controls the suck-back effect.

The opening and closing of the Dispense Valve 97113 / 97114 are influenced by the speed with which the pressurized air can escape from the double action actuator assembly.

The opening speed of the dispensing valve can be changed with the air outlet choke **8**.

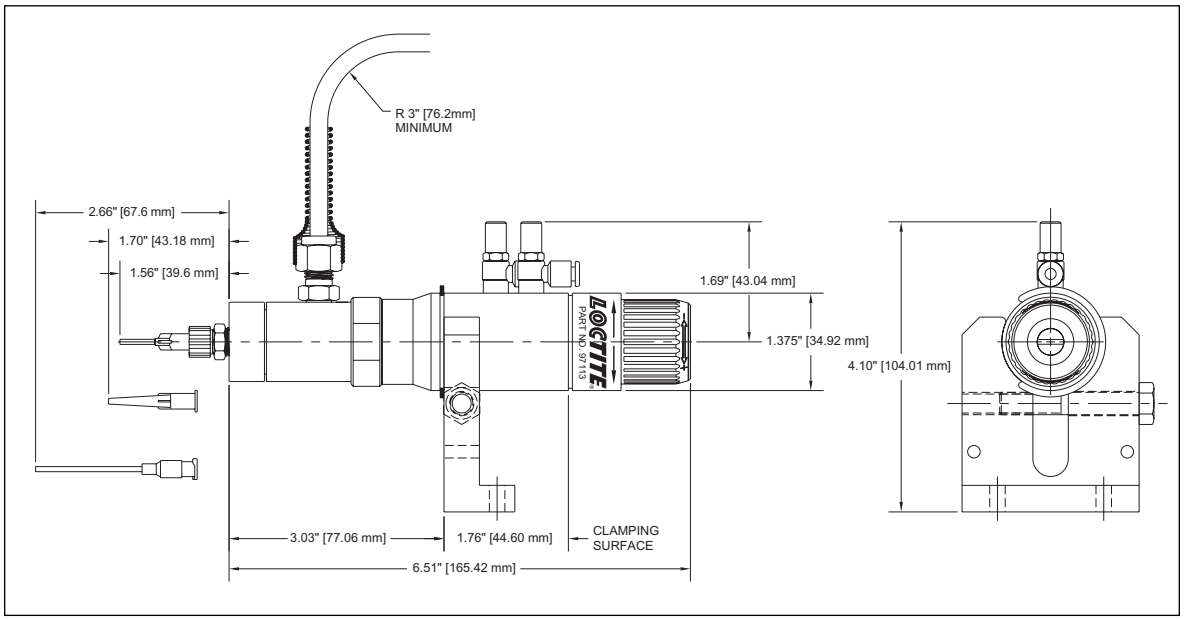
The closing speed of the dispensing valve can be changed with the air outlet choke **9**.

☞ With the changing of the opening and closing speed for the Dispensing Valve, the dispensed quantity is also changed.

3. Technical Data

Pneumatic supply	min. 4.08 Bar (min. 60 psi)
	max. 90 psi
Quality	Filtered 10 µm, oil-free, non-condensing
If the required quality is not achieved, install a LOCTITE® filter regulator.	Accessory Order No. 97120
Pneumatic hose size, supply	Minimum 1/4 I.D.
Control air connection	4 mm (.157 in.)
Product feedline	6.3 mm (1/4 in.) or 9.5 mm (3/8 in.)
Weight	0.340 kg (.75 lbs.)

