

FESTO

Product catalogue



for process automation

Product catalogue for process
automation



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	<p>Editorial</p>	<p>2</p>	<p>0</p>
	<p>Pilot valves</p>	<p>20</p>	<p>01</p>
	<p>Sensor boxes</p>	<p>214</p>	<p>02</p>
	<p>Positioners</p>	<p>286</p>	<p>03</p>
	<p>Linear drives</p>	<p>302</p>	<p>04</p>
	<p>Quarter turn actuators</p>	<p>370</p>	<p>05</p>
	<p>Ball valves and ball valve units</p>	<p>486</p>	<p>06</p>
	<p>Angle seat valves</p>	<p>616</p>	<p>07</p>
	<p>Butterfly valves</p>	<p>672</p>	<p>08</p>
	<p>Solenoid-actuated media valves</p>	<p>684</p>	<p>09</p>
	<p>Pneumatically actuated media valves</p>	<p>762</p>	<p>10</p>
	<p>Other pneumatic devices</p>	<p>786</p>	<p>11</p>
	<p>Services</p>	<p>838</p>	<p>12</p>
	<p>Appendix</p>	<p>852</p>	<p>0</p>

Editorial





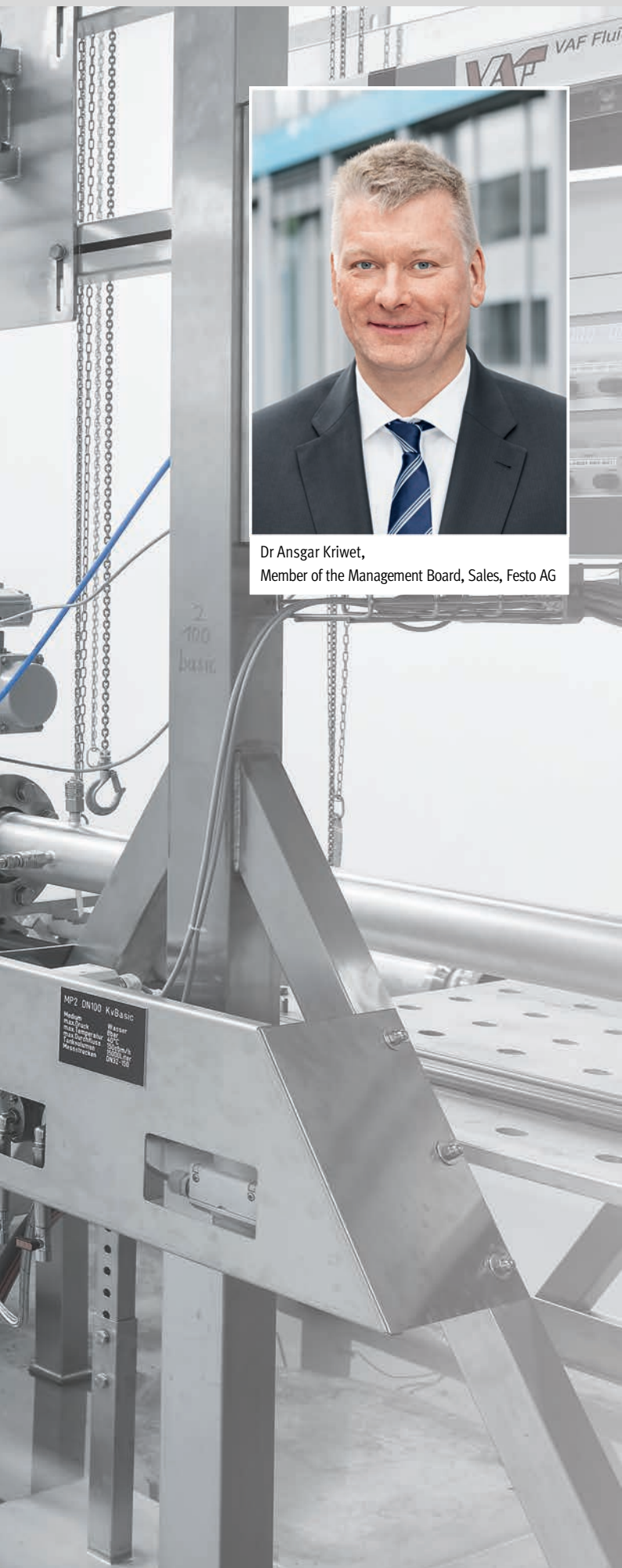
Contents

Preface	4
Partner for maximum productivity	6
Innovations for simpler automation	8
Digitalisation – megatrend for productivity	10
Automation x3	12
Easy selection – quick ordering	14
Online – get the ideal solution fast	15
Festo Online Shop	19

Preface



Editorial



Dr Ansgar Kriwet,
Member of the Management Board, Sales, Festo AG

Dear Customers,

Increasing your productivity is our motto for everything we do. The new product catalogue from Festo for the process industries is a truly impressive example of this. We support you along the entire value chain, from engineering to commissioning and operation, including with our tailored services too. We can also work with you to develop automation concepts for your specific production situation.

You have access to our wide range of components and solutions for the process industries. For example, our complete process valve units and control cabinets enable you to collaborate with just one partner, while our online configurators help you to find the precise combination you need with just a few mouse clicks.

Digitalisation, as we understand it, is not an end in itself. On the contrary, it boosts your productivity along all areas of the value chain, whether in engineering or in operation. Cloud services such as data analytics and visualisation via dashboards make it possible to realise a completely new kind of energy monitoring, and form the basis for predictive maintenance. Our energy efficiency modules MSE6 help you to reduce your CO2 emissions and lower your energy costs. They can also be easily retrofitted into existing systems, offering you a very easy first step into the world of digitalisation.

The Festo Motion Terminal VTEM is propelling pneumatics into the app-controlled, digital age. By installing apps, a wide range of functions can be realised on a standardised hardware platform; this eliminates the contradiction between standardisation and flexibility in planning and operation. The decentralised processing of process information in the VTEM means that the process control can be adapted to changing conditions automatically as well as virtually autonomously and decentrally in the field. The digital image, which can be created using the Product Key, rounds off the topic.

Another trend to which we are paying great attention is the modularisation of automation. Innovative products such as the modular electrical terminal CPX with integrated controller CEC and valve terminal MPA provide you with a uniform interface for decentralised intelligence that enables you to fully control machines or complex subsystems. The benefits of this modularity are clear: greater flexibility in production and a shorter time to market for your products.

Our core product range benefits from short delivery times. The 2,200 products marked with a star are in stock and are generally sent out on their way to you within 24 hours or generally within five days for configurable products.

Take a look at this catalogue since it shows you completely new ways of increasing your competitiveness with automation technology from Festo. And find out how solutions from Festo simplify your work and also make you more productive. I hope you find it rewarding!

