

## Dispense head VTOE

**FESTO**



## Key features

### Description

The dispense head VTOE is available in two different variants:

- With transparent manifold duct plate made from polycarbonate (PC)
- With media-resistant manifold duct plate made from polyether ether ketone (PEEK)

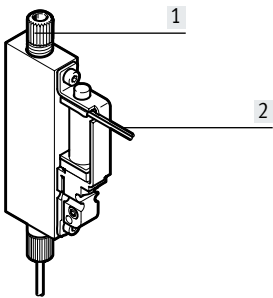
Both variants offer three different dosing syringes with three different internal diameters as standard.

### Advantages:

- Ready-to-install dosing solution saves time and costs
- Compact 9 mm grid dimension
- Maximum dosing precision down to the microlitre range
- Ideally suited to non-contact dispensing and jetting of liquid media

- Dosing valve isolated from the media, for sensitive and aggressive liquid media
- Small internal volume makes it easy to rinse

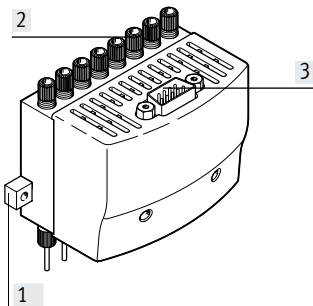
### VTOE-...-S design



- [1] Fluid connection
- [2] Individual electrical connection

Single-channel dispense head:  
Enables dosing with the utmost precision.

### VTOE-8-...-M design



- [1] Mounting strip
- [2] Fluid connections
- [3] Electrical multi-pin plug connection

8-channel dispense head:  
The system is optimally designed for microwell plates and enables a very high throughput as well as dosing of various fill quantities and liquid media.

Individual control of the valves permits the ducts to be coordinated for maximum precision.

### Range of application

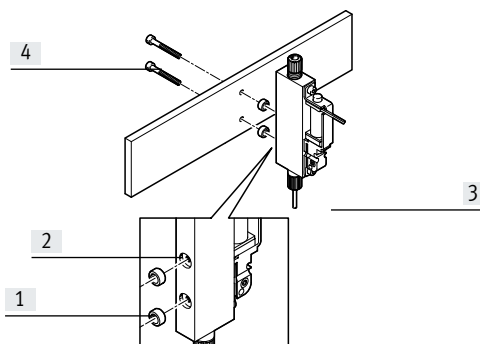
The dispense head VTOE is intended for installation in laboratory devices. It is designed to dispense liquids within the scope of its technical data.

The chemical resistance of the dispense head materials coming into contact with the media must be checked for each application. It is necessary to verify the extent to which the dispense head VTOE is suitable for the intended application.

The dispense head is not suitable for aspiration of liquids. It is not approved for direct contact with foodstuffs or their ingredients.

If you are unsure about the product's suitability for the planned application, please contact Festo for advice.

### Mounting

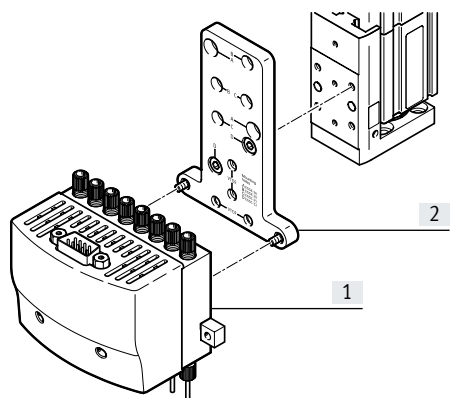


- [1] Centring rings
- [2] Drilled holes
- [3] Dispense head
- [4] Screws

Position the centring rings in the drilled holes and mount the dispense head on the strip using the screws. Up to eight dispense heads can be mounted on one rail, with a grid dimension of 9 mm.

