

## Dispense head VTOE

**FESTO**



## Characteristics

### 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)

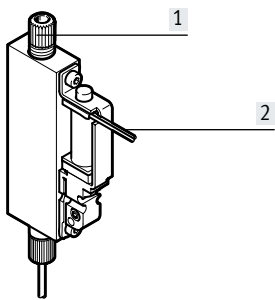
Both variants offer three different dosing syringes with three different internal diameters as standard.

### 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



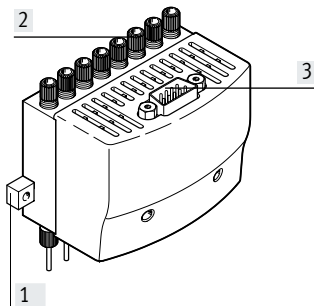
- [1] Fluid connection  
[2] Individual electrical connection

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

Typical areas of application:

- Producing dilutions
- Adding nutrient solutions
- Dosing reagents

### 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.

Typical areas of application:

- Preparing samples
- Adding liquid media to microwell plates

### Range of application

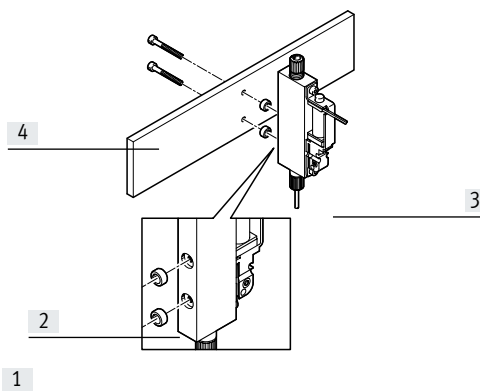
The dispense head VTOE is intended for use in dispensing liquid media into various vessels, especially microwell plates. The dispense head is designed for precisely dispensing the smallest amount of liquids, especially in applications in

laboratory automation, analysis technology and in-vitro diagnostics. The media typically include reagents, cell culture media, buffer solutions and (prepared) samples.

Dosing is generally carried out contactlessly, i.e. a drop or jet is released from the dosing syringe without making contact with the destination vessel.

The intended target volume, precision and accuracy are configured by the correct regulation of the working pressure and opening times of the dosing valves.

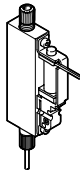
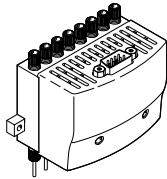
### Mounting



- [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.

## Product range overview

Function	Description	Nominal width of dosing needle	Operating pressure	Operating voltage	
		[mm]	[bar]		
Single-channel dispense head		2/2-way valve, normally closed, single solenoid			
		Electrical connection, cable, open end	0.32	0 ... 0.5	24 V DC
			0.6	0 ... 0.5	24 V DC
			1.0	0 ... 0.5	24 V DC
8-channel dispense head		8x 2/2-way valves, normally closed, single solenoid			
		Electrical connection, Sub-D, 9-pin	0.32	0 ... 0.5	24 V DC
			0.6	0 ... 0.5	24 V DC
			1.0	0 ... 0.5	24 V DC

## Type codes

001	Series	
VTOE	Dispense head	

002	Valve positions	
	1 valve position	
8	8 valve positions	

003	Output connection	
D9	Nozzle, length 30 mm, nominal size 1.0 mm	
D7	Nozzle, length 30 mm, nominal size 0.32 mm	
D8	Nozzle, length 30 mm, nominal size 0.6 mm	