Ansgar Kriwet

Partner for maximum productivity

You want to make your applications more productive.
You are looking for efficient solutions.
We are entering the digital future with you.

→ **WE ARE THE ENGINEERS
OF PRODUCTIVITY.**

Festo: a partner in dialogue, a partner for maximum productivity.

Best products. Best solutions. Best services. That is our claim. In this context, there is much more you can expect from us to permanently increase your productivity.

Editorial





Build with engineering excellence.

Use our ingredients for quick and easy engineering: extremely simple and suitable product selection, smart engineering and simulation processes, also with a digital twin, and a unique Product Key for complete product information. And procurement? It couldn't be easier.

Operate your systems smartly.

Connectivity to the cloud ensures reliable processes with greater productivity. Condition monitoring lets you see immediately when a service or repair is due - our MyDashboards will tell you. And with the Smartenance digital maintenance manager you have the servicing of all systems under control - even third-party systems.

Prepare to be inspired.

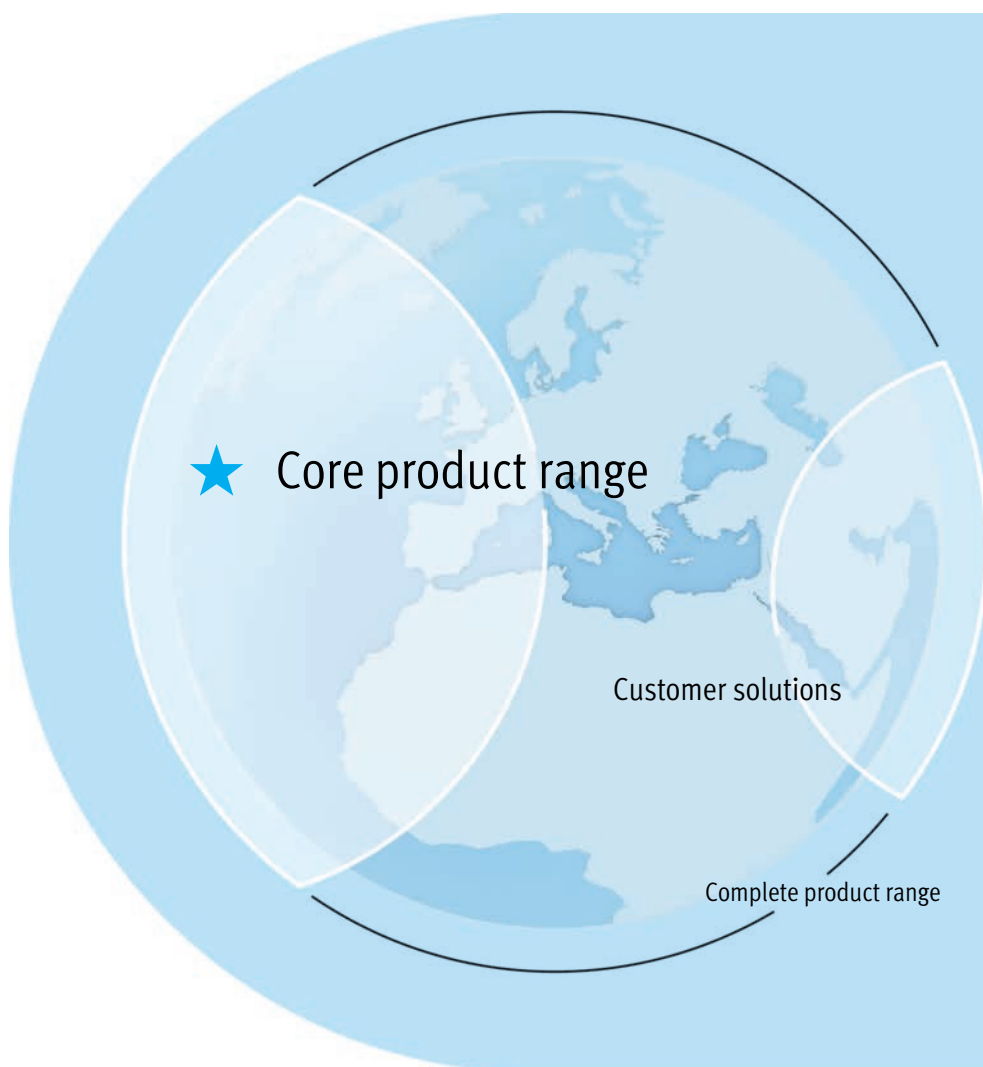
What does the automation of tomorrow look like? What are the trends? And what will make my production highly flexible, while also offering standardisation? You can find the answers right now with our Festo Motion Terminal VTEM, the first app-controlled pneumatic component. Future Concepts and our bionic studies show you how the world of tomorrow might look.

Never stop learning.

The market and global competition are accelerating steadily - and require constant learning if you want to maintain your competitive edge. You and your employees will benefit from the offer of Festo Didactic. Knowledge that pays off.

You rely on factory automation.
You rely on process automation.
We are technology and training.

→ **WE ARE THE ENGINEERS
OF PRODUCTIVITY.**



Product range

The rapid changes of our time are challenging and we have to continually adapt processes, functional concepts and solutions. Mastering this challenge technically and economically will become a core competency in the coming years. Only then can we keep up with general developments. Many tasks can be solved with simple means, some only with special approaches: our range is designed to support with all aspects.

1

Core product range

Our core product range offers you special advantages – selected products for 80% of automation applications. They can be ordered using a part number and are especially attractively priced.



- **Generally ready for dispatch from the Festo factory in 24 hours**
- In stock worldwide in 13 service centres
- Over 2200 products

Look for the star!

2

Complete product range

You will find solutions for more specific requirements in our complete product range, which we will deliver on the indicated date. This part of the range is not separately identified.

3

Customer solutions

If you cannot find the right products for your task in our range, our specialists in the "customer solutions" area are at your disposal.

Your partner for all automation questions.

Contact us → www.festo.com

Digitalisation

Digitalisation – megatrend for productivity

The virtual and real worlds are continuing to converge – and leading to Industry 4.0. Increasing digitalisation is one of the basic prerequisites for this process. Festo is driving this process forward in the field of automation – and we invite our customers to undertake this journey together with us.



The future: smart products – smart offering

Digital products can do more and more – and are masters at integrating additional functions. Smart products optimise themselves, adapt to external influences and identify themselves. The digital twin is accessed via the Product Key. These are the prerequisites for highly flexibly and extremely fast and adaptive production.

This also includes a tailored digital offering in the form of software, apps and firmware along our customer journey. Festo is making every effort in this area. Engineering tools such as FluidDraw or EPLAN Schematic Solutions ensure seamless, error-free documentation. Condition monitoring of components or solutions takes place via dashboards that output all relevant parameters – including on the go. This makes it possible to reconcile maximum system availability and optimum maintenance planning. Huge savings potential can be realised with Smartenance, our digital maintenance manager with reminder functions and proof for audits, including for non-Festo products.

