



Media separated valves VYKA/VYKB/VYKC/VZDB



Highlights

- Diaphragm valve for various gases and liquids
- Directly actuated solenoid valve for pressure and vacuum applications
- Reversible flow rate with different nominal diameters
- Small internal volume
- Optimised rinsability for efficient cleaning
- Minimised heat generation

Media-separated valves are versatile and can be used for distributing, mixing, dosing and aspirating liquids and gases. Thanks to FDA-listed materials, they are also compatible with aggressive media. They are characterised by low power consumption, a small internal volume for reduced media consumption and optimised rinsability. Their high power density makes them perfect for controlling fluid flows, e.g. in manifold duct plates.

Maximum performance density

The valves can easily manage a pressure range of -0.75 ... 3 bar and flow rates of up to 930 ml/min. The small grid dimensions also make them suitable for a wide range of applications, such as with microwell plates.

Reliable and safe media separation

The high-performance polymers EPDM, FKM and FFKM used for the separating diaphragms can withstand even aggressive media, protect the interior of the valves and simultaneously

prevent corrosion. Their low internal volume makes the valves very easy to clean, which is ideal especially for sensitive applications.

Highly flexible control options

VYKA and VYKC offer a flexible control range between 12 and 26 V DC. The necessary holding current reduction for the VYKA can be achieved using the plug-in E-box VAVE or using the valve control module VAEM. With the VYKC, on the other hand, you decide whether you operate the valve with the optional integrated

holding current reduction or use an external valve controller (e.g. VAEM). The VYKB has an integrated electronic connecting component and can be actuated using 12 V or 24 V. The VZDB, however, is actuated using compressed air.



More information:

Product pages
> www.festo.com/catalogue/yykx



Product comparison



Performance valve VYKA

Dosing, handling very small amounts of liquids and sensitive gas applications

Size

- High performance density with extremely small dimensions

Performance

- Dosing extremely small volumes (from μl to ml)
- Precise and reproducible results
- Optimised rinsability and cleanability
- Minimal energy consumption and optimised heat management

Support

- Accessories, test reports, application descriptions, etc.



Compact valve VYKB

Offering high flow rates

Size

Flow rate

- Unrivalled performance density: extremely small dimensions with large nominal widths

Performance

- Precise control, little heat build-up
- Different materials, voltage ranges and functions
- Pneumatically controlled variant: VZDB



All-round valve VYKC

Cost attractive

All-rounder

- Incredibly versatile: perfect for controlling, distributing and mixing various liquids and gases

Performance

- Different nominal widths and functions with the same size
- Precise control and smart switching
- Easy to commission and maintain
- Comprehensive range of accessories

VYKA



- Kv value: 0.35 l/min
- For dosing, aspirating (vacuum-capable) and for continuous flow applications such as filling microwell plates
- Compact width of 7 mm
- FDA-listed materials
- FKM variant with oxygen-compatible materials (BAM tested)
- Extremely flexible in use thanks to 3/2 and 2/2 variants (NC/NO) and actuation with 12 ... 26 V DC using plug-in E-box VAVE-K1

Product-specific accessories and spare parts

- Various connection options
 - E-box VAVE-K1 with holding current reduction
 - Connecting cables NEBV-Q7
- PEEK connection module VABS-K1
 - M5
 - UNF1/4-28
- Electrical connecting cable NEBV-Q7
 - 0.1 m
 - 0.5 m
- Precise valve actuation with holding current reduction
 - 1-way (VAVE-K1)
 - 8-way (8x NEBV + VAEM)
- Direct PCB connection via female contacts
 - VAVE-K1-...-R with holding current reduction
 - VAVE-K1 without holding current reduction

VYKB



- Kv value 0.57 l/min (VYKB-F10) and 0.93 l/min (VYKB-F12)
- For dosing, aspirating (vacuum-capable) and for continuous flow applications
- Compact width of 10 mm or 12 mm
- Extremely flexible in use thanks to 3/2 and 2/2 variants (NC) and actuation with 12 or 24 V DC

Product-specific accessories and spare parts

- PEEK connection kits VABS-K2
 - M5, M6
 - G1/8
 - NPT1/8, UNF1/4-28
- Electrical connecting cable NEBV-HPG2
 - 0.3 m
- Seals as spare parts VAVC-K2
 - EPDM
 - FKM
 - FFKM
- Plug outlet to the side on request



