

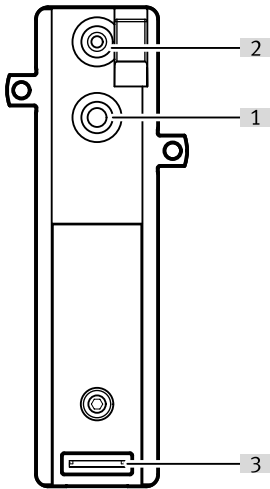
## Piezo valve VEA

**FESTO**



## Characteristics

### At a glance



#### Special characteristics:

- Energy consumption < 0.1 W at 5 Hz
- No self-heating
- No operating noise
- Extremely long service life
- For compressed air or inert gases, as well as for oxygen
- Small and lightweight

#### Low energy demand:

- Compared with solenoid valves, proportional valves with piezo technology require virtually no energy to maintain an active state thanks to their capacitive character. The piezo valve operates like a capacitor: it needs current only at the start in order to charge the piezo ceramics.
- No additional energy is needed to maintain this state and therefore the valves generate no heat. They consume up to 95% less energy than solenoid valves, which permanently require an electrical current.
- The piezo valve connection needs to be earthed for an EMERGENCY OFF circuit in which the valve is meant to close. If the connection is simply disconnected, the piezo actuator will remain in its current position for a while due to its capacitive character.

#### Operating mode:

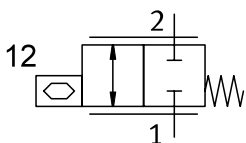
- The VEAЕ is a proportional 2/2-way valve in which a piezo actuator is controlled electrically.
- The flow rate can be controlled via a closed-loop control circuit by integrating a flow sensor in the output line.
- The valve is closed in the normal position. Pressure supplied at port 1 supports the closing function.

#### Control behaviour:

- The piezo actuator is controlled with a variable voltage to provide proportional closed-loop control. Depending on the design, this allows either the pressure or flow to be controlled. The pressure or flow behaviour is controlled by integrating a sensor in the output line of the closed-loop control circuit.
- The piezo valve VEAЕ exhibits the typical hysteresis behaviour of a proportional valve. Linear behaviour can be achieved by combining control electronics with a flow sensor.

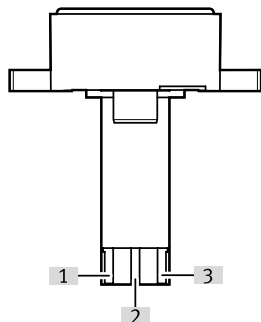
### Valve function

[6] 2/2-way valve, normally closed



## Characteristics

### Electrical connection



Pin assignment:

- Pin 1: Power supply 0 ... 300 V
- Pin 2: GND
- Pin 3: GND

The charge and discharge current must be limited to 11 mA. If the current is not regulated by the controller, this can be achieved using a 27 kOhm resistor connected in series.

### Diagrams

[Link](#)  [veae](#)



The diagrams shown in this document are also available online. These can be used to display precise values.

### Type code

001	Series	
VEAE	Piezo valve	
002	Directional control valve type	
B	Sub-base valve	
003	Valve function	
6	2/2-way valve, normally closed	
004	Inflow direction	
B	Over seat	

005	Nominal width [mm]	
1.2	1.2	
1.5	1.5	
1.7	1.7	
006	Pressure range [bar]	
D9	0 ... 6	
D22	0 ... 3	
007	Electrical connection	
X4	ZIF connection/standard flexible conductor	

## Datasheet

General technical data			
Nominal size	1.2 mm	1.5 mm	1.7 mm
Valve function	2/2-way, closed, monostable		
Type of reset	Mechanical spring		
Standard nominal flow rate (standardised to DIN 1343)	50 ... 60 l/min	58 ... 81 l/min	47 ... 63 l/min
Note on standard nominal flow rate	Production-related distribution		
Total leakage	0.4 l/h		
Type of piloting	Direct		
Sealing principle	Soft		
Dimensions (W x L x H)	64 x 24 x 12 mm		
Grid dimension	20.5 mm		
Pneumatic connection, port 1	Flange		
Pneumatic connection, port 2	Flange		
Type of actuation	Electric		
Type of mounting	With through-hole		
Mounting position	optional		
Flow direction	Non-reversible		
Product weight	10 g		
Special characteristics	Oxygen-compatible to DIN EN 1797		

