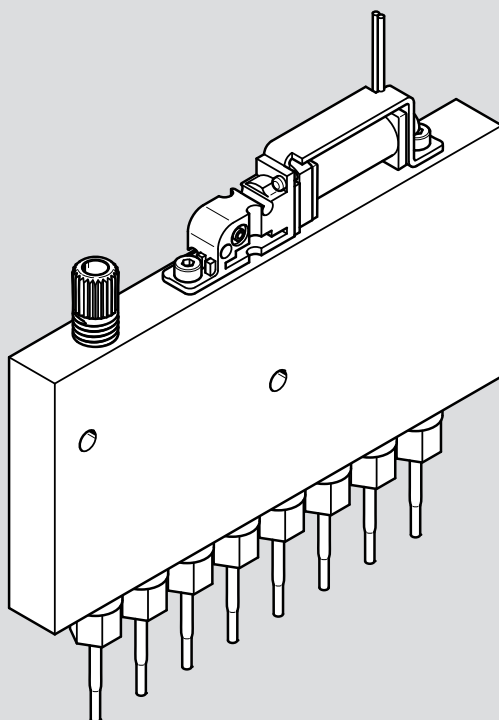


VTOI(-A)-V8

Dispense head

FESTO

Operating instructions



8231256

8231256
2025-09c
[8231258]

Original instructions

FPM is a registered trademark of its respective trademark holder in certain countries.

Table of contents

1	Applicable documents	5
2	Safety	5
2.1	Safety instructions	5
2.1.1	General safety instructions	5
2.1.2	Media	5
2.1.3	Return to Festo	5
2.2	Intended use	5
2.3	Foreseeable misuse	6
2.4	Training of qualified personnel	6
3	Additional information	6
4	Product Range Overview	6
4.1	Scope of delivery	6
4.2	Not in scope of delivery	6
5	Mounting	7
6	Installation	7
6.1	Electrical installation	7
6.2	Fluid installation	8
7	Commissioning	8
8	Maintenance	8
9	Repair	9
10	Disassembly	11
11	Technical data	11

1 Applicable documents



All available documents for the product → www.festo.com/sp.

Document	Product	Contents
Assembly instructions	Clamping component S-17975	–
Application note	–	Application examples

Tab. 1: Applicable documents

2 Safety

2.1 Safety instructions

2.1.1 General safety instructions

- Only use the product in its original condition without unauthorised modifications.
- Only use the product if it is in perfect technical condition.
- Before working on the product: switch off the power supply and medium supply and secure it against being switched on again.
- Do not subject the product to mechanical load.
- The product can become hot during continuous operation. Provide protective measures for use and handling of the product.
- Do not operate the product in the vicinity of easily flammable liquids and materials.
- Do not exceed the maximum permissible pressure of the medium. Potential pressure peaks in the system must also be taken into account.

2.1.2 Media

- Media may escape in the event of leakage. Take suitable protective measures when using and handling the product.
- When using crystallising media, plan appropriate rinsing routines for the product.
- Use only media that will not cause dangerous reactions if mixed.
- Use only media to which the materials used for the product are resistant. Materials in contact with the medium → 11 Technical data.

2.1.3 Return to Festo

Hazardous substances can endanger the health and safety of personnel and cause damage to the environment. To prevent hazards, the product should only be returned if explicitly requested by Festo.

- Consult your regional Festo contact.
- Complete the declaration of contamination and attach it to the outside of the packaging.
- Comply with all legal requirements for the handling of hazardous substances and the transport of dangerous goods.

2.2 Intended use

- The dispense head is intended for installation in laboratory devices.
- The dispense head dispenses and aspirates fluid media.

2.3 Foreseeable misuse

- The dispense head is not approved for direct contact with foods.

2.4 Training of qualified personnel

Work on the product may only be carried out by qualified personnel who can evaluate the work and detect dangers. The qualified personnel have knowledge and experience in handling electrical and fluidic systems.

3 Additional information

- If you have any questions about planned areas of application of the product, contact your regional Festo contact person → www.festo.com.
- Accessories → www.festo.com/catalogue.