VYKC

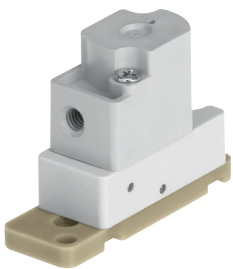


- Kv value up to 0.81 l/min (VYKC-...-20)
- For dosing, aspirating (vacuum-capable) and for continuous flow applications
- Compact width of 16 mm
- Extremely flexible in use thanks to 3/2 and 2/2 variants (NC/NO) and actuation with 12 or 24 V DC
- Precise valve actuation
 - With optional holding current reduction integrated in the valve (NEBV-H1G2)
 - Without holding current reduction with valve control module (NEBV-H1G2 + VAEM)
- Two variants:
 - VYKC-...-H2R with two LEDs:
 1. LED for on/off indication
 2. LED for intelligent detection of operating errors
 - VYKC-...H2: without LEDs
- FDA-listed materials

Product-specific accessories and spare parts

- PEEK connection modules VABS-K3
 - M5
 - G1/8
 - NPT1/8, UNF1/4-28
- Electrical connecting cable NEBV-H1G2
 - 0.5 m, 1 m, 2.5 m, 5 m

VZDB



- Kv value: 0.57 l/min
- For dosing, aspirating and for continuous flow applications
- Compact width of 10 mm
- No electronics required, since actuation is pneumatic
- Extremely flexible in use thanks to 3/2 and 2/2 variants (NC)

Product-specific accessories and spare parts

- PEEK connection kits VABS-K2
 - M6
 - UNF1/4-28
- Seals VAVC-K2
 - EPDM
 - FKM
 - FFKM

Technical data

	VYKA	VYKB	VYKC	VZDB
Valve type	Solenoid valve	Solenoid valve	Solenoid valve	Pneumatic valve
Valve function	3/2; 2/2 NC; 2/2 NO	3/2; 2/2 NC	3/2, 2/2 NC, 2/2 NO	3/2; 2/2 NC
Width [mm]	7	10 (VYKB-F10); 12 (VYKB-F12)	16	10
Dimension for series connection [mm]	7.5	11 (VYKB-F10); 13 (VYKB-F12)	17	11
Pressure [bar] *)	–0.5 ... 2	–0.75 ... 1 (VYKB-F10) –0.75 ... 3 (VYKB-F12)	–0.75 ... 5 (VYKC-...-12) –0.75 ... 3 (VYKC-...-16) –0.75 ... 2 (VYKC-...-20)	–0.75 ... 1
Temperature of medium [°C]	0 ... 50 (FKM), 15 ... 50 (FFKM)	0 ... 50	0 ... 50 (FKM, EPDM), 15 ... 50 (FFKM)	0 ... 50
Nominal widths [mm]	1.2	1.6 (VYKB-F10) 2.0 (VYKB-F12)	1.2 (VYKC-...-12) 1.6 (VYKC-...-16) 2.0 (VYKC-...-20)	1.6
Kv value [l/min]	0.35	0.57 (VYKB-F10) 0.93 (VYKB-F12)	0.55 (VYKC-...-12) 0.86 (VYKC-...-16) 1.3 (VYKC-...-20)	0.57
Power consumption (Pick-up/hold) [W]	2.19/0.06 3.53/0.23 with E-box VAVE	3.7/1 (VYKB-F10) 4.5/1 (VYKB-F12 / 24 V DC) 5.2/1 (VYKB-F12 / 12 V DC)	4.2 ... 5.5 / 1.1 ... 1.4	4.5/1 with 24 V DC 5.2/1 with 12 V DC
Connection type	Flange	Flange	Flange	Flange
Sub-bases	UNF1/4-28, M5	UNF1/4-28, M6	M5, G1/8 NPT1/8, UNF1/4-28	UNF1/4-28, M6
Operating voltage [V DC]	12 ... 26 +/-10% with E-box VAVE	12 and 24	12 ... 24	–
Seals	EPDM, FKM, FFKM	EPDM, FKM, FFKM	EPDM, FKM, FFKM	EPDM, FKM, FFKM
Internal volume [µl] (fluid chamber as well as fluid channels)	20 (2/2), 22 (3/2)	35 (VYKB-F10) 60 (VYKB-F12)	89 (2/2-way valve) 59 (3/2-way valve)	35
Reversible	With limitations	No	Yes	No
Max. switching cycles	10 million	10 million	10 million	10 million
FDA-listed materials	Yes	No	Yes	No

*) Larger/extended pressure ranges on request

[Extended product information: → Link](#)



**Success
stories**



**Application
notes**



Brochures



General accessories

NLFA* fittings for laboratory applications

Material in contact with media	PP
Pressure [bar]	–0.75 ... 6.0 (NLFA-...-K...) –0.75 ... 4.0 (NLFA-...-B...)
Temperature of medium [°C]	0 – 50 (NLFA-...-K...) 0 – 35 (NLFA-...-B...)
Fluid connection 1	UNF 1/4-28
Fluid connection 2 [mm]	OD: 1.6; 3.0; 3.2 (NLFA-...-K...) ID: 1.2; 2.1 (NLFA-...-B...)
Variants	Straight
Special features	FDA-listed materials

* This product is currently in development but samples are available.