Operating and environmental conditions		
Operating pressure	0 ... 0.3 MPa	0 ... 0.6 MPa
Operating pressure	0 ... 3 bar	0 ... 6 bar
Burst pressure	2.5 MPa	
Burst pressure	25 bar	
Nominal operating pressure	0.3 MPa	0.5 MPa
Nominal operating pressure	3 bar	5 bar
Medium	Compressed air as per ISO 8573-1:2010 [5:3:1] Inert gases Oxygen (oxygen applications to IEC 60601-1 only on request)	
Oxygen suitability according to standard	ASTM G 63 ASTM G 93 ISO 15001	
Biocompatibility according to standard	ISO 18562	
Note on the medium	Lubricated operation not possible	
Ambient temperature	-10 ... 60°C	
Media temperature	-10 ... 60°C	
Storage temperature	-20 ... 70°C	
Relative air humidity	0 - 60% Non-condensing	
Pressure dew point	-20°C	
Grade of filtration	5 µm	
Degree of protection	IP40	
Corrosion resistance class CRC <sup>1)</sup>	2 - Moderate corrosion stress	

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

Electrical data	
Nominal operating voltage DC	300 V
Operational voltage range DC	0 ... 300 V
Electrical connection	3-pin Plugs Flexible circuit board connector, RM 2.5 mm
Max. electrical power consumption	0.1 W
Max. current consumption	11 mA
Max. switching frequency	12 Hz
Duty cycle	100%

## Datasheet

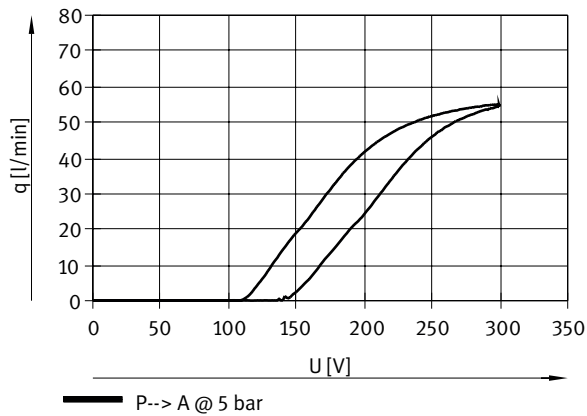
### Safety data

Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

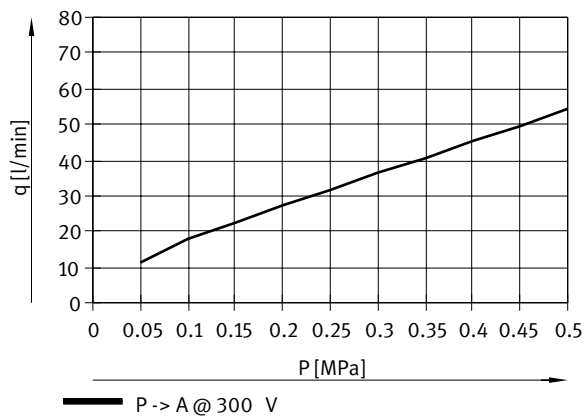
### Materials

Material seals	EPDM
Material housing	PA-reinforced
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364 zone III