4 Product Range Overview

4.1 Scope of delivery

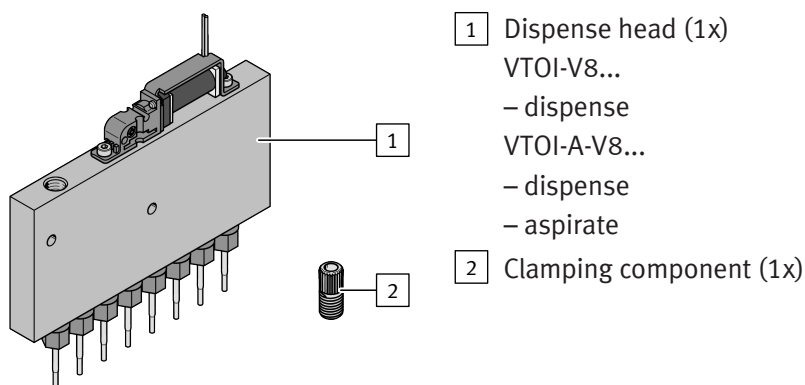


Fig. 1

4.2 Not in scope of delivery

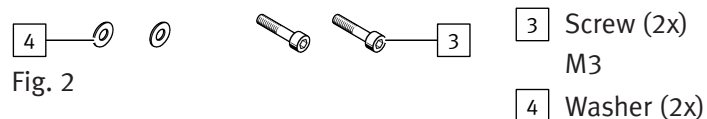


Fig. 2

5 Mounting

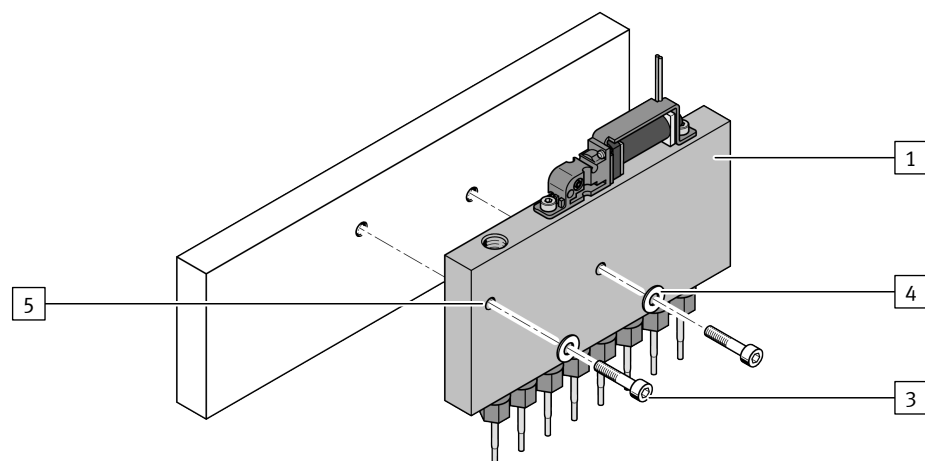


Fig. 3

1. Place the dispense head [1] on a flat surface.
2. Position the washers [4] at the drilled holes [5].
3. Tighten the screws [3]. Tightening torque: $0.5 \text{ Nm} \pm 10\%$

6 Installation

6.1 Electrical installation

⚠ WARNING

Risk of Injury due to Electric Shock.

- For the electric power supply, use only PELV circuits that ensure a reliable electric disconnection from the mains network.
- Observe IEC 60204-1/EN 60204-1.
- The unit must be powered by a power source that fulfils the requirements of an energy-limited circuit in accordance with IEC 61010-1/EN 61010-1.

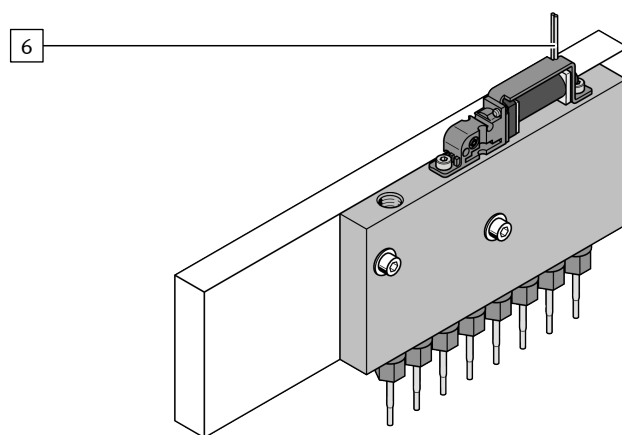


Fig. 4

- Connect wire ends [6]. Polarity optional.