Your entry into the digital world? CPX/MPA as an example

The advantages of digitalisation are clearly demonstrated by a valve terminal MPA ordered and configured in the Online Shop and the CPX automation platform with decentralised intelligence. It features numerous approaches from integrated industries. It is documented electromechanically and pneumatically in no time at all with Schematic Solutions and FluidDraw from the App World, so that a digital twin is immediately available. In addition, the Product Key as a data matrix code on the product ensures that important information is easy to retrieve during commissioning and maintenance.

An additional, configurable OPC UA interface connects the CPX/MPA to the IoT gateway that transfers the data to the Festo Cloud. Festo MyDashboards visualise this data, for example for condition monitoring. Smartenance is used for maintenance planning, including for the entire system or production line.

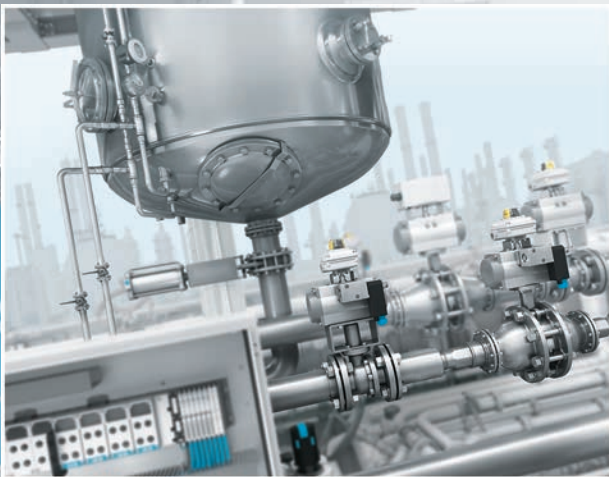
Only this combination of classic hardware and software-controlled elements boost the automation productivity and flexibility. We are happy to share this expertise with our customers.

Automation x3



Editorial





Factory automation

... for maximum productivity

In everyday factory operations, typical tasks such as gripping, moving and positioning part components, modules or complete products are carried out by Festo automation technology.

Fully integrated competitive edge

Our components and systems are used in production and assembly in a wide range of industry sectors, including the automotive, packaging and electronics industries.

The corresponding service and appropriate training make us the No. 1 partner for our customers across their entire value chain.

Process automation

... for safety during operation

Regulating and controlling fluids, gases and solids are typical process automation tasks. The main fields of application are in water and wastewater technology, the pharmaceutical sector, the chemical industry and food and beverage production. However, our solutions are also used in many factories, for example in cooling circuits and ventilation systems.

Tailored industry solutions

Together with and for our customers, we develop tailored automation solutions for controlling and regulating fluids, gases and solids. We provide support in all project phases from development through to commissioning.

Electric automation

... seamless connectivity in factory and process automation

One automation platform for factory and process automation

Our CODESYS controllers, primarily the modular control system CPX-E and the control platform CPX with protection to IP65 create unique advantages and set new standards in factory and process automation.

This includes a cost-effective overall concept, technical synergies and the advantages of decentralised installation as well as connecting to Industry 4.0, the IoT and the Festo Cloud thanks to OPC UA.

A comprehensive platform for electric automation

Automation in core and secondary machine processes: from electromechanics and rotary modules, servo motors and servo drives, complete positioning systems and motion control solutions to complete handling systems and decentralised control solutions as well as the Multi-Carrier System – and always with the appropriate Festo Automation Suite sizing and engineering software.

Includes intelligent connectivity with various communication tools as well as the direct and complete integration of our servo drives in higher-level control concepts from globally controller manufacturers.

Easy selection

Quick order placement for selected basic designs

We make it easy for you!

We have compiled a globally standardised core product range that not only offers you faster and easier selection, but also fast delivery.

It has been selected by Festo experts based on actual customer requirements and covers the main applications of automation technology, while offering the best possible value for money.

Products with the star: easy selection and fast delivery

You can recognise these outstanding products at a glance: they are marked in the catalogues with a ★ star.

Quick and easy to order

Preconfigured to ensure the best possible value for money, these products can be ordered quickly and easily either via the order code, which is based on the features, or the unique part number.

High level of availability

In stock and generally ready for immediate dispatch: these products are available in no time at all.¹⁾

More variety or individually configured? No problem!

If your requirements go beyond the main applications of automation technology or if you need individually configurable products such as valve terminals, you can choose from the full spectrum of Festo's automation portfolio with all of its technological diversity.

- Each product in this catalogue is presented as part of a product range overview, e.g. Solenoid valves VSNC, NAMUR → page 24
- Make your selection using the configurator in our digital product catalogue – online at

→ www.festo.com/catalogue/..., enter the type code, e.g. **vsnc**

- You can also place the order from the configurator.

Further information on how to quickly find the optimal solution

→ page 15, 18 and 19.

1) Special features are explicitly stated.



You can benefit from these advantages whenever you need core pneumatic and electrical functions. Wherever you see this symbol in our printed or electronic catalogue, it identifies a selected product which is perfect for the main applications of automation technology. The stars will help you to find what you are looking for more quickly and place orders more easily. These star products are generally in stock and ready for immediate delivery.

At a glance:

- + Fast: generally ready for dispatch in 24 hours
- + Superb: Festo quality at an attractive price
- + Easy: just a few clicks to place an order online

Quick order placement for selected basic designs

You will find the order code for each product on the product pages. The appropriate accessories for each product are presented in tabular format at the end of each product description.

It couldn't be easier:

to get the correct order code, complete the fields in the first row from the left to the right. Follow the connecting line from each field to the column with the associated sizes and variants and make your selection.

There are three types of fields:

- + Mandatory data with predefined content **1**:
in the example on the right, the basic design AEN is specified.
- + Mandatory data (empty field) **2**:
enter your required stroke length here.
- + Optional data (line only) **3**:
if nothing is entered here, the basic variant will be supplied (in this example this means a standard piston rod).

When making your selection, note the conditions associated with the variants **4**, which are shown as footnotes.