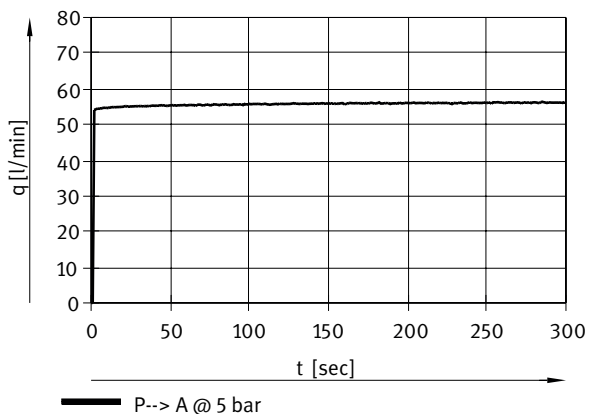
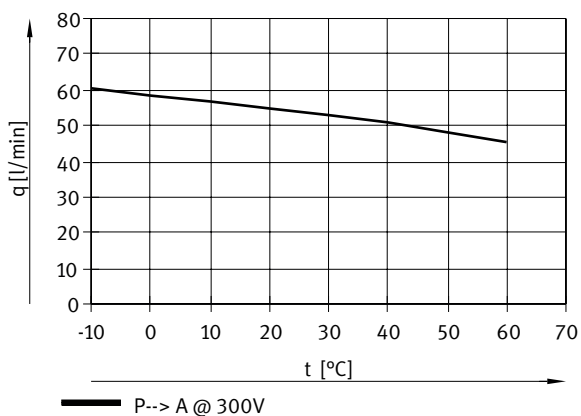
### VEAE-BB-6-12-D9-X4, flow rate $q_n$ as a function of voltage at operating pressure 0.5 MPa (5 bar)



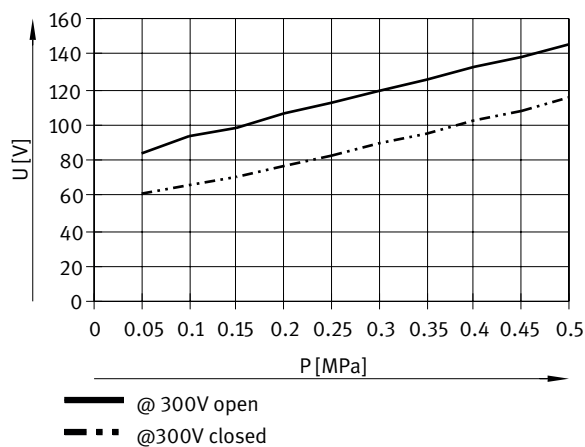
### VEAE-BB-6-12-D9-X4, flow rate $q_n$ as a function of operating pressure at 300 V



## Datasheet

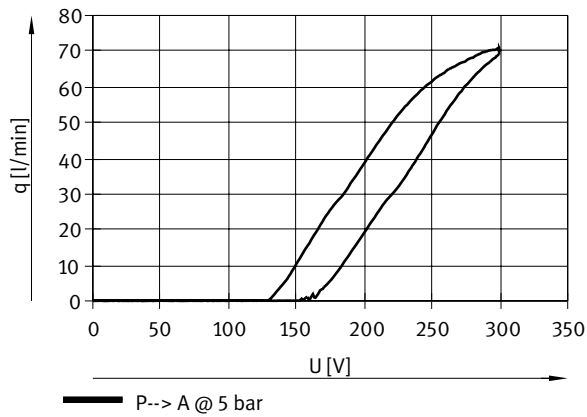
VEAE-BB-6-12-D9-X4, flow rate  $q_n$  as a function of switch-on time at 300 V and operating pressure 0.5 MPa (5 bar)VEAE-BB-6-12-D9-X4, flow rate  $q_n$  as a function of ambient temperature at 300 V

VEAE-BB-6-12-D9-X4, voltage for opening and closing the valve as a function of operating pressure at 300 V

