

Dispense head VTOE

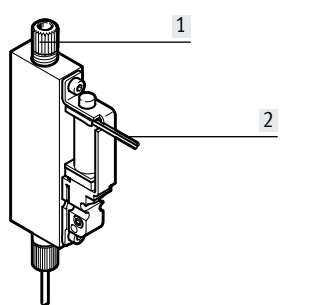
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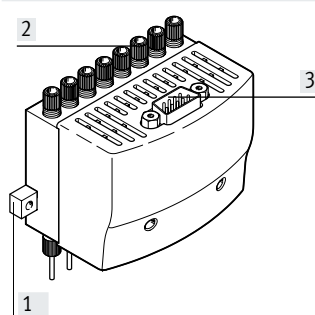
Key features

Description			
The dispense head VTOE is available in two different variants: <ul style="list-style-type: none">• 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: <ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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	Single-channel dispense head: Enables dosing with the utmost precision.	
	[2] Individual electrical connection		

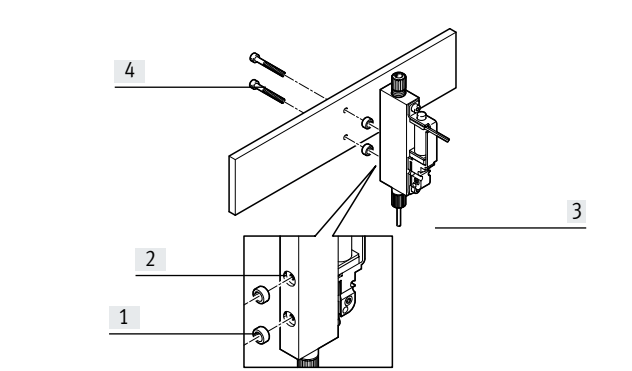
VTOE-8-....M design

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

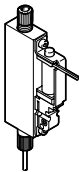
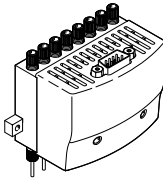
Range of application

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.
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Mounting

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

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	

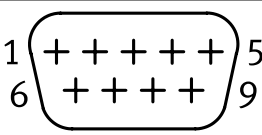
1) Corrosion resistance class CRC 0 to Festo standard FN 940070

No corrosion stress. Applies to small, visually unimportant standards-based 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.

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

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

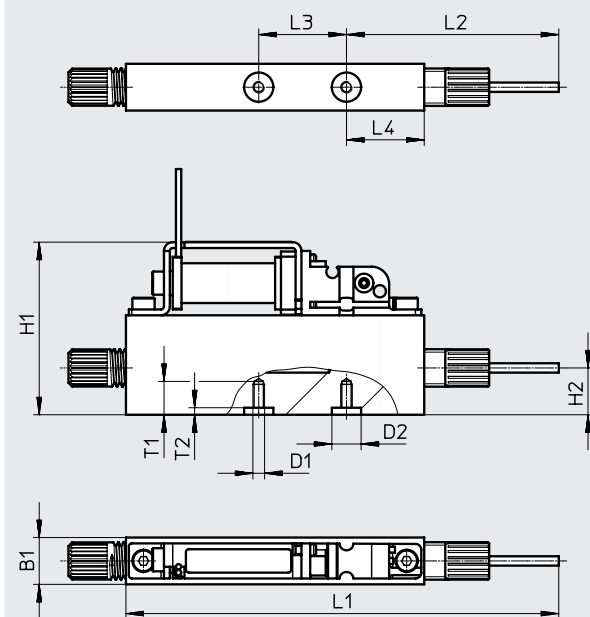
Pin allocation		
	Pin	Function
	1	Valve 1
	2	Valve 2
	3	Valve 3
	4	Valve 4
	5	Valve 5
	6	Valve 6
	7	Valve 7
	8	Valve 8
	9	GND