Example of an order code:

Type	AEN	Single-acting compact cylinder, pushing	
Piston Ø [mm]	12	Stroke [mm]	1 – 10
	16, 20, 25, 32, 40, 50, 63, 80, 100		1 – 25
Piston rod thread	A	Male thread	
	I	Female thread	
Cushioning	P	Elastic cushioning (rings/plates at both ends)	
Position sensing	A	Via proximity sensor	
Protection against rotation	Q	Square piston rod	(S)
Temperature resistance	S6	Heat resistant seals up to max. 120°C	
1 Not with piston Ø 12 4			

Contact

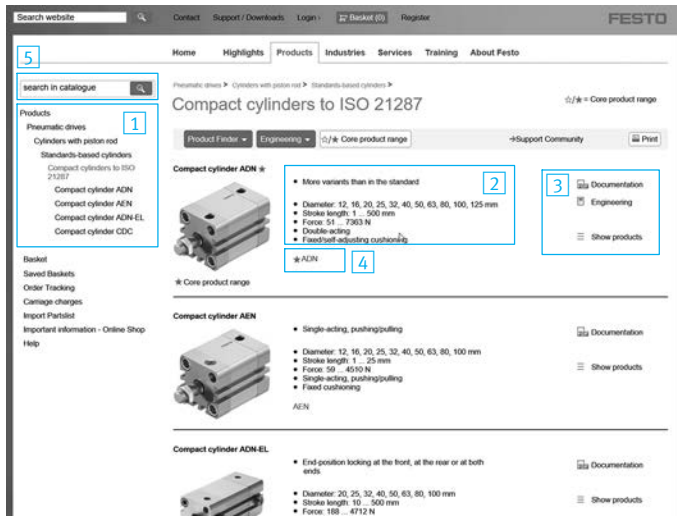
On pages 879 to 880 you will find the service network with details of our contacts.

Prefer online?

→ www.festo.com

We look forward to hearing from you.

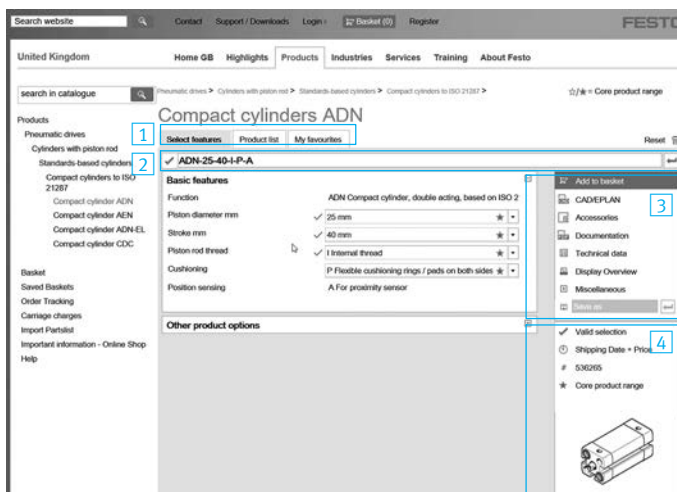
Online: Enter → www.festo.com in your web browser, then choose your country. Click on Go.
On the homepage, select the "Products" menu.



From the product group to the product

There are three options available:

1. Click on a product group **1** or product photo. A selection of products will then be displayed along with a list of the technical features **2** and selectable links **3**:
 - "Engineering" starts the selection and calculation software
 - "Documentation" provides detailed information in PDF format
 - "Feature search" lets you further narrow down the product selection
2. Full text search: Enter your search term in the search field **5**. This can be made up of complete or partial keywords, part numbers, type codes or names of favourites. Depending on your input, a selection of products as described in step 1 will be displayed or you will be taken directly to the product you searched for.
3. Quick link: Use the quick link **4** to take you directly to the required product by clicking on an order code.



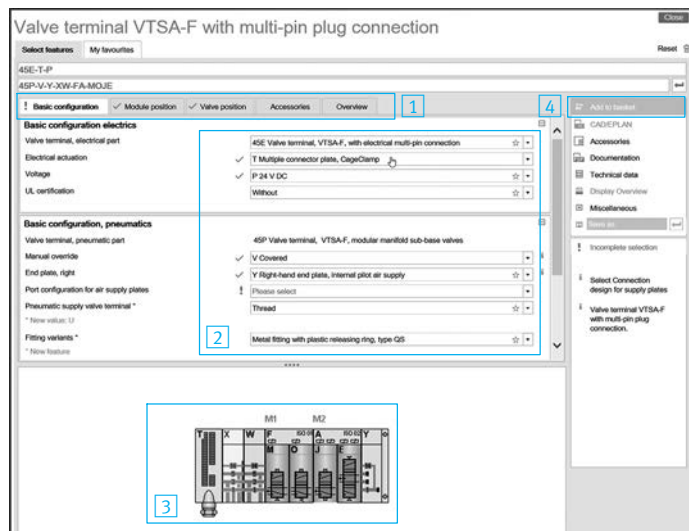
Functions in the product configurator

1. Tab navigation **1**
 - "Select features": Select the appropriate features here
 - "Product list": Lists all products in the product group
2. Input field for order code **2**:
Enter the exact order code here.
3. Other actions **3** which are available following a correct configuration:
 - "Add to basket": Adds your product to the basket, see also the sections "Exporting your basket" and "Managing your basket" → 18.
 - "2D/3D view": Creates a CAD model, see the section "Viewing CAD models"
 - "Accessories": Lists suitable accessories
 - "Data Sheet": Contains all the relevant technical data
 - "Display Overview": Displays an overview of all selected models
4. Details **4**:
Here you will find information such as part number, price, product graphic, product illustration and circuit symbol.

Online or offline – get the ideal solution fast

Online: Enter → www.festo.com in your web browser, then choose your country. Click on Go.

On the homepage, select the "Products" menu.

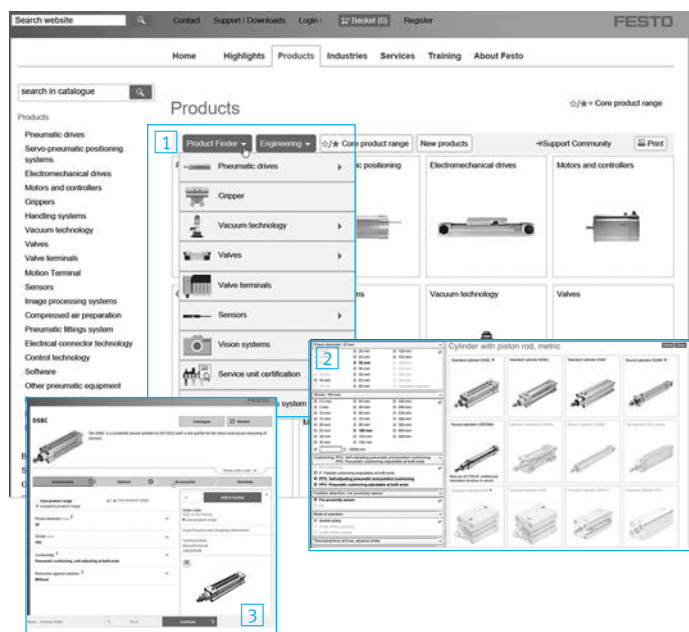


Selecting product features in the product configurator

1. Select the product features:
 - Navigate using the tabs **1**.
 - Configure your product by selecting the required features **2** on the tabs **1** running from left to right.
 - The tabs **1** give you a quick overview of all the selected features. Missing features are marked with a blue exclamation mark and incorrect features are marked in red. Clicking on the feature takes you directly to it, so that you can then change it.
2. Graphic representation **3**: A dynamic graphic¹⁾ is created based on your current configuration.
3. Add the product to the basket: Once the configuration is complete, you can add products to the basket by clicking on "Add to basket" **4**. A message is displayed to confirm that the product has been added successfully.