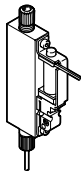
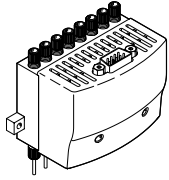
## Key features

### Mounting on a drive with adapter plate



- [1] Dispense head VTOE
- [2] Adapter plate

Product range overview



Function	Description	Nominal width Dosing needle [mm]	Operating pressure [MPa]	Operating voltage
Single-channel dispense head	 <p><b>2/2-way valve, normally closed, single solenoid</b> Electrical connection, cable, open end</p>	0.32	0 ... 0.05	24 V DC
		0.6	0 ... 0.05	24 V DC
		1.0	0 ... 0.05	24 V DC
8-channel dispense head	 <p><b>8x 2/2-way valves, normally closed, single solenoid</b> Electrical connection, Sub-D, 9-pin</p>	0.32	0 ... 0.05	24 V DC
		0.6	0 ... 0.05	24 V DC
		1.0	0 ... 0.05	24 V DC

## Type codes

<b>001</b>	Series		<b>006</b>	Nominal width	
<b>VTOE</b>	Dispense head		<b>08</b>	0.8 mm	
<b>002</b>	Valve positions		<b>007</b>	Diaphragm and sealing material	
	1 valve position		<b>F</b>	FFPM	
<b>8</b>	8 valve positions		<b>V</b>	FPM	
<b>003</b>	Output connection		<b>008</b>	Housing material	
<b>D9</b>	Nozzle, length 30 mm, nominal size 1.0 mm		<b>P</b>	PEEK	
<b>D7</b>	Nozzle, length 30 mm, nominal size 0.32 mm		<b>S</b>	PPS	
<b>D8</b>	Nozzle, length 30 mm, nominal size 0.6 mm		<b>009</b>	Manifold block material	
<b>004</b>	Input connection		<b>P</b>	PEEK	
<b>T3</b>	For tubing 3 mm		<b>PC</b>	Polycarbonate	
<b>005</b>	Valve function		<b>010</b>	Valve control	
<b>M22C</b>	2/2-way valve, normally closed		<b>M</b>	Multi-pin electric	
			<b>S</b>	Individual connection, electric, with flying leads, 0.2 m	

# Dispense head VTOE

## Data sheet

-  Voltage  
24 V DC
-  Operating pressure  
0 ... 0.05 MPa



General technical data			
Type		VTOE-D...-S	VTOE-8-D...-M
Valve function		2/2-way valve, closed, single solenoid	
Reset method		Mechanical spring	
Application information		See application note (available on the Support Portal at festo.com)	
Nominal width		[mm]	0.8
Nominal width of dosing needle	VTOE...-D7	[mm]	0.32
	VTOE...-D8	[mm]	0.6
	VTOE...-D9	[mm]	1
Length of dosing needle		[mm]	30
Internal volume		[μl]	113
Valve with fluid connections			
Water flow rate at maximum operating pressure	VTOE...-D7	[μl/s]	370
	VTOE...-D8	[μl/s]	1300
	VTOE...-D9	[μl/s]	2000
Minimum dispensing volume	VTOE...-D7	[μl]	1
	VTOE...-D8	[μl]	3
	VTOE...-D9	[μl]	5
Note on dosing volume		Depends on configuration, environment and application	
Typical dosing precision	For volumes 1 ... 5 μl	[%]	<2.5 CV
	For volumes over 5 μl	[%]	<1 CV
Note on dosing precision		Depends on configuration, environment and application	
Max. switching frequency		[Hz]	4
Note on switching frequency		Dependent on the ambient temperature and installation state	
Switching time	On	[ms]	7
	Off	[ms]	2
Note on switching time		Depends on configuration, environment and application	
Mounting position		Any	
Grid dimension		[mm]	9
Actuation type		Electrical	
Type of control		Direct	
Sealing principle		Soft	
Fluid connection		UNF1/4-28	8x UNF1/4-28
Note on fluid connection		Fitting for tubing with 3 mm outside diameter enclosed	
Type of mounting		Via female thread M2 and centring sleeve	
		Via through-hole for M3 screw	
Product weight		[g]	18
			220