Valve Dimensions



4. Installation

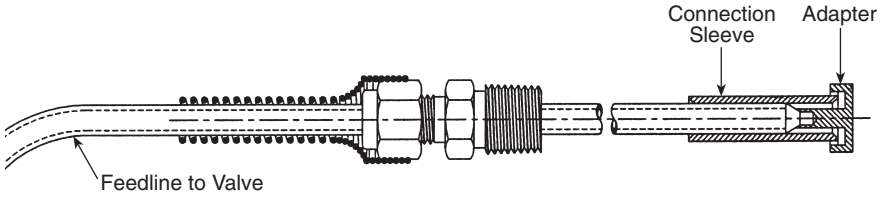
4.1 Installing the Anti-Bubbler to .5 liter and 2 liter Reservoirs

Anti-bubbler

The anti-bubbler is inserted at the end of the feedtube which resides in the product reservoir. The purpose of the anti-bubbler is to minimize the amount of adhesive which will run out of the feedtube when the reservoir lid is removed to re-fill the product reservoir.

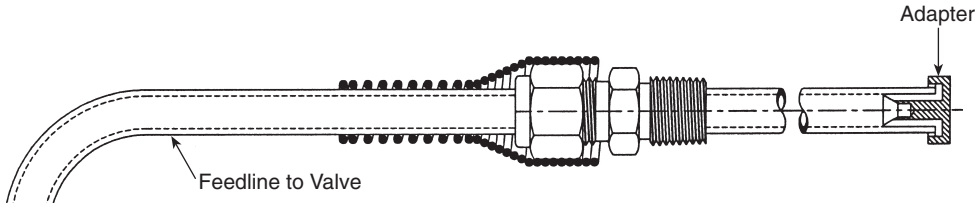
A. Anti-bubbler Installation - 1/4" Feedtube

Install spring guard, fitting nut, and ferrule onto the feedline. Insert feedline into fitting located in reservoir lid. Insert anti-bubbler into anti-bubbler connection sleeve. Push anti-bubbler connection sleeve onto 1/4" feedline. Position feedline so that the anti-bubbler is close to the bottom of the adhesive bottle.



B. Anti-bubbler Installation - 3/8" Feedtube

Install spring guard, fitting nut, and ferrule onto the feedline. Insert feedline into fitting located in reservoir lid. Insert anti-bubbler into 3/8" feedline. Position feedline so that the anti-bubbler is close to the bottom of the adhesive bottle.



4.2 Connecting Airlines

Connect the blue 4 mm O.D. airline to the lower fitting/air outlet choke, farthest fitting from the knob (see Figure 1 item **8**). The other end of the airline will be connected to the normally opened port of a 4-way solenoid valve.

Connect the yellow 4 mm O.D. airline to the upper fitting/air outlet choke closest fitting to the knob (see Figure 1 item **9**). The other end of the airline will be connected to the normally closed port of a 4-way solenoid valve.

5. Dispensing

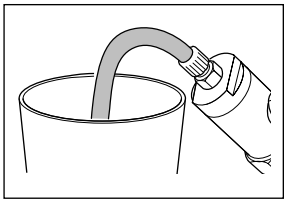
5.1 Priming the Dispensing Valve

☞ To avoid air bubbles during dispensing, the product line must be filled and then purged of air. The dispensing valve must be very carefully purged of air to achieve error-free dispensing.

- To fill the product line, hold the dispensing valve slanted upward so that no air will be trapped inside the valve chamber.
- Slide the silicone tubing provided over the dispensing needle.

⚠ • **Bend the silicone tubing downward to avoid uncontrolled squirting of the product.**

! • **Place a container under the dispensing valve since the product will flow out.**



- Perform the filling of the product feedline according to the operating instructions of the various Controllers.

5.2 Adjusting the Dispensed Quantity

☞ Before the dispensing quantity is adjusted, the stroke of the shutoff piston should be adjusted on the Dispensing Valve. With the changing of the piston stroke, the dispensed quantity is also changed for the same dispensing pressure.

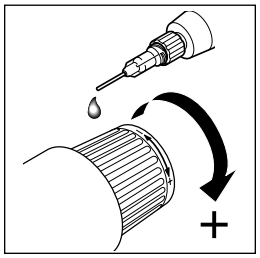
The opening and closing speed of the dispensing valve can be changed with the air outlet chokes. With the changing of the opening and closing speed for the dispensing valve, the dispensed quantity is also changed.

