Dispense head VTOE

Key features

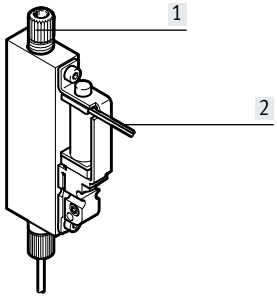
Description

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

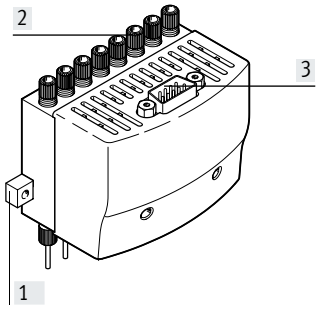
VTOE-...-S design



[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

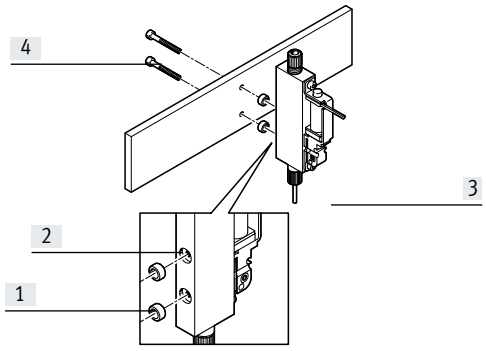
The dispense head VTOE is intended for installation in laboratory devices. It is designed to dispense liquids within the scope of its technical data.

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

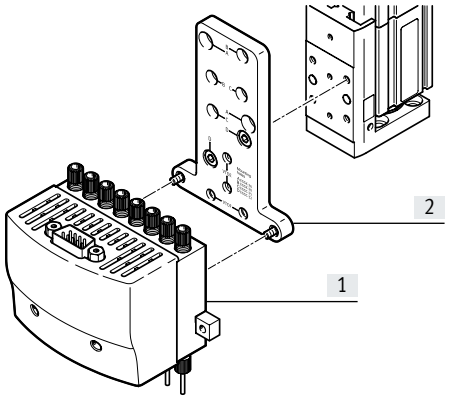


[1] Centring rings
[2] Drilled holes
[3] Dispense head
[4] Screws

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.

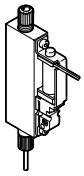
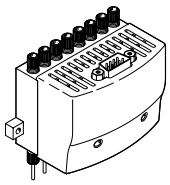
Key features

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		**2/2-way valve, normally closed, single solenoid**			
		Electrical connection, cable, open end	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		**8x 2/2-way valves, normally closed, single solenoid**			
		Electrical connection, Sub-D, 9-pin	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

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 ... 0.05 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	0.32
	VTOE-...-D8	[mm]	0.6	0.6
	VTOE-...-D9	[mm]	1	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	370
	VTOE-...-D8	[µl/s]	1300	1300
	VTOE-...-D9	[µl/s]	2000	2000
Minimum dispensing volume	VTOE-...-D7	[µl]	1	1
	VTOE-...-D8	[µl]	3	3
	VTOE-...-D9	[µl]	5	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 female thread 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	

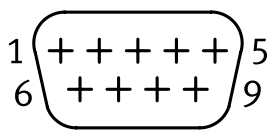
Operating and environmental conditions		
Operating pressure	[MPa]	0 ... 0.05
	[bar]	0 ... 0.5
	[psi]	0 ... 7.25
Medium		Liquid media
Note on the medium		Observe resistance of materials in contact with the medium
Ambient temperature	[°C]	5 ... 40
Temperature of medium	[°C]	5 ... 50
Storage temperature	[°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[1)]
CE marking[2)]		To EU RoHS Directive

1) More information: www.festo.com/x/topic/kbk

2) More information: 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

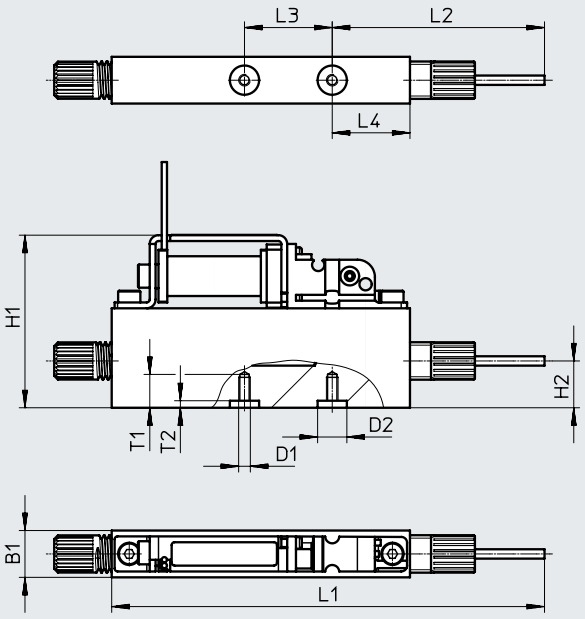


Pin	Function
1	Valve 1
2	Valve 2
3	Valve 3
4	Valve 4
5	Valve 5
6	Valve 6
7	Valve 7
8	Valve 8
9	GND

