

Dispense head VTOE

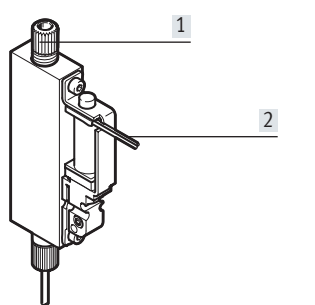
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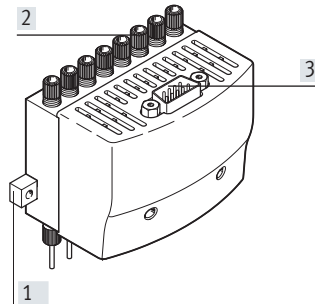
Key features

| 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

| | | | |
|--|---|--|--|
|  | <ul style="list-style-type: none">[1] Fluid connection[2] Individual electrical connection | Single-channel dispense head: Enables dosing with the utmost precision. | |
| | | | |

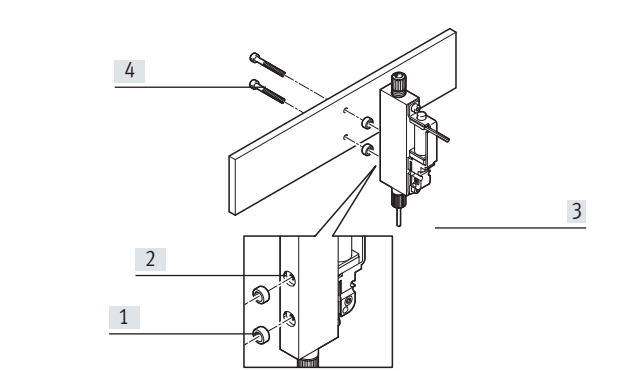
VTOE-8-...-M design

| | | | |
|--|---|---|---|
|  | <ul style="list-style-type: none">[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. |
| | | | |

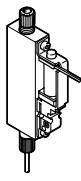
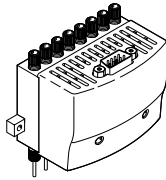
Range of application

| | | | |
|---|--|--|---|
| 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

| | | | |
|--|---|---|--|
|  | <ul style="list-style-type: none">[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 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 | |

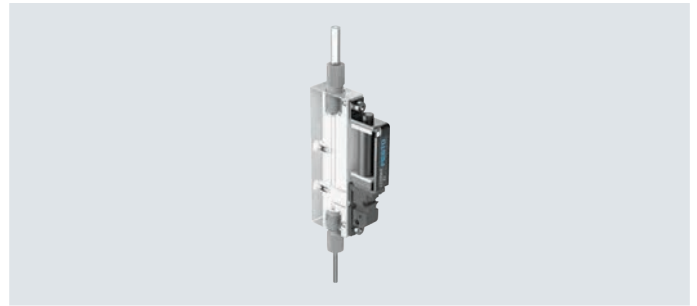
| | | |
|-----|------------------|--|
| 008 | Housing material | |
| P | PEEK | |
| S | PPS | |

| | | |
|-----|-------------------------|--|
| 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 | |

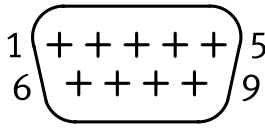
1) Corrosion resistance class CRC 0 to Festo standard FN 940070

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 |

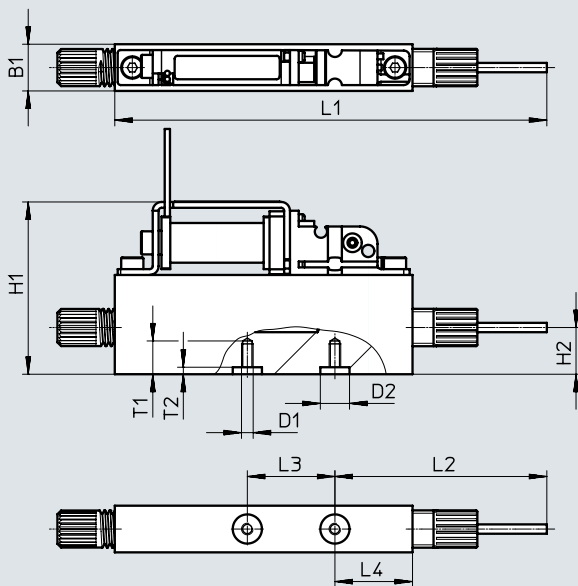
| Pin allocation | | |
|---|-----|----------|
| | Pin | Function |
|  | 1 | Valve 1 |
| | 2 | Valve 2 |
| | 3 | Valve 3 |
| | 4 | Valve 4 |
| | 5 | Valve 5 |
| | 6 | Valve 6 |
| | 7 | Valve 7 |
| | 8 | Valve 8 |
| | 9 | GND |