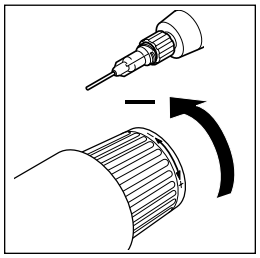
5.2.1 Adjusting the Suck-Back Effect (Piston Stroke)

The piston stroke should be adjusted so that the product no longer drips out of the dispensing needle.

! **The product must not be sucked back too far since, when using cyanoacrylates, curing can occur in the needle and valve and cause malfunction.**

- Initiate a time-controlled dispensing start (approx. 0.50 sec. long). When necessary, change the piston stroke with the adjustment knob **10**:





Product drips:
– Turn the adjustment knob in the **+** direction. The piston stroke (suck-back effect) is increased.

Product dispensing is delayed after a start:
– Turn the adjustment knob in the **–** direction.

- Perform the adjustment of the dispensed quantity according to the operating instructions of the various Controllers.

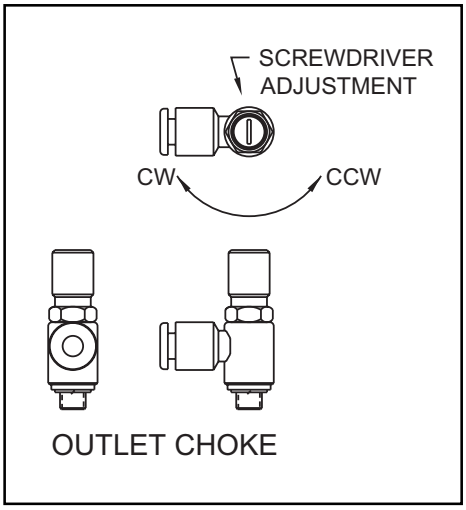
5.2.2 Adjusting the Air Outlet Chokes

☞ For most dispensing tasks, the air outlet chokes should be completely open. The air outlet chokes must be adjusted when:

– Very low viscosity (thin bodied) adhesive is dispensed or:
– An extremely exact point or bead application is required.

Adjustment of the air outlet chokes

The air outlet chokes are provided to slow the actuation speed of the valve. The air outlet chokes, used on this valve, allows air to free flow into the actuator and controls the rate at which the exhaust air is metered out of the actuator. Refrerring to Figure 1 the air outlet choke **8** allows pressurized air into the actuator, which shuts off product flow. Air outlet choke **9** allows air into the actuator to open the valve thus allowing product to flow through the valve.



OUTLET CHOKE

For most applications the air chokes should be set for maximum airflow. Maximum flow is achieved by turning the adjustment screw all the way in a counterclockwise direction.

For bead dispensing it may be helpful to open the valve slower to improve bead consistence from start to finish. This is done by:

1. Locate air choke **8.**
2. Turn adjustment screw all the way in a clockwise direction.
3. Turn adjustment screw one or two revolutions in the counterclockwise direction.
4. Actuate the valve and observe speed at which the valve opens.
5. Repeat steps 3 and 4 until valve is operating at desired speed.

For dispensing acrylic adhesive slowing the shut off speed of the valve may reduce micro bubbles from forming within the product chamber of the valve. This is done by:

1. Locate air choke **9.**
2. Turn adjustment screw all the way in a clockwise direction.
3. Turn adjustment screw one or two revolutions in the counterclockwise direction.
4. Actuate the valve and observe speed at which the valve opens.
5. Repeat steps 3 and 4 until valve is operating at desired speed.

5.3 Shutdown

- To protect anaerobic products from curing, remove needle leaving Luer-Lok adapter exposed to air.
- To protect all other products from curing, place a protective cap on the dispensing needle.
- If for some reason the product being dispensed changes, contact your local salesperson for the recommended procedures.