To find out how to place an order, see the section "Managing your basket" → 18.

1) Available for the valve terminal and service unit product groups.



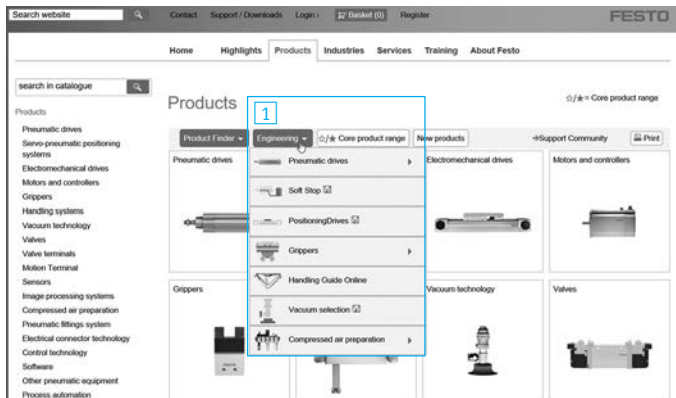
Selecting product features in the product finder

1. Click on the blue icon "Product finder" **1** and select the required product group.
2. Select the required technical features in the selection field **2** on the left-hand side.
3. Then click on a product photo. The configurator **3** opens with the features you selected.

Online or offline – get the ideal solution fast

Online: Enter → www.festo.com in your web browser, then choose your country. Click on Go.

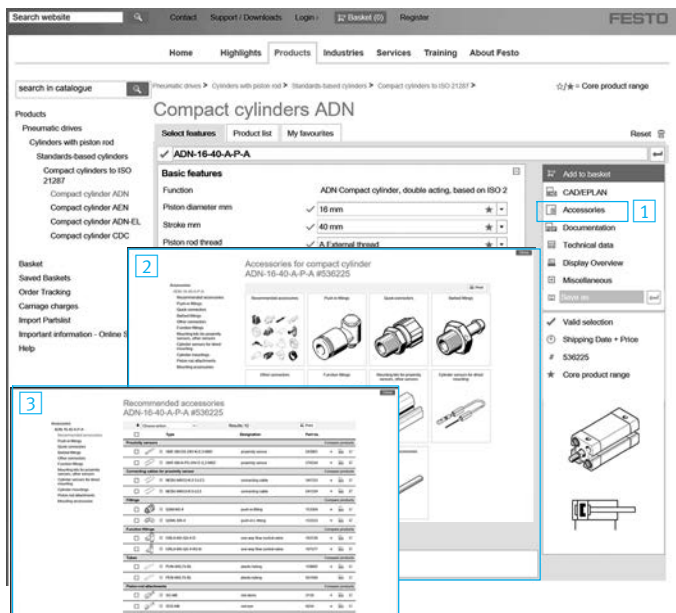
On the homepage, select the "Products" menu.



Engineering tools for appropriate products for your applications

1. Click on the blue icon "Engineering" **1** and select the required engineering tool.

This tool guides you step-by-step to the application simulation based on the technical features you selected and suggests the appropriate products for your application.



Finding the appropriate accessories quickly

1. Select the required features in the configurator.
2. Click on the "Accessories" icon **1** on the right-hand side.
3. Select the required accessory from the accessories on offer **2**.

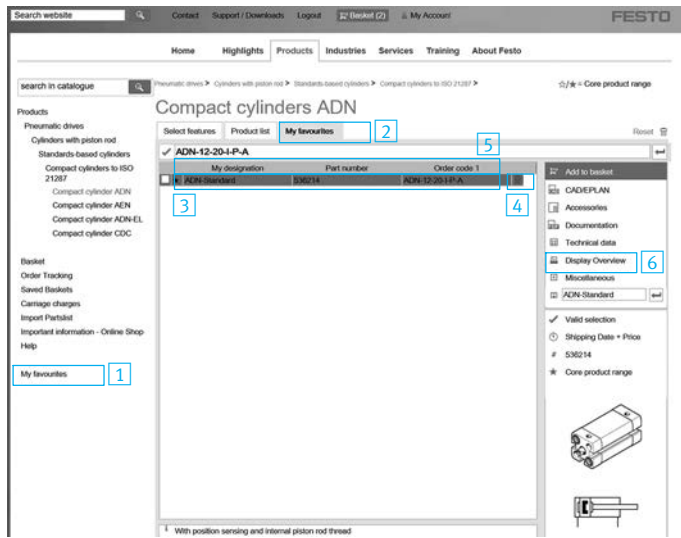
The tool will take you to the appropriate accessory selection list.

Tip:

For some cylinder series you can find the appropriate accessories faster by selecting "Recommended accessories" in the accessories on offer **2**. For some cylinder series you will also find "Recommended accessories" **3** after you have added your selection to the basket.

Online or offline – get the ideal solution fast

Online: Please register as a user to use the functions described on this page.



My favourites

You can save as many product configurations as favourites as you want.

To display the list of all stored favourites **1**:

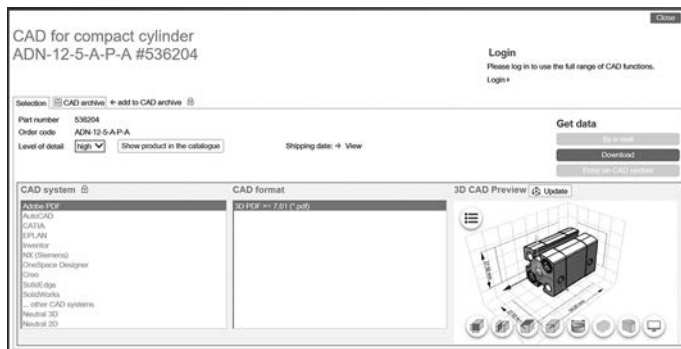
– Click on the "My favourites" tab **2**. A table containing your saved favourites is displayed.

The name of the favourite, part number, type code and a button **4** for deleting the favourite are displayed.

– Double-clicking on a row in the configuration **3** opens the corresponding configuration window.