004	Input connection	
T3	For tubing 3 mm	

005	Valve function	
M22C	2/2-way valve, normally closed	

006	Nominal width	
08	0.8 mm	



007	Diaphragm and sealing material	
F	FFPM	
V	FPM	

008	Housing material	
P	PEEK	
S	PPS	

009	Manifold block material	
P	PEEK	
PC	Polycarbonate	

010	Valve control	
M	Multi-pin electric	
S	Individual connection, electric, with flying leads, 0.2 m	

## Data sheet

-  Voltage  
24 V DC
-  Operating pressure  
0 ... 0.5 bar



General technical data				
Type			VTOE-....S	VTOE-8-....M
Valve function			2/2-way valve, closed, single solenoid	
Reset method			Mechanical spring	
Nominal width of dosing needle	VTOE-....D7	[mm]	0.32	0.32
	VTOE-....D8	[mm]	0.6	0.6
	VTOE-....D9	[mm]	1	1
Grid dimension		[mm]	9	
Fluid connection			UNF1/4-28	8x UNF1/4-28
Note on fluid connection			Fitting for tubing with 3 mm outside diameter enclosed	
Electrical connection				
Connection technology			Cable, open end, 2-wire	Sub-D plug, 9-pin
Cable length			0.15	–
Wire ends			Sheath removed	–
Conductor nominal cross section			AWG28	–
Actuation type			Electrical	
Type of control			Direct	
Sealing principle			Soft	
Type of mounting			Via female thread M2 and centring sleeve	Via female thread and centring sleeve
			–	Via through-hole for M3 screw
Mounting position			Any	
Product weight		[g]	18	220
Electrical data				
Nominal operating voltage		[V DC]	24	
Permissible voltage fluctuations		[%]	±10	
Max. electrical power consumption		[W]	1.8 (per valve)	
Duty cycle		[%]	100	
Degree of protection			IP30 (completely mounted)	

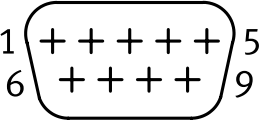
## Data sheet

Operating and environmental conditions		
Operating pressure	[bar]	0 ... 0.5
Operating medium		Gaseous media
		Liquid media
Note on operating/pilot medium		Observe resistance of materials in contact with the medium
Ambient temperature	[°C]	5 ... 40
Temperature of medium	[°C]	5 ... 50
Storage temperature	[°C]	5 ... 40
Corrosion resistance class CRC		0 <sup>1)</sup>

1) Corrosion resistance class CRC 0 to Festo standard FN 940070

No corrosion stress. Applies to small, visually irrelevant standard parts such as threaded pins, circlips and clamping sleeves which are usually only available on the market in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.

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

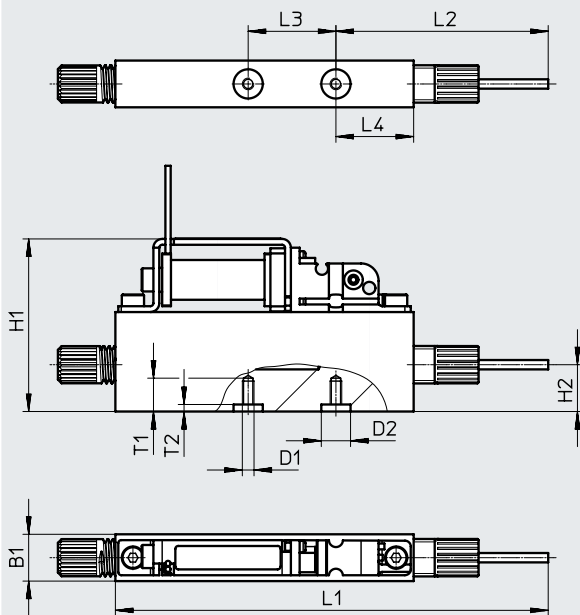
Pin allocation		
	Pin	Function
	1	Valve 1
	2	Valve 2
	...	
	8	Valve 8
	9	GND