5.4 Returning to Operation

- Remove the protective cap from the dispensing needle.
- If needed, purge the product feedline and dispensing valve of air (see Section 5.1).

Returning to Operation After Longer Periods of Non-use

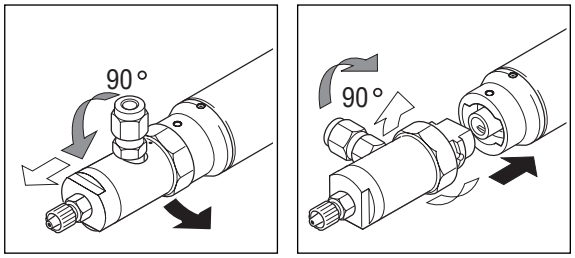
- Remove the Luer-Lok tip cap.
- Purge the product feedline and dispensing valve of air (see Section 5.1).
- Perform the adjustment of the dispensing quantity according to Section 5.2.

5.5 Disassembling the Dispensing Valve

☞ To replace the valve assembly or the actuator assembly, the bayonet lock of the dispensing valve can easily be opened.

- Loosen the locking nut **6**, turn the valve assembly **4** by 90° counterclockwise and pull out.
- Reassemble the dispensing valve with the replaced part in the reverse order. In this case, there must not be any pneumatic pressure on the actuator.

! **Tighten the locking nut not only hand tight, but also lightly with a wrench.**