## Data sheet

Electrical connection		
Type	VTOE-D...-S	VTOE-8-D...-M
Connection technology	Cable, open end, 2-wire	Sub-D plug, 9-pin
Cable length [m]	0.15	–
Wire ends	Stripped	–
Nominal conductor cross section	AWG28	–

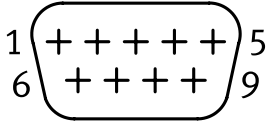
Electrical data		
Type	VTOE-D...-S	VTOE-8-D...-M
Nominal operating voltage [V DC]	24	
Permissible voltage fluctuations [%]	±10	
Electrical power consumption [W]	1.8	
Note on power consumption	–	Specification per valve
Duty cycle [%]	100 with individual mounting 50 in case of block mounting (max. switch-on time 1 s)	50 (max. switch-on time 1 s)
Degree of protection	IP30	
Note on degree of protection	In assembled state	
Pollution degree	2	

Operating and environmental conditions		
Operating pressure	[MPa]	0 ... 0.05
	[bar]	0 ... 0.5
	[psi]	0 ... 7.25
Medium		Liquid media
Note on the medium		Observe resistance of materials in contact with the medium
Ambient temperature [°C]		5 ... 40
Temperature of medium [°C]		5 ... 50
Storage temperature [°C]		–20 ... 70
Relative humidity [%]		0 ... 95
Relative humidity		Non-condensing
Nominal altitude of use		≤ 2000 m above sea level
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Corrosion resistance class CRC		0 <sup>1)</sup>
CE marking <sup>2)</sup>		To EU RoHS Directive

1) More information: [www.festo.com/x/topic/kbk](http://www.festo.com/x/topic/kbk)

2) More information: [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...) → Support/Downloads.

Materials		
Dosing needle		High-alloy stainless steel
Material number for dosing needle		1.4301
Note on materials		RoHS-compliant Contains paint-wetting impairment substances
Materials in contact with the media	VTOE...-V-S-PC	ETFE, PEEK, PC, PPS, FPM, high-alloy stainless steel
	VTOE...-F-P-P	ETFE, PEEK, FFPM, high-alloy stainless steel

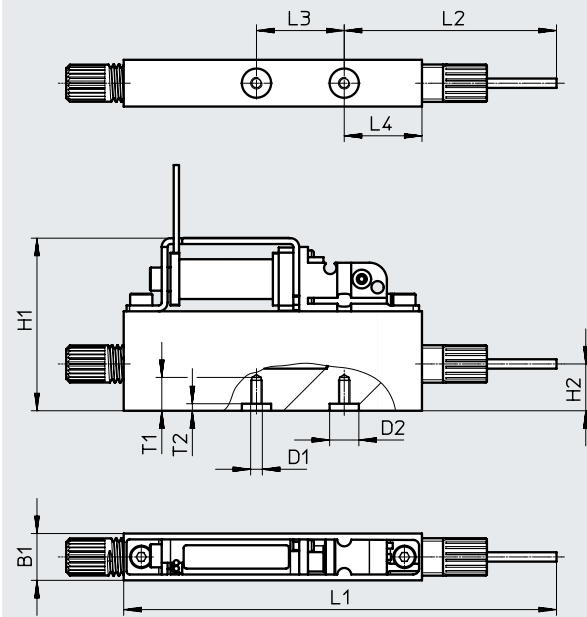
Pin allocation		
	Pin	Function
	1	Valve 1
	2	Valve 2
	3	Valve 3
	4	Valve 4
	5	Valve 5
	6	Valve 6
	7	Valve 7
	8	Valve 8
	9	GND