## Data sheet

## Dimensions

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

VTOE-...S

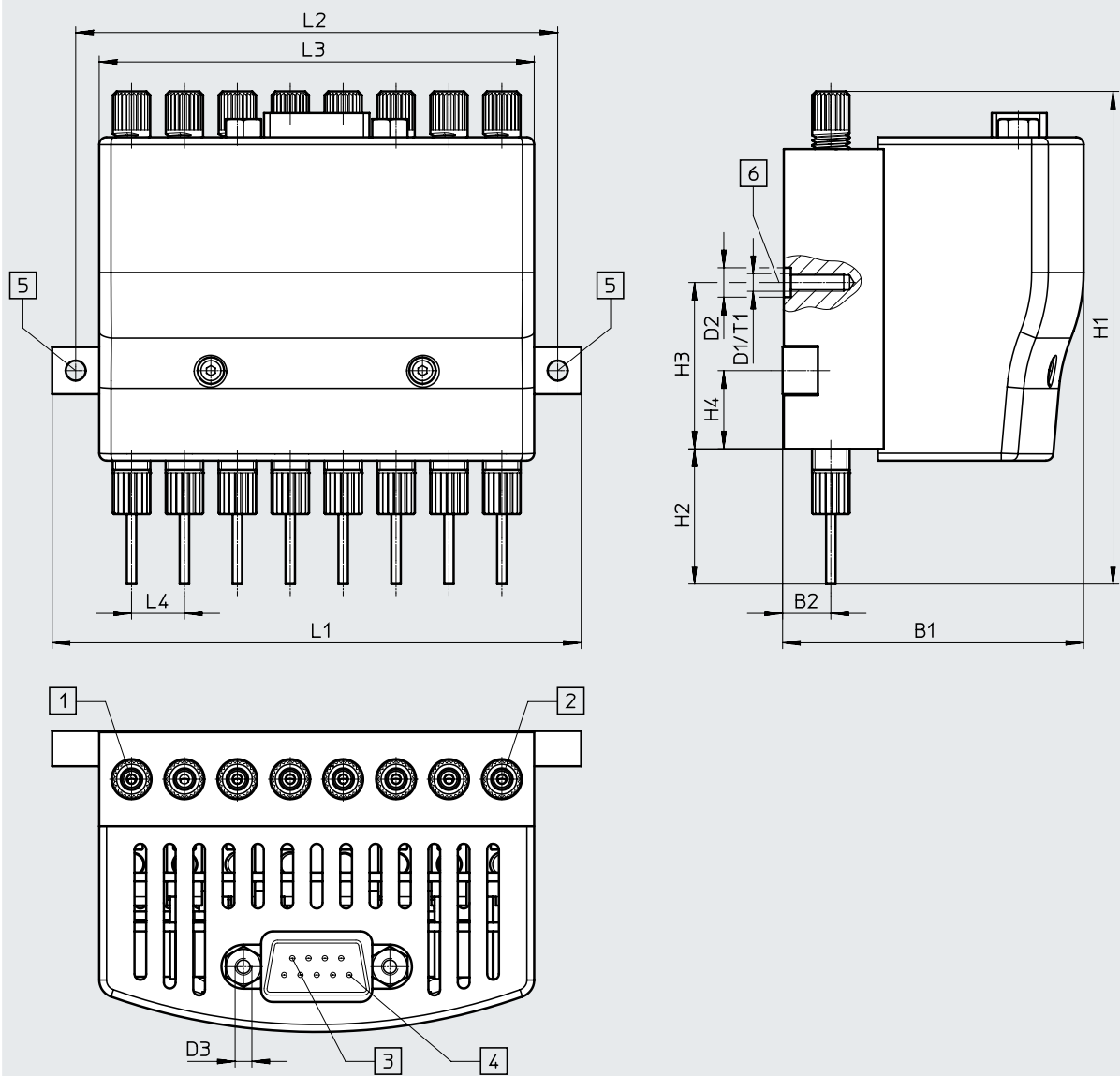


Type	B1	D1	D2 diam.	H1	H2	L1	L2	L3	L4	T1	T2
VTOE-...S	8.1	M2	5	30	8	74	36.3	15	13.3	5.2	1.2

Data sheet

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

VTOE-8-...-M



- [1] Channel 1

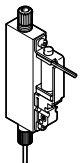
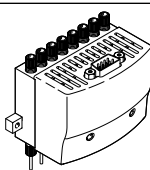
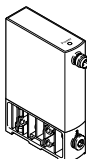
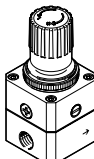
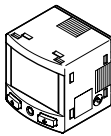
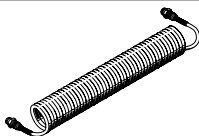
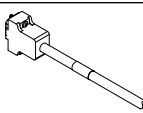
[2] Channel 8
- [3] Pin 1

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

Type	B1	B2	D1 ø	D2 ø	D3 ø	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
Dispense head, individual connection					
	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	
		1	8063374	VTOE-D9-T3-M22C-08-F-P-P-S	
			8063371	VTOE-D9-T3-M22C-08-V-S-PC-S	
Dispense head, 8-channel					
	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	
		1	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
In-line valve					
	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	VEABL26D7Q4V11R1	
		0.001 ... 0.2	8046301	VEAB-L-26-D12-Q4-V1-1R1	
Precision pressure regulator					
	For regulating the operating pressure	0.05 ... 0.7	159500	LRP-1/4-0.7	
Pressure sensor					
	For monitoring compressed air and non-corrosive gases			8035542	SPAN-B2R-Q4-PNLK-PNVBA-L1
Plastic tubing					
	–			159660	PUN-3X0.5-BL
Connecting cable					
	Sub-D socket, 9-pin	2.5 m	531184	KMP6-09P-8-2.5	
		5 m	531185	KMP6-09P-8-5	
		10 m	531186	KMP6-09P-8-10	