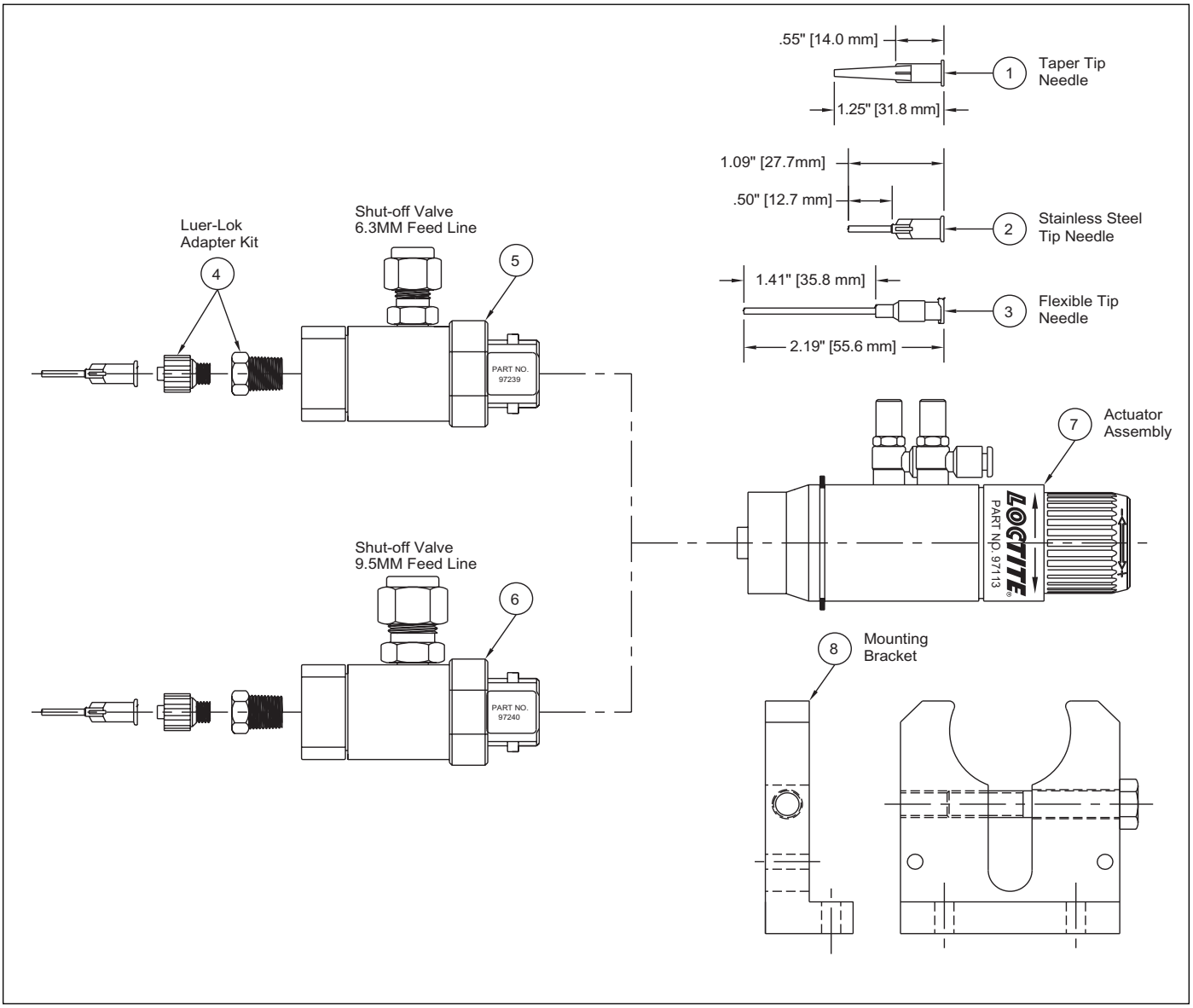


6. Troubleshooting

Type of Malfunction	Possible Cause	Correction
No product or too little product.	– Product feedline not correctly connected. – Pneumatic hose not correctly connected. – Curing in the product feedline and/or in the dispensing valve and/or in the dispensing needle, when the adjustment knob **10** does not move for a start and no product is dispensed. – Air in the product feedline and/or in the dispensing valve and/or in the dispensing needle, when the adjustment knob 10 moves for a start and no product is dispensed. – Controller incorrectly adjusted. – Product reservoir not switched on, or pressure is too low. – Valve is closed.	• Correctly connect the product feedline. • Correctly connect the pneumatic feedline. • Replace the product hose and/or valve assembly of the dispensing valve and/or dispensing needle. • Purge the product feedline, dispensing valve and dispensing needle of air (section 5.1). • Check the controller (see operating . instruction for the controller). Loctite Service. • Check the reservoir (see operating instruction for the product reservoir). • Increase stroke.
Air bubbles in product.	– Air in the dispensing valve/product feedline.	• Purge the product feedline, dispensing valve and dispensing needle of air (Section 5.1).
Product comes delayed after a start.	– Piston stroke (suck-back effect) too large.	• Reduce the piston stroke.
Product drips.	– Piston stroke (suck-back effect) too small.	• Increase the piston stroke.
Dispensing valve does not open.	– Air outlet choke **8** closed. – Piston stroke set to **O**.	• Open the air outlet choke **8**. • Turn the adjustment knob **10** counter-clockwise (**+** direction).
Dispensing valve opens too fast.	– Air outlet choke **8** opened too wide.	• Adjust the air outlet choke **8**.
Dispensing valve does not close.	– Air outlet choke **9** closed. – Bayonet locking piece is not tight enough. – Tubing not properly seated.	• Open the air outlet choke **9**. • Tighten counter nut **6** with a wrench. • Push tubing into fitting.
Dispensing valve closes too fast.	– Air outlet choke **9** opened too wide.	• Adjust the air outlet choke **9**.