Data sheet

Dimensions Download CAD data ➔ www.festo.com

VTOE-...-S

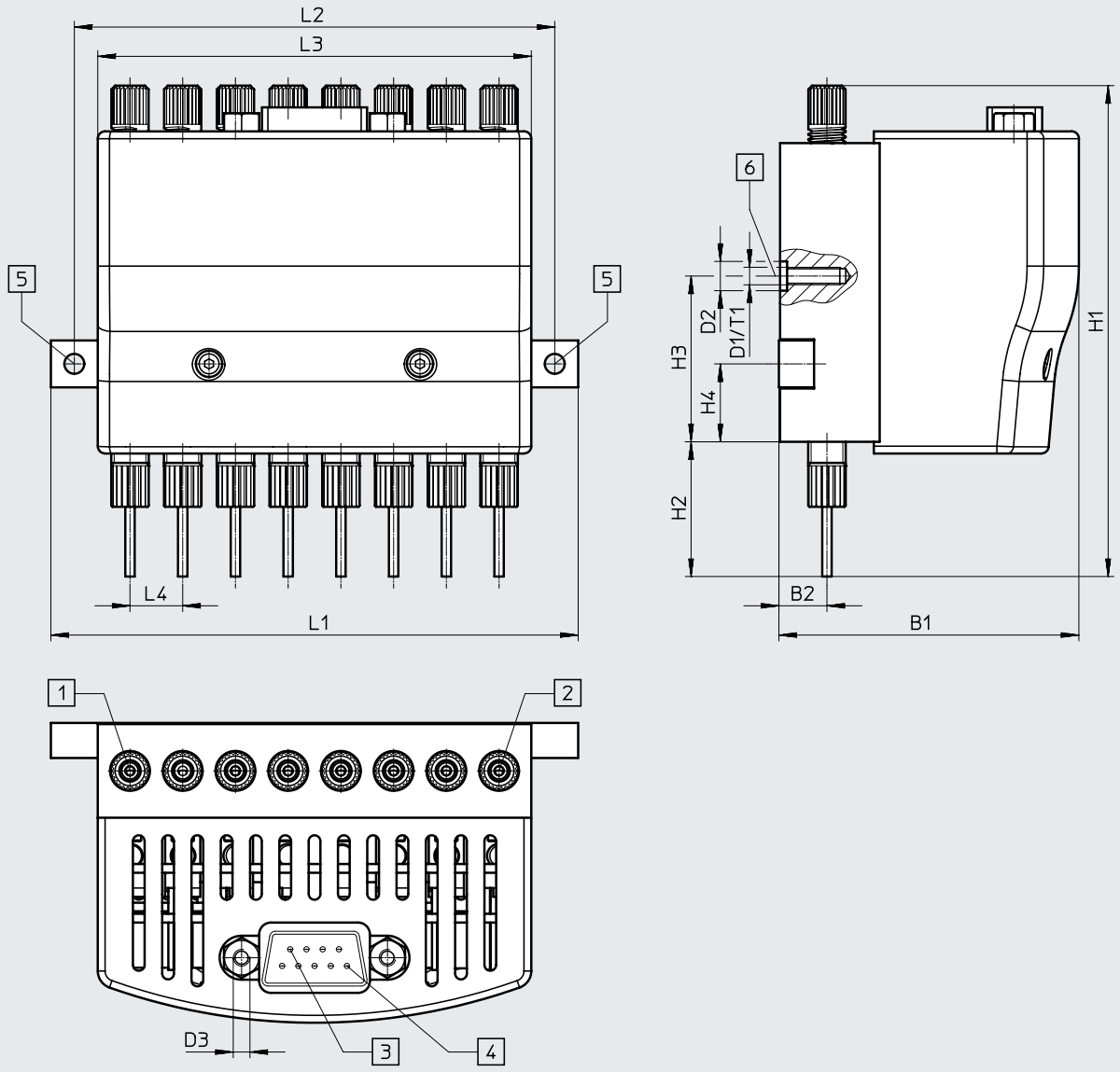


Type	B1	D1	D2 ø	H1	H2	L1	L2	L3	L4	T1	T2
VTOE-...-S	8.1	M2	5	30	8	74	36.3	15	13.3	5.2	1.2

Data sheet

Dimensions Download CAD data ➔ www.festo.com

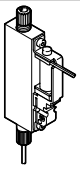
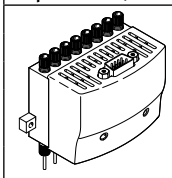
VTOE-8-...-M

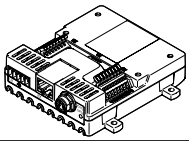
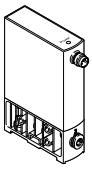
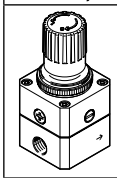
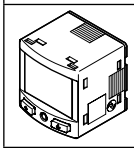
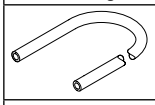
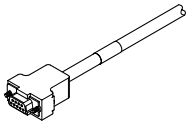


[1] Duct 1
[2] Duct 8
[3] Pin 9
[4] Pin 1
[5] Drilled hole for M3 screw
[6] Optional: mounting without mounting strip – thread M3x min. 9

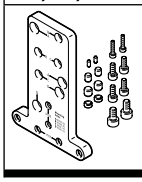
Type	B1	B2	D1 Ø	D2 Ø	D3 Ø	H1 ±2	H2	H3	H4	L1	L2	L3	L4	T1
VTOE-8-...-M	51.2	8.2	M3	5	UNC 4-40	84	23	28.3	13.3	90	82	74	9	10.2

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
Valve control module				
	For up to 8 solenoid valves		**8088772**	**VAEM-V-S8EPRS2**
Proportional pressure regulator				
	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**
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				
	Tubing O.D. 3 mm Packaging unit 50 m		**197375**	**PUN-H-3X0.5-NT**
Connecting cable				
	Sub-D socket, 9-pin	5 m	**531185**	**KMP6-09P-8-5**
		10 m	**531186**	**KMP6-09P-8-10**

Accessories

Ordering data			
		Part no.	Type
Adapter plate			
	To mount the dispense head VTOE on the electric slide EGSC-32	**8140774**	**EHAM-MA-E19-25-C11**