Dosing needles VAVN

Length [mm]	30, 60
Internal diameter [mm]	0.3; 0.6; 1.2
Special versions:	Tapered, with chamfer

VAEM

Dimensions W x L x H [mm]	92 x 100 x 28
Parameterisation	Parameter setting per output
Intrinsic current consumption at operating voltage [mA]	27
Trigger level [V]	Level 14 ... 24
Load voltage range DC [V]	8 ... 24
Max. no. of outputs	8
Pick-up current, per output [mA]	20 ... 1,000
Holding current, per output [mA]	20 ... 400
Pick-up current, total [A]	≤ 4
Holding current, total [A]	≤ 1.8
Pick-up time [ms]	≤ 100
Time resolution [ms]	0.2
Nominal operating voltage DC [V]	24
Permissible voltage fluctuations	+/- 15 %
Power supply, function	Digital trigger input Power supply
Communication interface, protocol	RS232, Ethernet

General accessories



Valve control module VAEM

- Valve control of up to eight solenoid valves
- Parameterisation of 2/2- and 3/2-way solenoid valves
- Current control
- Dimensions: 92 x 100 x 28 mm, weight: 98 g
- Resolution: 0.2 ms
- GUI available
- Communication via RS232 and Ethernet
- External trigger input 24 V

Highlights

- Dosing precision can be enhanced through:
 - Eight individually controlled channels
 - Very fast valve actuation with a time resolution of 0.2 ms
 - Individual parameterisation of switching times, holding current reduction and delay times per channel
- Easy to use and integrate thanks to:
 - Control and diagnostics via GUI, RS232 and Ethernet
 - External trigger input 24 V for synchronisation with other systems
 - Compact design and light weight



Fluidic push-in fitting NLFA and dosing nozzles VAVN

- Fittings for liquid media, especially suitable in laboratory applications
- Five different fittings for a range of tubing
- Dosing nozzles for dosing media
- Ten different nozzles with optional tapering and chamfer

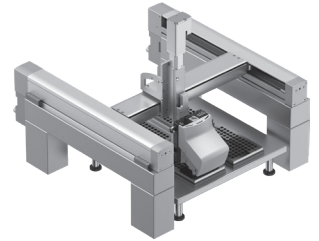
Highlights

- Innovative technology for easy-to-install fluid connections: the two individual parts of the fitting are joined together and do not need to be ordered or installed separately
- Suitable for aggressive liquids
- FDA-listed materials
- Excellent rinsability thanks to connector without dead space
- Large selection of dosing nozzles to optimise dosing performance

Suitable for a wide range of applications

Ideal for the following applications

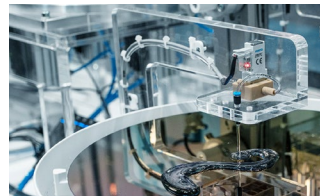
- Liquid handling for high-precision dosing applications in laboratory automation
- Controlling media in bioreactors
- Gas analysis with particle-free switching operations or very low leakage rates
- In-vitro diagnostics for the automated handling of patient samples
- Controlling media for industrial printing
- Handling media in the semiconductor industry, e.g. for manufacturing wafers
- Dosing liquids such as biological or chemical substances



Dosing liquids, e.g. flavourings



Bioreactors such as controlling different media for cultivation

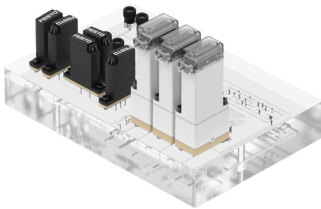


Semiconductor, such as for producing wafers



Printing, e.g. for supplying printer ink or cleaning printheads

Diffusion Bonded Manifolds



Diffusion Bonded Manifolds are compact, custom-designed manifolds for the precise control of liquids and gases. They are manufactured using a high-precision joining process without adhesives, which ensures contamination-free production. Compared to conventional systems connected using tubing or drilled systems, they enable greater integration density and process reliability. Their main application areas in life science

are small tabletop devices in medical technology as well as laboratory analysis and diagnostics, including microfluidic applications. These manifolds are made of PMMA (acrylic) or PEI (Utem). They are available as functionally integrated complete solutions in combination with the media-separated valves VYKA, VYKB or VYKC.

Highlights

- Customised design for easy integration
- Compact design with many channels
- Minimised leakage thanks to seamless connections
- Contamination-free joining without dead volume