6.2 Fluid installation

Requirement:

- The piping system is unpressurised and it does not contain flowing media.
- Lines are free of particles and fibres.
- Customer-provided dirt filters are installed in the media line upstream of the dispense head. Mesh size: $\leq 20\ \mu\text{m}$

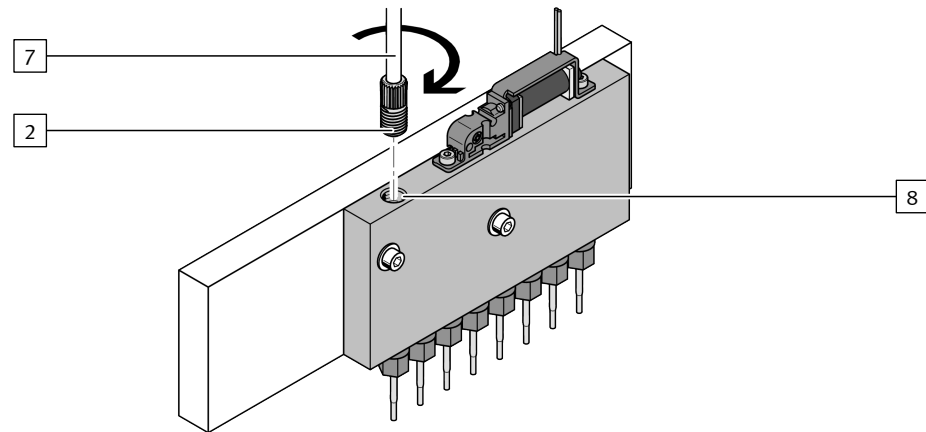


Fig. 5

1. Mount clamping component [2] on tubing [7] → 1 Applicable documents.
Tightening torque: 0.15 Nm
2. Screw clamping component [2] with the tubing [7] into the fluid connector [8].

7 Commissioning

Requirement:

- The dispense head is fully mounted and connected.

Procedure:

1. Switch on the media supply.
2. Switch on the power supply.
3. Check the dispense head for leakage.

8 Maintenance

⚠ WARNING

Risk of injury due to very hot surface.

The dispense head can heat up to +130 °C in continuous operation.

- Do not touch the dispense head during operation or immediately afterward.
- Check product regularly from the outside for leakage and function.

9 Repair

Replacing needles

If the needles are damaged or heavily soiled, they can be replaced.

Product code	Name	Product number
VT0I-30D3:SP	Dosing needle set	8238151

Tab. 2: Spare part

The dosing needle set contains 8 needles and 8 sleeves.

- Replace all 8 needles together with the 8 sleeves. The replacement of individual needles or individual sleeves is not permitted.
- The replacement needles and sleeves are not sterile when delivered. If sterile application is required, they must be cleaned and sterilised appropriately.
- The sleeves and screwed plugs are not available as spare parts and must be reused.
- Replace the needles only if they are damaged or heavily soiled. Replacing the needles may affect the flow rate between the needles. Festo cannot provide flow rate data for replacement needles.