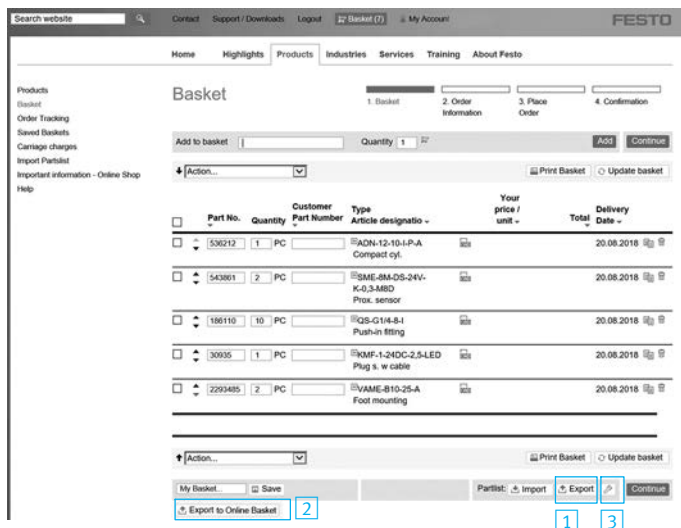
– You can sort your favourites by clicking on the column headings **5**.

– You can select multiple favourites and compare them by clicking on "Product compare" in the field on the right **6**.



Viewing CAD models

Clicking on the "2D/3D view" icon opens a window containing a CAD preview of the product. The "Export" function lets you export the files to your CAD system in the right format.



Exporting your basket ...

1. ... as a csv file:

To do this, click on "Export" **1**, choose "Save as" in the new window and specify where you want to save it to. This file can then be opened in Excel, for example, and edited.

2. ... in your choice of format: To do this, click on "Settings" **3** and specify which information is to be exported.

Managing your basket

1. Upload the basket directly to the Online Shop and place your order: to upload a basket directly to the Online Shop, simply click on "Export to online basket" **2**. An Internet connection is established and the products are transferred to the online basket. After logging in via "Login", your net prices and delivery times are displayed. Now just place your order and you're done!

2. Place an order: To place an order, simply print out your basket and send it to Festo by fax or export it as an e-mail.



The Support Portal

All product information can be accessed centrally → www.festo.com/sp



Round-the-clock benefits

**24h
online**+ **Continuous availability** – product information, documentation, prices, availability, ordering, etc.+ **Complete overview of all orders** – order tracking with search function, status display in lists and easy reordering.+ **No minimum quantity surcharge** – there will be no additional costs for small orders.+ **Request quotations** – you can request quotations directly from the basket at the push of a button.+ **Download all documents for a complete basket** – complete documentation for the selected products.+ **Express delivery** – orders placed before 8:30 p.m. with express delivery selected will be with you by noon the following working day, provided they are in stock.

You will find our Online Shop at ...

→ www.festo.com

> click on the "Basket" link

Search website Contact Support / Downloads Logout **Basket (3)** My Account **FESTO**

Home Highlights Products Industries Services Training About Festo

Products
Basket
Order Tracking
Saved Baskets
Carriage charges
Import Partslist
Important information - Online Shop
Help

Basket

1. Basket 2. Order Information 3. Place Order 4. Confirmation

Add to basket Quantity

↓ Action...

<input type="checkbox"/>	Part No.	Quantity	Customer Part Number	Type Article designatio	Your price / unit	Total	Delivery Date
<input type="checkbox"/>	536212	1	PC	ADN-12-10-I-P-A Compact cyl.			20.08.2018
<input type="checkbox"/>	543861	2	PC	SME-8M-DS-24V-K-0,3-M8D Prox. sensor			20.08.2018
<input type="checkbox"/>	193138	1	PC	CRLA-M5-QS-4-D 1-way contr.val			20.08.2018

↑ Action...

My Basket... Partlist:

Requested Delivery Date Shipping method Ship complete orders only

Please Note: For items that exceed 30kg or are over 2 metres in length, delivery can take up to 5 working days from despatch date.

Festo Design Tool 3D

Already registered?

Then you can log in directly via → www.festo.com/login or by clicking on "Login".

If you have not yet registered ...

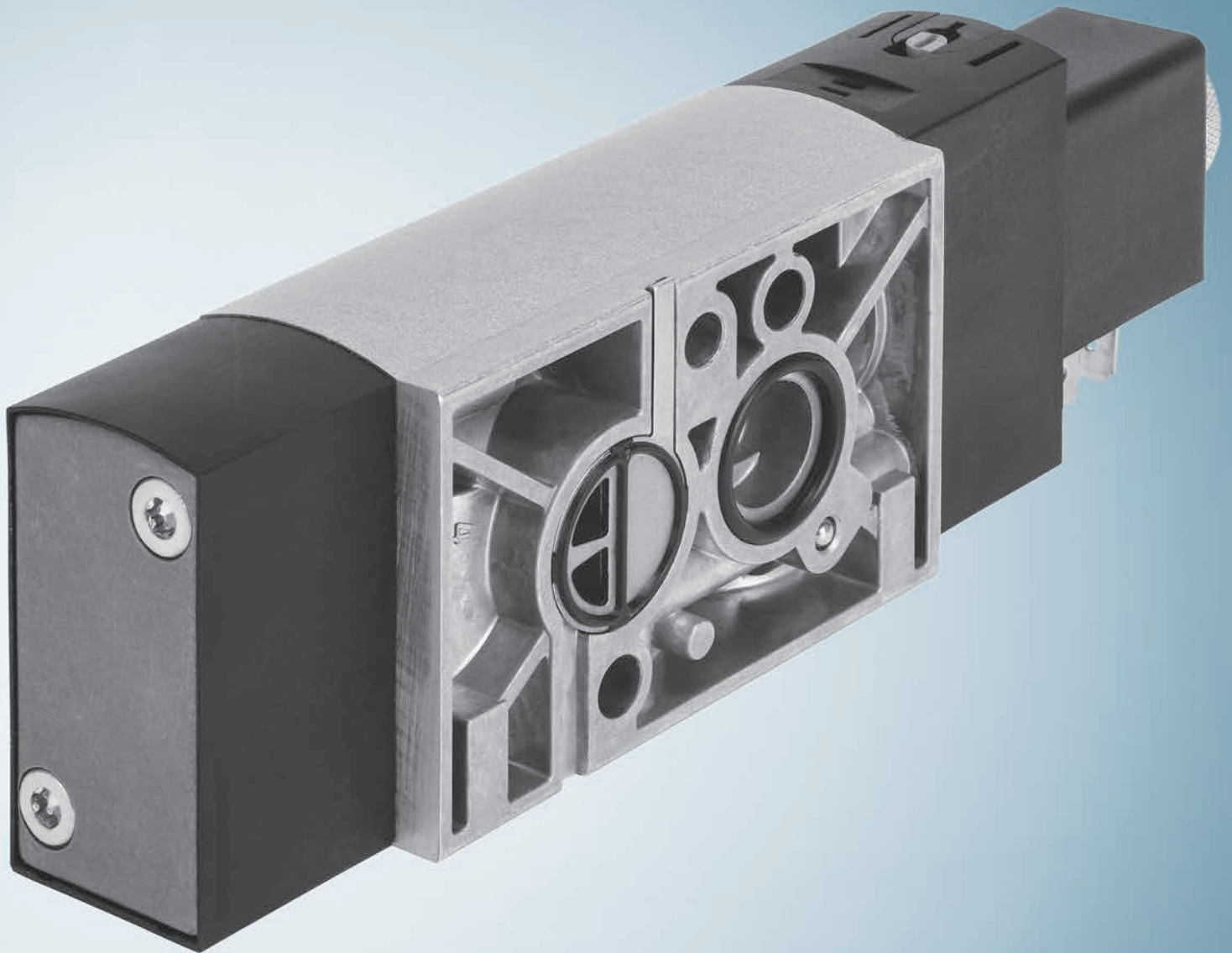
... open the registration form via → www.festo.com and by clicking on "Register".