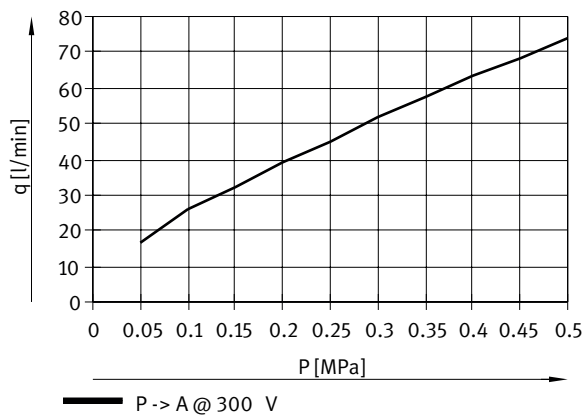


Datasheet

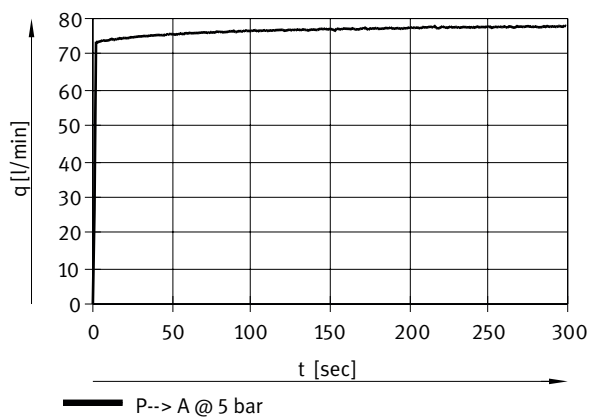
VEAE-BB-6-15-D9-X4, flow rate  $q_n$  as a function of voltage at operating pressure 0.5 MPa (5 bar)



VEAE-BB-6-15-D9-X4, flow rate  $q_n$  as a function of operating pressure at 300 V

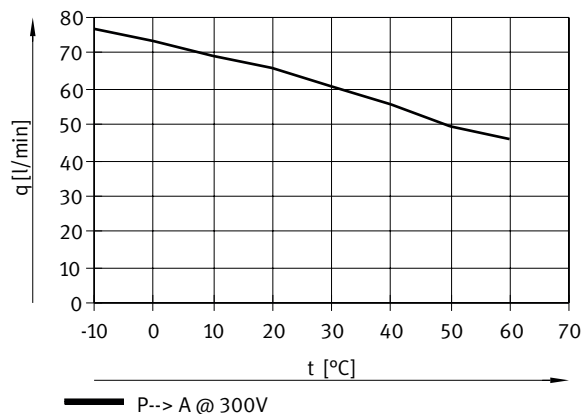


VEAE-BB-6-15-D9-X4, flow rate  $q_n$  as a function of switch-on time at 300 V and operating pressure 0.5 MPa (5 bar)

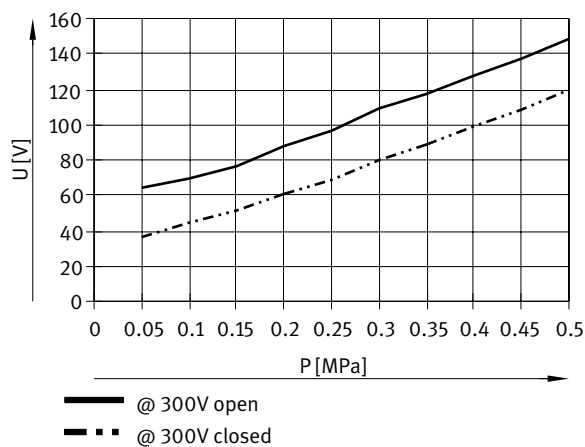
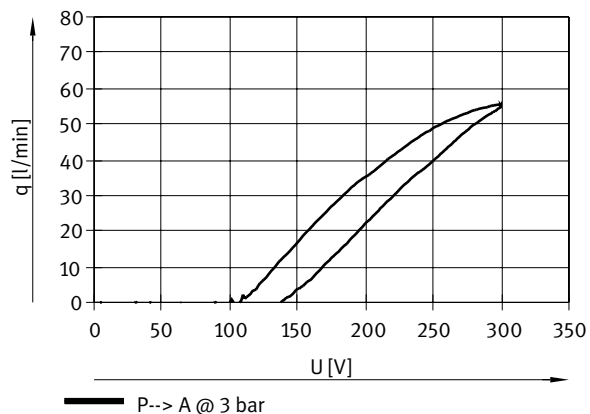




## Datasheet

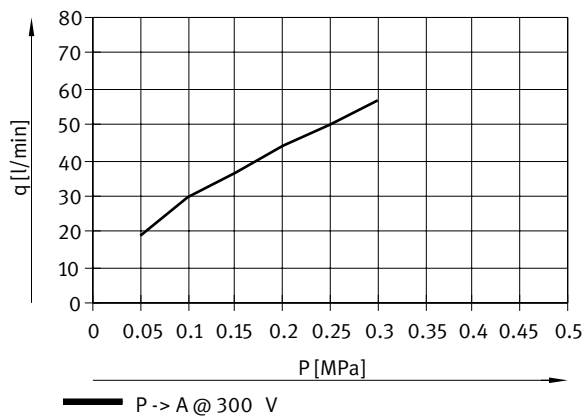
VEAE-BB-6-15-D9-X4, flow rate  $q_n$  as a function of ambient temperature at 300 V