Data sheet

Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

VTOE...S



Type	B1	D1	D2 ∅	H1	H2	L1	L2	L3	L4	T1	T2
VTOE...S	8.1	M2	5	30	8	74	36.3	15	13.3	5.2	1.2

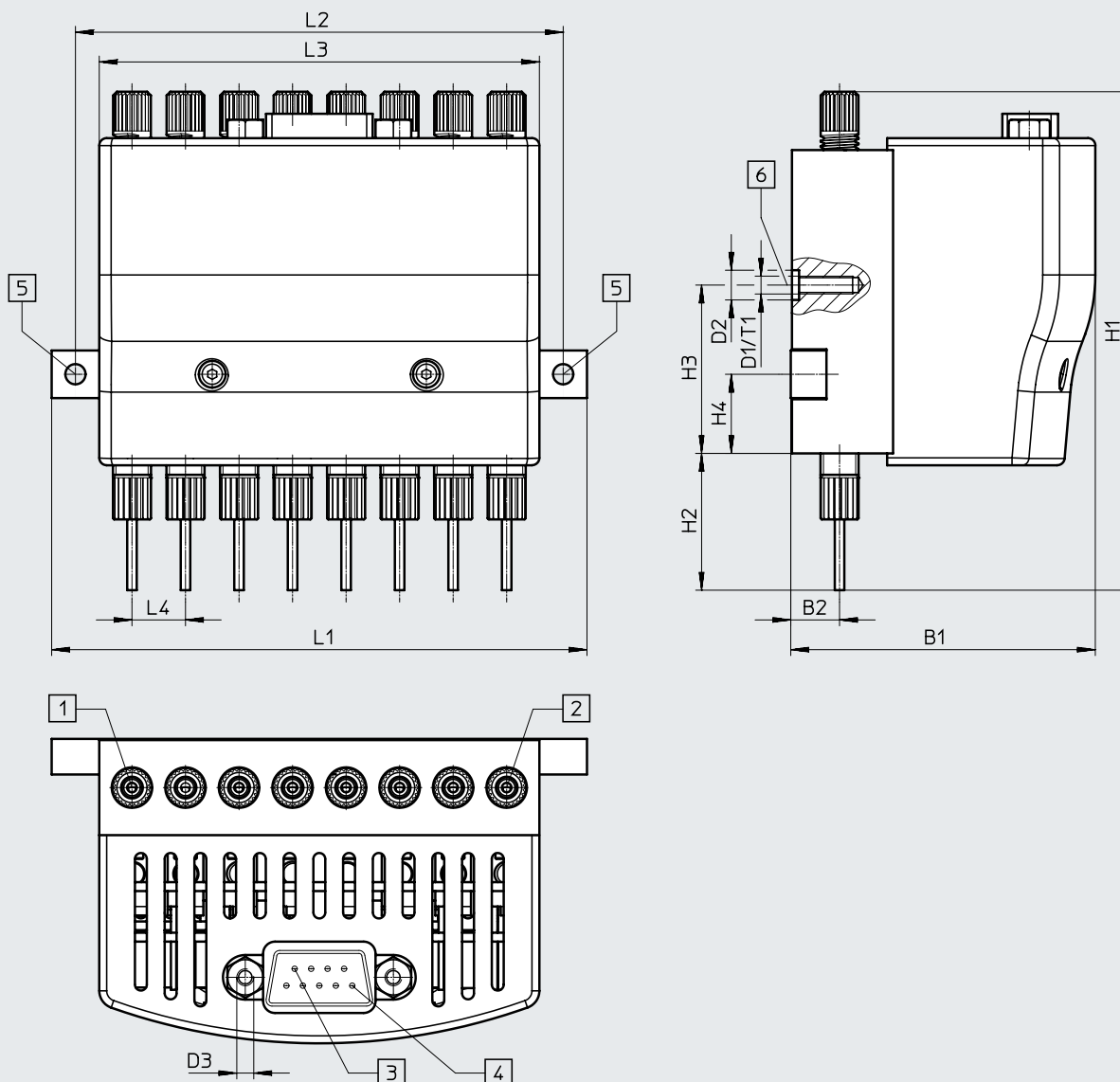


Data sheet

Dimensions

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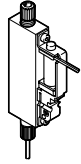
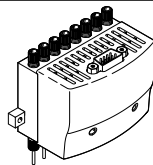
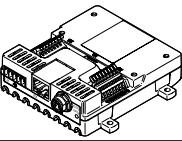
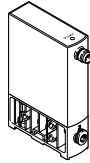
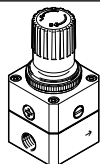
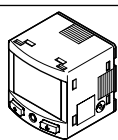
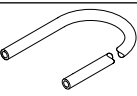
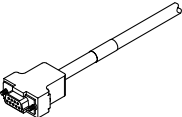
VTOE-8-...-M



- [1] Duct 1
- [2] Duct 8
- [3] Pin 9
- [4] Pin 1
- [5] Drilled hole for M3 screw
- [6] Optional: mounting without mounting strip – thread M3x min. 9

Type	B1	B2	D1 ∅	D2 ∅	D3 ∅	H1 ±2	H2	H3	H4	L1	L2	L3	L4	T1
VTOE-8-...-M	51.2	8.2	M3	5	UNC 4-40	84	23	28.3	13.3	90	82	74	9	10.2

## Accessories

Ordering data		Description	Nominal width of dosing needle [mm]	Part no.	Type
<b>Dispense head, individual connection</b>					
	2/2-way valve, normally closed	0.32	8063372	VTOE-D7-T3-M22C-08-F-P-P-S	
			8063369	VTOE-D7-T3-M22C-08-V-S-PC-S	
		0.6	8063373	VTOE-D8-T3-M22C-08-F-P-P-S	
			8063370	VTOE-D8-T3-M22C-08-V-S-PC-S	