Data sheet

Dimensions

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VTOE-...S



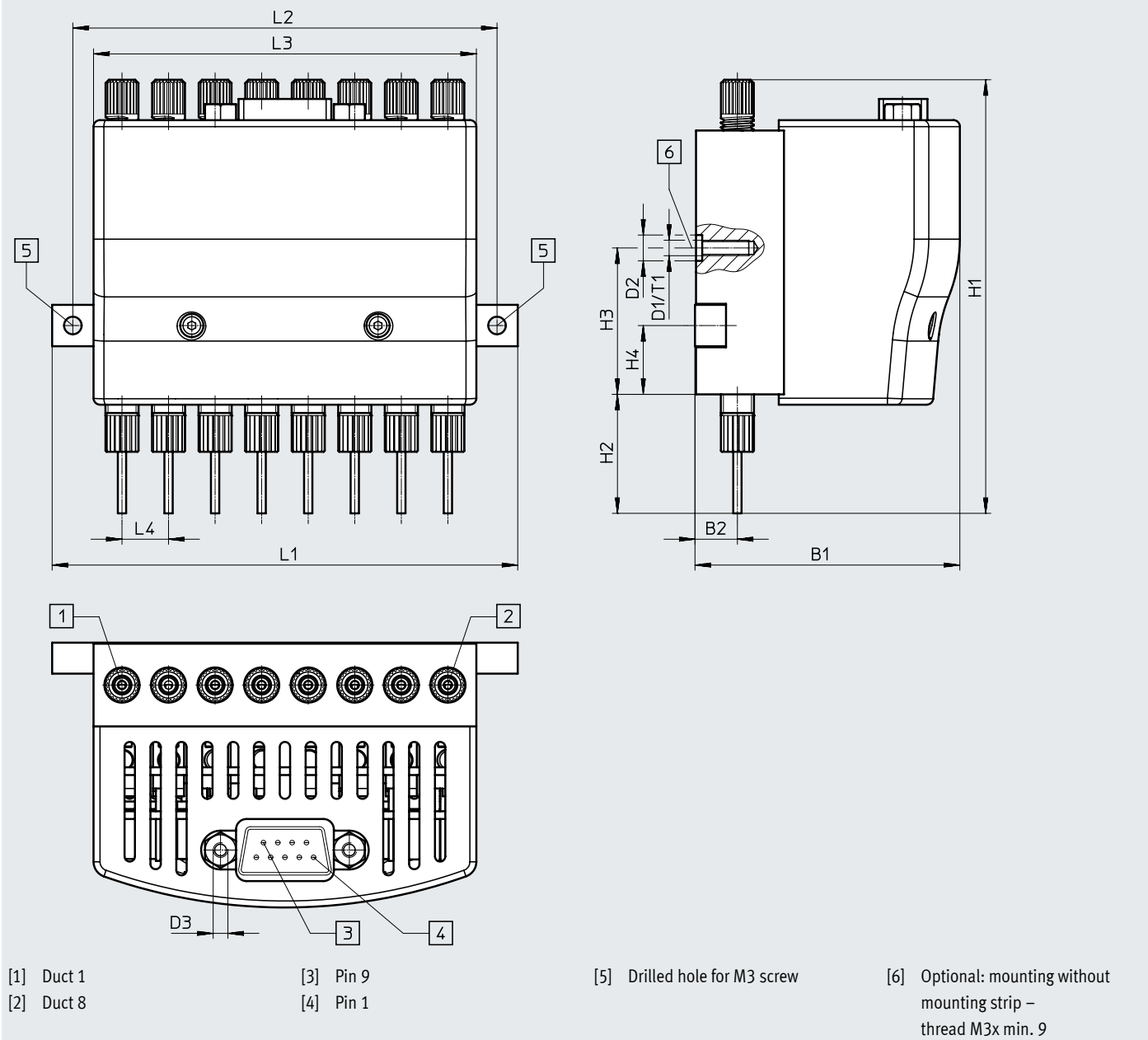
Type	B1	D1	D2 Ø	H1	H2	L1	L2	L3	L4	T1	T2
VTOE-...S	8.1	M2	5	30	8	74	36.3	15	13.3	5.2	1.2

Data sheet

Dimensions

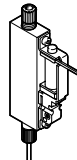
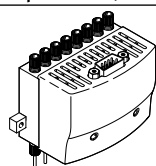
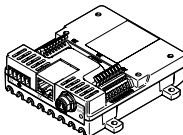
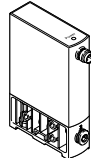
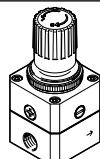
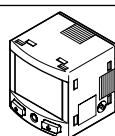
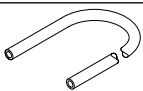
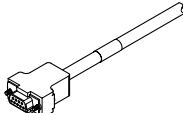
VTOE-8-...-M

Download CAD data → www.festo.com



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	