VEAE-BB-6-15-D9-X4, voltage for opening and closing the valve as a function of operating pressure at 300 V

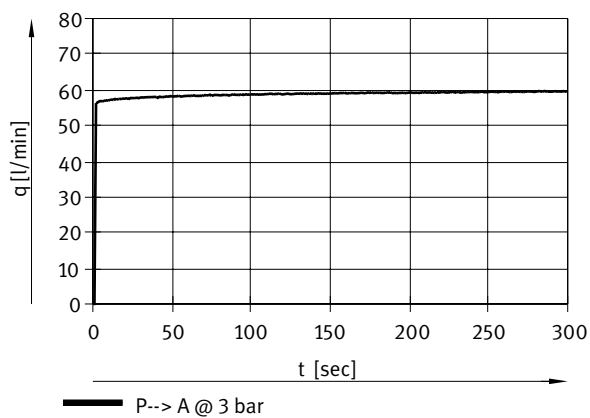
VEAE-BB-6-17-D22-X4, flow rate  $q_n$  as a function of voltage at operating pressure 0.3 MPa (3 bar)

## Datasheet

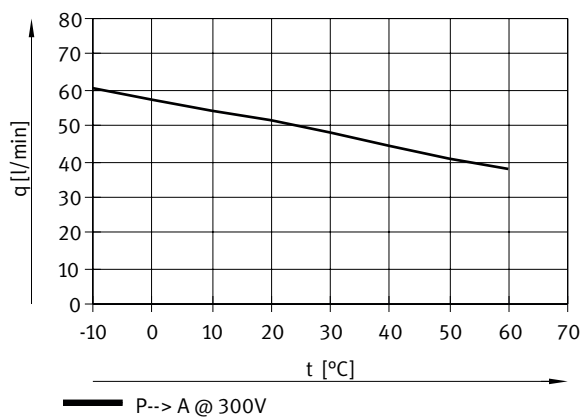
VEAE-BB-6-17-D22-X4, flow rate  $q_n$  as a function of operating pressure at 300 V



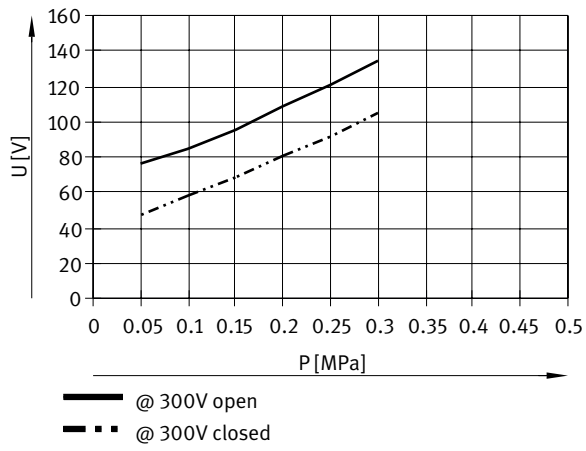
VEAE-BB-6-17-D22-X4, flow rate  $q_n$  as a function of switch-on time at 300 V and operating pressure 0.3 MPa (3 bar)



VEAE-BB-6-17-D22-X4, flow rate  $q_n$  as a function of ambient temperature at 300 V