			8063374	VTOE-D9-T3-M22C-08-F-P-P-S	
8063371	VTOE-D9-T3-M22C-08-V-S-PC-S				
<b>Dispense head, 8-channel</b>					
	8x 2/2-way valve, normally closed	0.32	8063637	VTOE-8-D7-T3-M22C-08-F-P-P-M	
			8063634	VTOE-8-D7-T3-M22C-08-V-S-PC-M	
		0.6	8063638	VTOE-8-D8-T3-M22C-08-F-P-P-M	
			8063635	VTOE-8-D8-T3-M22C-08-V-S-PC-M	
			8063639	VTOE-8-D9-T3-M22C-08-F-P-P-M	
8063636	VTOE-8-D9-T3-M22C-08-V-S-PC-M				
Ordering data			Pressure regulation range [bar]	Part no.	Type
<b>Valve control module</b>					
	For up to 8 solenoid valves		8088772	VAEM-V-S8EPRS2	
<b>Proportional pressure regulator</b>					
	Current type, 4 ... 20 mA	0.005 ... 1	8046304	VEAB-L-26-D7-Q4-A4-1R1	
		0.001 ... 0.2	8046302	VEAB-L-26-D12-Q4-A4-1R1	
	Voltage type, 0 ... 10 V	0.005 ... 1	8046303	VEAB-L-26-D7-Q4-V1-1R1	
		0.001 ... 0.2	8046301	VEAB-L-26-D12-Q4-V1-1R1	
<b>Precision pressure regulator</b>					
	For regulating the operating pressure	0.05 ... 0.7	159500	LRP-1/4-0.7	
<b>Pressure sensor</b>					
	For monitoring compressed air and non-corrosive gases		8035542	SPAN-B2R-Q4-PNLK-PNVBA-L1	
<b>Plastic tubing</b>					
	Tubing O.D. 3 mm Packaging unit 50 m		197375	PUN-H-3X0.5-NT	
<b>Connecting cable</b>					
	Sub-D socket, 9-pin	5 m	531185	KMP6-09P-8-5	
		10 m	531186	KMP6-09P-8-10	