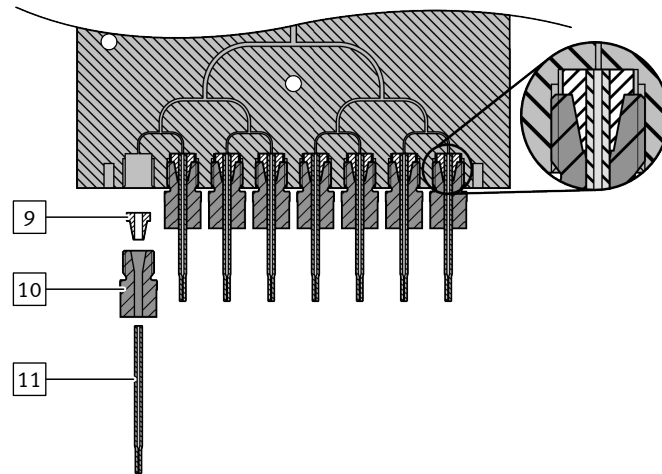


Fig. 6: Replacing needles

1. Loosen the screwed plugs [10].
2. Remove the needle [11] as a unit with the screwed plug [10] and sleeve [9].
3. Remove the screwed plug [10] and the sleeve [9] from the needle. Keep the screwed plug [10].
4. Dispose of the old needle along with the old sleeve.
5. Repeat steps 1 to 4 for the remaining 7 needles.
6. Place the new sleeve on the new needle. Make sure that the needle and the sleeve are flush.
7. Insert the new needle with the sleeve into the screwed plug [10]. Make sure the sleeve is aligned as shown in the illustration.
8. Insert the new needle as a unit with attached sleeve and screwed plug into the dispense head. Make sure that the needle is fully inserted into the dispense head to the stop.
9. Press the needle [11] slightly towards the dispense head to ensure that the needle [11] is inserted into the dispense head to the stop. Screw in the screwed plug [10] hand-tight.
10. Tighten the screwed plug [10]. Tightening torque: $0.25 \text{ Nm} \pm 10\%$
11. Repeat steps 6 to 10 for the remaining 7 needles.
12. Check the product for possible leakage by rinsing the dispense head with a liquid, such as water. Pay particular attention to any leakage of liquid between the dispense head and the screwed plug [10] as well as between the screwed plugs [10] and the needles [11].
13. Perform a flow test and check the flow rates. Check the volume as a function of the opening times of the valve.

10 Disassembly

⚠ WARNING

Risk of injury due to very hot surface.

The dispense head can heat up to +130 °C in continuous operation.

- Do not touch the dispense head during operation or immediately afterward.

1. Drain the media line and dispense head completely. Collect the discharged media in a suitable container.
2. Switch off the power supply.
3. Depressurise the media line and dispense head and allow them to cool down.
4. Remove the dispense head. Do not pull on the cable.

11 Technical data

VTOI		-V8...	-A-V8...
Technical data, general			
Function		Dispense	Dispense
		–	Aspirate
Mounting position		Vertical	
Degree of protection		IP30 (fully mounted)	
Temperature range			
Medium	[°C]	5 ... 50	
Environment	[°C]	5 ... 40	
Dispense head	[°C]	≤ 130 (at 40 °C ambient temperature) ¹⁾	
Port			
[6] Connection, electrical		Wire ends	
[8] Connection, fluidic		1/4-28 UNF-2B	
Technical data, electrical			
Nominal operating voltage	[V DC]	24	
Voltage fluctuations	[%]	± 10	
Nominal power consumption	[W]	1.8	2.0
Maximum switching frequency	[Hz]	4	
Relative duty cycle			
with individual mounting	[%]	100	
with block mounting	[%]	– (maximum 1 s)	
Overvoltage category		II	
Technical data, fluidic			
Medium		Liquid media	
Materials in contact with the medium		ETFE, PEEK, PEI, PPS, FPM, high-alloy stainless steel	
Operating pressure	[MPa]	0 ... 0.1	–0.02 ... 0.065
	[bar]	0 ... 1	–0.2 ... 0.65
	[psi]	0 ... 14.5	–2.9 ... 9.4
Minimum dispense volume ²⁾	[µl]	1	
Typical dispense accuracy (tip-to-tip) ²⁾			
Dispense		< 5 % CV for volumes 1 ... 1000 µl	< 5 % CV for volumes 1 ... 1000 µl

VTOI	-V8...	-A-V8...
Aspirate	—	< 3 % CV for volumes 1 ... 1000 µl
Typical dispense accuracy (intra-run) ²⁾		
Dispense	< 3 % CV for volumes 1 ... 1000 µl	< 3 % CV for volumes 1 ... 1000 µl
Aspirate	—	< 2 % CV for volumes 1 ... 1000 µl

1) Measuring specifications: maximum permissible voltage

2) The information was obtained with a selected configuration, specific ambient conditions and a defined application in accordance with ISO 8655-6. The desired target volume, accuracy (correctness) and precision were set primarily via the working pressure and actuation time of the dispense head.

Tab. 3: Technical data

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