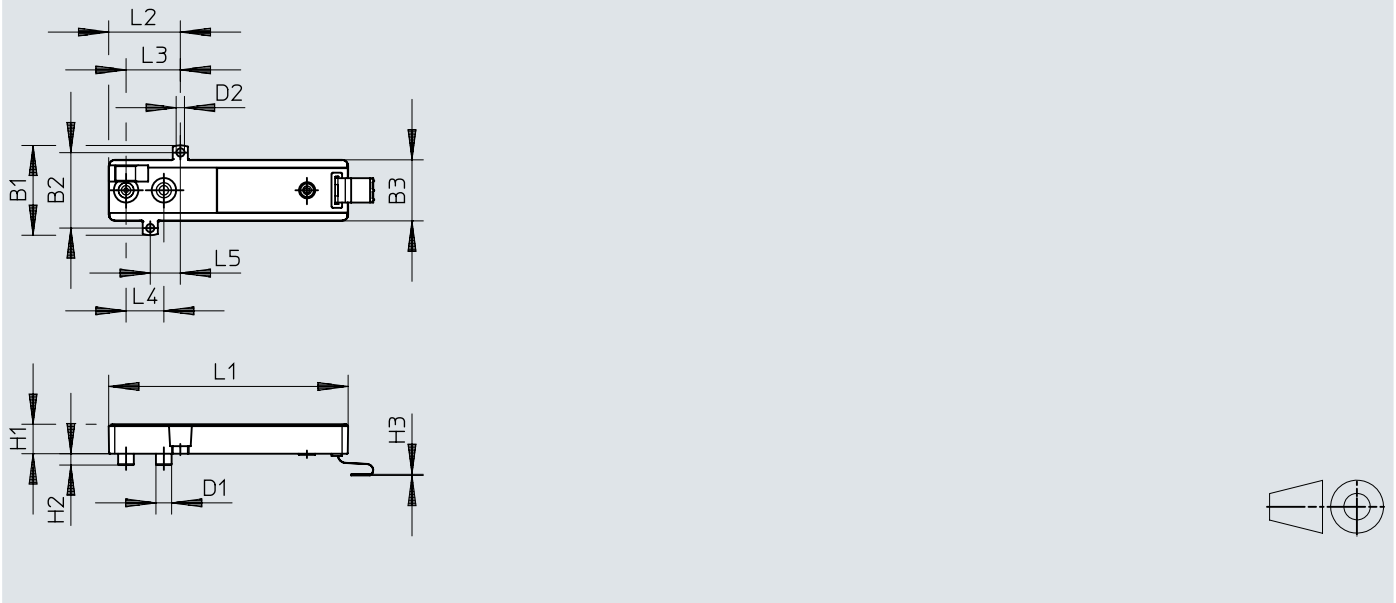
## Datasheet

**VEAE-BB-6-17-D22-X4, voltage for opening and closing the valve as a function of operating pressure at 300 V**

## Dimensions

### Dimensions – Piezo valve VEAЕ

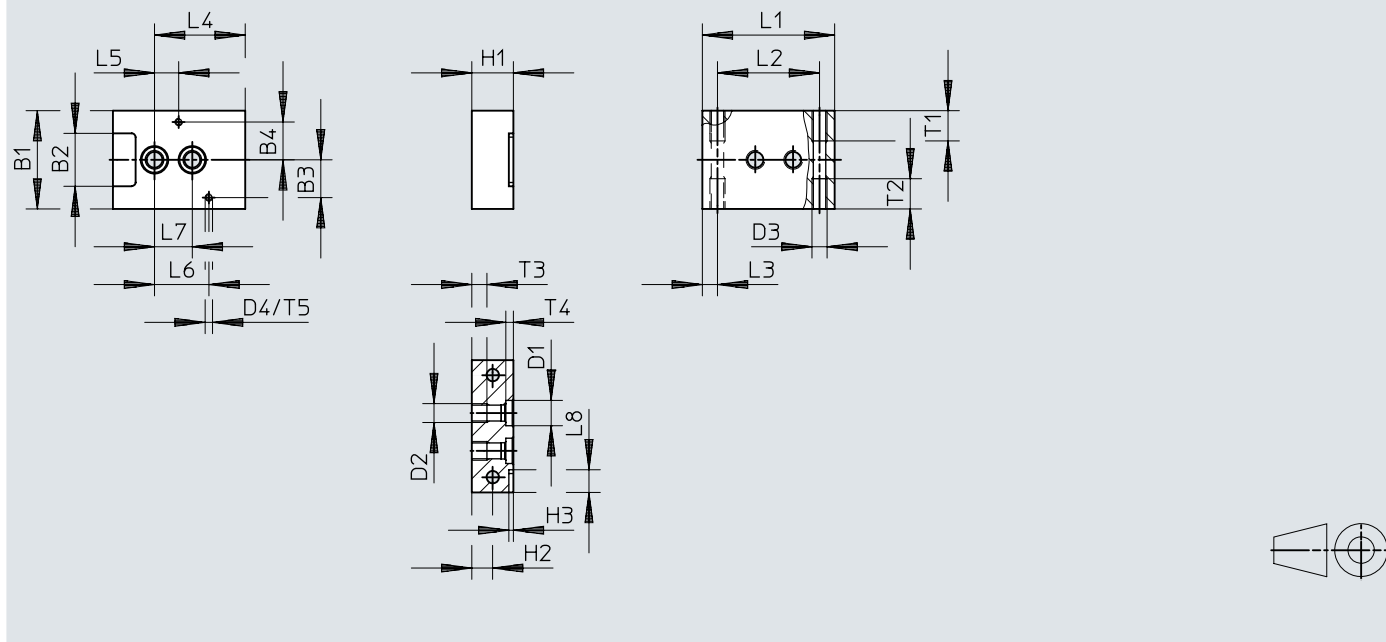
Download CAD data [www.festo.com](http://www.festo.com)