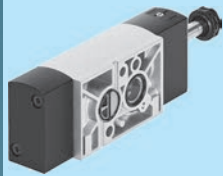
Further information on the Festo Online Shop can be found here:

→ www.festo.com/ols

01 Pilot valves

Solenoid valves for controlling pneumatic actuators with NAMUR interfaces (VDI/VDE 3845) as well as application-specific valves for typical safety applications in process automation





VSNC

Solenoid valves, NAMUR

- + Certified to all current Ex standards
- + Sturdy and with high flow rates

→ page 23



VOFC

Solenoid valves

- + Directly actuated poppet valve
- + Variants with TÜV approval up to SIL3 to IEC 61508

→ page 85



VOFD

Solenoid valves

- + Piston spool valve, piloted piston poppet valve
- + Variants with TÜV approval up to SIL3 to IEC 61508

→ page 151



VACF, VACN, VACC

Solenoid coils

- + For solenoid valves VSNC, VOFC, VOFD
- + For solenoid valves VZWM-L, reverse jet pulse valves VZWE

→ page 211

Contents

Solenoid valves, NAMUR VSNC	23
Solenoid valves VOFC	85
Solenoid valves VOFD	151
Solenoid coils, overview	211

Solenoid valves, NAMUR

VSNC



Overview, configuration and ordering
→ www.festo.com/catalogue/vsnc



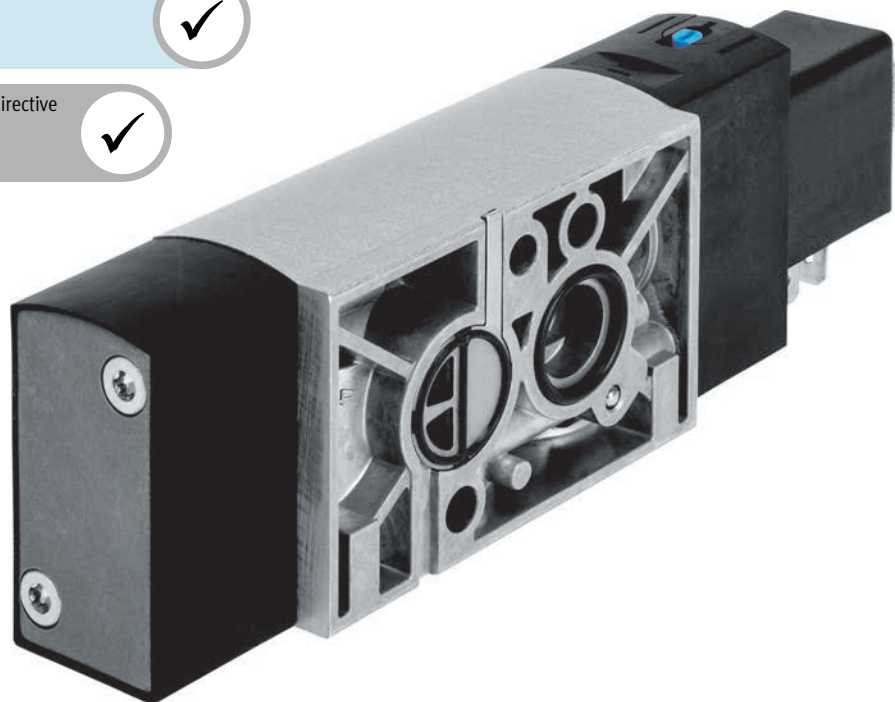
Additional information, support and user documentation
→ www.festo.com/sp/vsnc



Quick ordering of basic designs
→ page 38, 50



Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/ex



- + The VSNC-...FN armature system permits the use of solenoid coils with and without explosion protection
- + The VSNC-...FN variant achieves higher energy efficiency with reduced power consumption

- + Connection G1/4, NPT1/4
- + Flow rate 900 ... 1000 l/min
- + Voltage 12, 24, 48 V DC, 24, 48, 120, 230 V AC
- + NAMUR connection pattern to VDE/VDI 3845
- + Electrically actuated, piloted
- + Mechanical spring return
- + Wide range of Ex solenoid systems, IEC Ex, FM EX
- + Convertible from 5/2-way function to 3/2-way function

Solenoid valves VSNC

Key features, product range overview VSNC-...


Function


VSNC valves are pilot valves for single- and double-acting quarter turn and linear actuators with a port pattern in accordance with VDI/VDE 3845, such as DAPS, DFPB. They can also be mounted on actuators without a NAMUR interface, e.g. diaphragm actuators

thanks to appropriate accessories such as a connection kit. They are designed for the requirements of process automation. Mechanical springs (single-solenoid valves) ensure safe switching to the initial position in the event of a power failure.

Cost- and application-optimised

- Cost-optimised variant with plastic cover and brass armature and IP65 coils

-  - Voltage
12, 24, 48 V DC
24, 48, 120, 230 V AC

-  - Operating pressure
2.5 ... 10 bar

-  - Temperature range
-20 ... +60 °C

Innovative

- Conversion from 3/2-way to 5/2-way valve simply by turning the seal
- Enables single- or double-acting actuators to be controlled with one valve

- The valve can be ordered either with non-detenting/detenting or non-detenting manual override or without manual override. It is converted using a special cover. The part number is therefore identical. The manual override option can be changed at any time

Flexible

- Application-optimised variant with aluminium cover, stainless steel armature tube for IP65 and Ex coils, and protective cap for armature tube exhaust
- One armature tube system for all Ex solenoid systems

- For zone 1 to IEC Ex with type of ignition protection
- Ex-ia
- Ex-mb
- For zone 2 to IEC Ex with type of ignition protection
- Ex-nA
- For Class I, Div I to NEC 505
- AEx-m



VSNC-F8



VSNC-F ... -FN



VSNC-FT ... -FN



VSNC piston spool

VSNC poppet seat



VSNC with IP65 solenoid



VSNC with Ex-ia solenoid



VSNC with FM solenoid



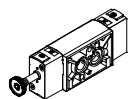
VSNC with Ex-nA solenoid



VSNC with Ex-m solenoid

Key features, product range overview VSNC-...-F8

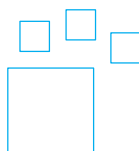
VSNC-F8



- Valve cover cap material: Plastic/metal
- Armature material: Brass
- Pilot air (incoming air of armature), unprotected