7. Accessories and Spare Parts

7.1 Figure 8



7. Accessories and Spare Parts (continued)

Pos. No.	Description	Loctite Order No.
1	Dispense Needle, Polyethylene – Taper Tip,	
	Dispense Needle 16GA (50 pcs/box), ID Size 1.20 mm, grey	97221
	Dispense Needle 18GA (50 pcs/box), ID Size 0.84 mm, green	97222
	Dispense Needle 20GA (50 pcs/box), ID Size 0.58 mm, pink	97223
	Dispense Needle 22GA (50 pcs/box), ID Size 0.41 mm, blue	97224
2	Dispense Needle, Stainless Steel – Straight,	
	Dispense Needle 15GA (50 pcs/box), ID Size 1.37 mm, amber	97225
	Dispense Needle 18GA (50 pcs/box), ID Size 0.84 mm, green	97226
	Dispense Needle 20GA (50 pcs/box), ID Size 0.60 mm, pink	97227
	Dispense Needle 25GA (50 pcs/box), ID Size 0.26 mm, red	97228
3	Dispense Needle, Polypropylene – Flexible,	
	Dispense Needle 15GA (50 pcs/box), ID Size 1.38 mm, grey	97229
	Dispense Needle 18GA (50 pcs/box), ID Size 0.83 mm, pink	97230
	Dispense Needle 20GA (50 pcs/box), ID Size 0.62 mm, yellow	97231
	Dispense Needle 25GA (50 pcs/box), ID Size 0.34 mm, red	97232
4	Luer-Lok-Adapter Kit	97233
5	Shut-off Valve Assembly 6.3 mm	97239
6	Shut-off Valve Assembly 9.5 mm	97240
7	Actuator Assembly	97291
8	Mounting Bracket	97242
9	Filter Regulator (Not Shown)	97120
10	Anti-Bubbler Connection Sleeve (See section 4.1)	992663
11	Anti-Bubbler Adapter (See section 4.1)	992533

8. Warranty

Henkel Loctite expressly warrants that all products referred to in this Instruction Manual Dispense Valve 97113 & 97114 (hereafter called “Products”) shall be free from defects in materials and workmanship. Liability for Henkel Loctite 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 of 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 Henkel 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 twelve 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 of the Products including, where products, parts or attachments for use in connection with the Products are available from Henkel Loctite, the use of products, parts or attachments which are not manufactured by Henkel Loctite.

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

NO WARRANTY IS EXTENDED TO ANY EQUIPMENT WHICH HAS BEEN ALTERED, MISUSED, NEGLECTED, OR DAMAGED BY ACCIDENT, OR IF THE SYSTEM USED TO DISPENSE ANY LIQUID MATERIAL OTHER THAN LOCTITE PRODUCTS.

EXCEPT FOR THE EXPRESS WARRANTY CONTAINED IN THIS SECTION, HENKEL 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 HENKEL LOCTITE AND WAIVED BY THE PURCHASER.

THIS SECTION SETS FORTH EXCLUSIVELY ALL OF LIABILITY FOR HENKEL LOCTITE TO THE PURCHASER IN CONTRACT, IN TORT OR OTHERWISE IN THE EVENT OF DEFECTIVE PRODUCTS.

WITHOUT LIMITATION OF THE FOREGOING, TO THE FULLEST EXTENT POSSIBLE UNDER APPLICABLE LAWS, HENKEL 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 NEGLIGENCE FROM HENKEL LOCTITE OR OTHERWISE.

9. Declarations of Conformity

CE – Declarations of Conformity

Manufacturer

LOCTITE®

Loctite Industrial
Henkel Loctite Corporation
1001 Trout Brook Crossing
Rocky Hill, CT 06067-3910

declares that machine contained in this delivery is the machine designated below, is however incomplete and that its operation is prohibited until it can be determined that the machine is in accordance with the provisions of EC machine regulations.

Designation of the unit	Stationary Applicator
Unit number	97113 or 97114
Applicable EC Regulations	EG-Machine Regulations 89/392/EWG, version 93/68/EWG
Applicable harmonized standards	DIN EN 292 Part 1 11.1991; DIN EN 292 Part 2 11.1991
Date / Manufacturer's signature	1995 
Information regarding the Signer	President – Worldwide Manufacturing (Peter G. Dowling)

For changes to the unit that were not approved by Henkel Loctite, this declaration loses its validity.

LOCTITE®

Loctite Industrial

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