	B1	B2	B3	D1 ∅	D2 ∅	H1	H2	H3	L1	L2	L3	L4	L5
VEAE	24	20	16,4	4,2	2,2	7,9	3	0,3	63,3	19	14,4	10	8

## Dimensions

## Dimensions – Manifold block VABS

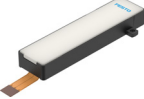
Download CAD data [www.festo.com](http://www.festo.com)

	B1	B2	B3	B4	D1 ∅	D2	D3	D4	H1	H2	H3
VABS	26	14	10	10	6,7	M5	M4	M2x7	11	5,5	1,2

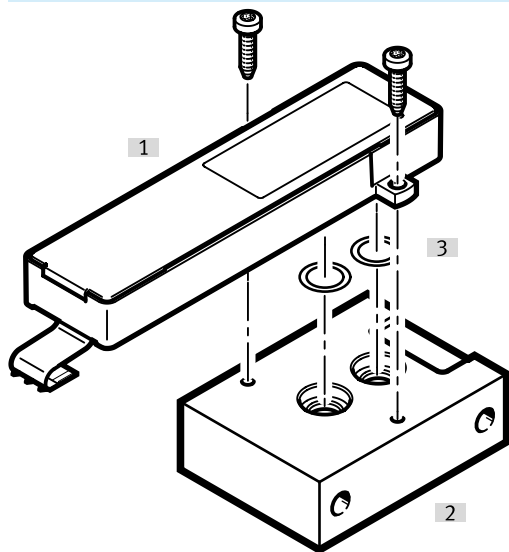
	L1	L2	L3	L4	L5	L6	L7	L8	T1	T2	T3	T4	T5
VABS	35	27	4	24	6,4	14,4	10	6	8	8	4	2	8

## Ordering data

Sub-base valve VEAE						
	Valve function	Nominal size	Operating pressure	Operating pressure	Part no.	Type
	2/2-way, closed, monostable	1.2 mm	0 ... 0.6 MPa	0 ... 6 bar	★ 8078916	VEAE-BB-6-12-D9-X4
		1.5 mm			★ 8078914	VEAE-BB-6-15-D9-X4
		1.7 mm	0 ... 0.3 MPa	0 ... 3 bar	★ 8078917	VEAE-BB-6-17-D22-X4

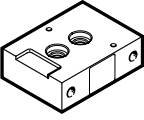
## Peripherals

## Example piezo valve VEAE with sub-base




Accessories			→ Link
Type/order code	Description		
[1] Piezo valve VEAE	-		<a href="#">veae</a>
[2] Sub-base VABS	-		<a href="#">16</a>
[3] Seal assortment VABD	-		<a href="#">16</a>

## Accessories

Sub-base, for 2/2-way valve			
	Pneumatic connection, port 2	Part no.	Type
	M5	8097804	VABS-P16-10S-M5

Sealing ring, 200 pieces (for 100 VEAE valves), oxygen-compatible			
	Material seals	Part no.	Type
	NBR	8097798	VABD-P16-S