Data sheet

Dimensions

Download CAD data → www.festo.com

VTOE-...S



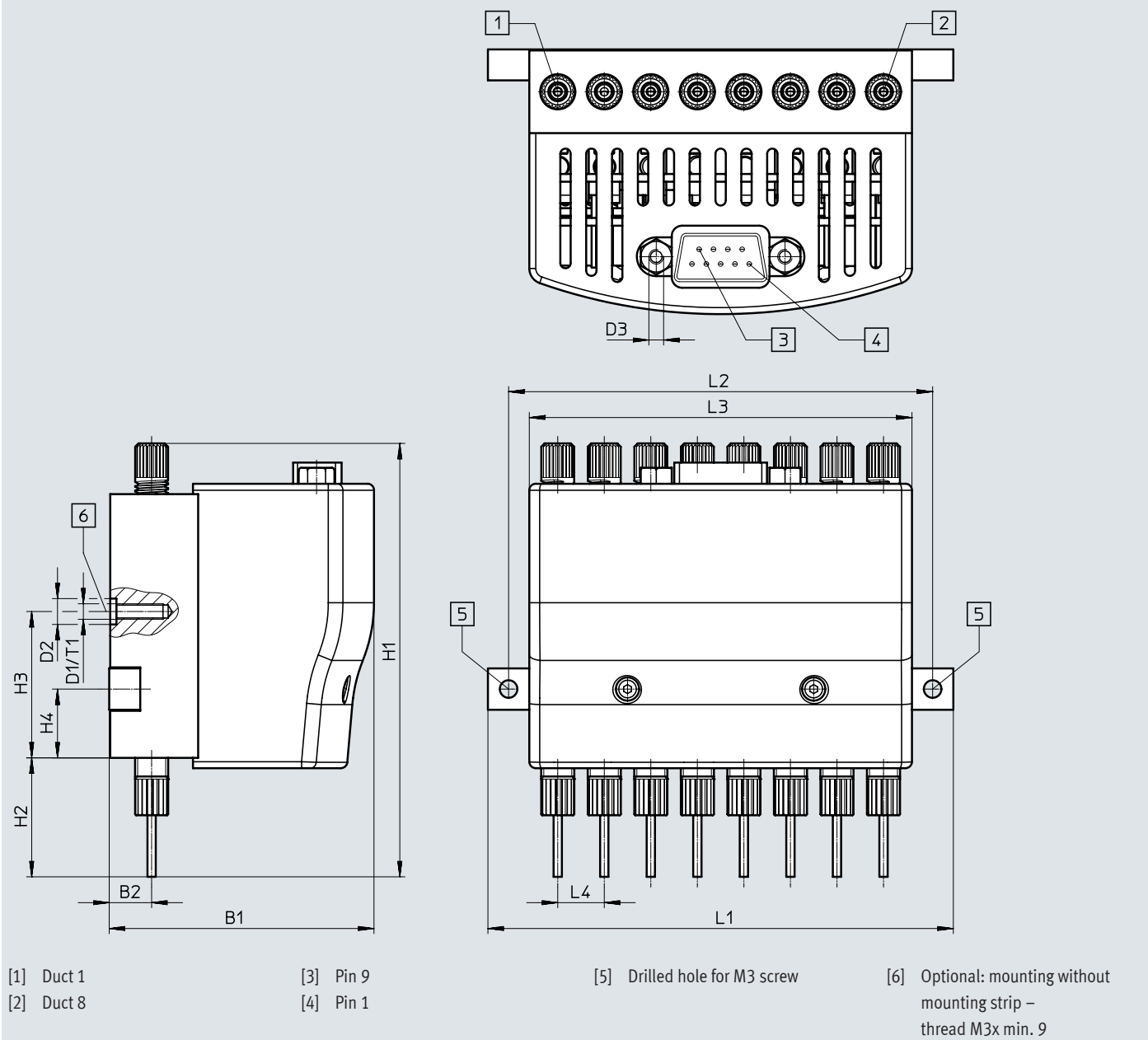
| Type | B1 | D1 | D2 Ø | H1 | H2 | L1 | L2 | L3 | L4 | T1 | T2 |
|-----------|-----|----|---------|----|----|----|------|----|------|-----|-----|
| VTOE-...S | 8.1 | M2 | 5 | 30 | 8 | 74 | 36.3 | 15 | 13.3 | 5.2 | 1.2 |

Data sheet

Dimensions

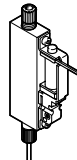
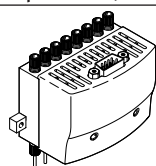
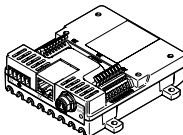
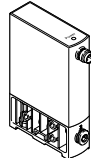
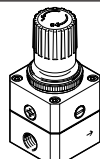
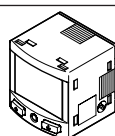
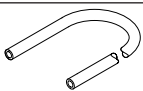
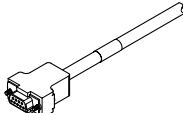
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VTOE-8-...-M



| 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 | |

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