Version	Type	Pneumatic connection 1, 3, 5	Pneumatic connection 2, 4, based on standard	Standard nominal flow rate [l/min]	→ Page
5/2-way or 3/2-way valve, convertible, single solenoid					
	VSNC-FC-M52-MD-G14-F8	G 1/4	VDI/VDE 3845 NAMUR 1/4	1250	34
	VSNC-FC-M52-MD-N14-F8	NPT 1/4			
	VSNC-FC-M52-MD-G14-F8-1A1	G 1/4			
5/2-way valve, double solenoid					
	VSNC-F-B52-D-G14-F8	G 1/4	VDI/VDE 3845 NAMUR	1350	39
	VSNC-F-B52-D-N14-F8	NPT 1/4			
5/3-way valve					
	VSNC-F-P53C-MD-G14-F8	G 1/4	VDI/VDE 3845 NAMUR	1250	42
	VSNC-F-P53U-MD-G14-F8	G 1/4		950	
	VSNC-F-P53E-MD-G14-F8	G 1/4		1050	
	VSNC-F-P53C-MD-N14-F8	NPT 1/4		1250	
	VSNC-F-P53U-MD-N14-F8	NPT 1/4		950	
	VSNC-F-P53E-MD-N14-F8	NPT 1/4		1050	

Ordering data – Product options



Configurable product
This product and all its product options can be ordered using the configurator.

The configurator can be found at
→ www.festo.com/catalogue/...

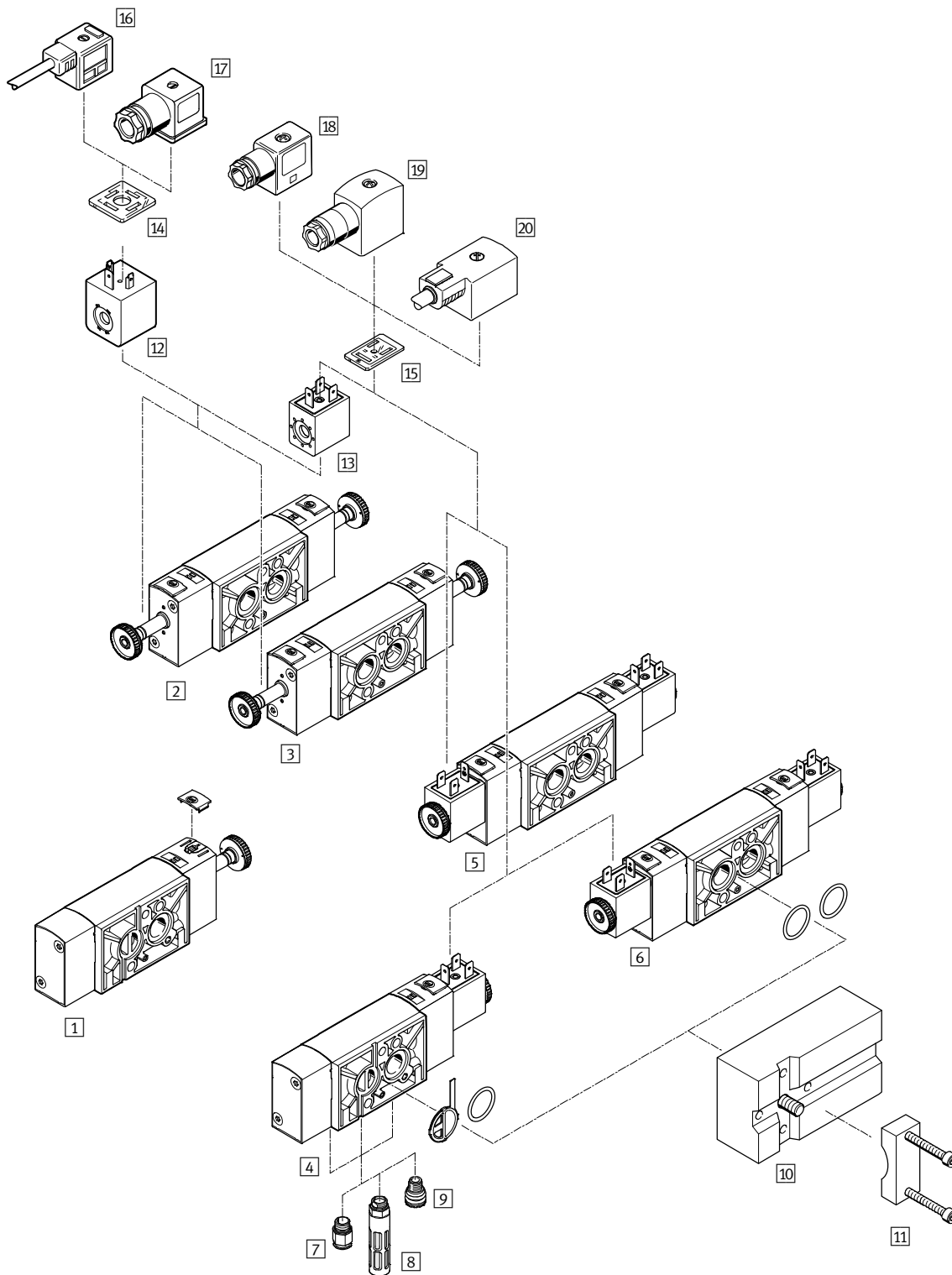
Part No. Type
8026033 VSNC

Coils	IP65 Industrial type B							IP65 type A						
	12 V DC	24 V DC	48 V DC	24 V AC	48 V AC	120 V AC	230 V AC	12 V DC	24 V DC	48 V DC	24 V AC	48 V AC	120 V AC	230 V AC
5/2-way and 3/2-way, single solenoid	■	■ Part no.	■	■	■	■	■	■	■	■	■	■	■	■
5/2-way, double solenoid	■	■ Part no.	■	■	■	■	■	■	■	■	■	■	■	■
5/3 G	■	■	■	■	■	■	■	■	■	■	■	■	■	■
5/3 B	■	■	■	■	■	■	■	■	■	■	■	■	■	■
5/3 E	■	■	■	■	■	■	■	■	■	■	■	■	■	■

■ = Can be combined using a modular system
Part no. = Can be ordered with part number as a fast seller

Solenoid valves VSNC

Peripherals overview VSNC-...-F8



01

Pilot valves

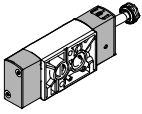
Peripherals overview VSNC-...-F8

Mounting components and accessories			
	Brief description		→ Page/Internet
1	VSNC-...-F8 Solenoid valves	3/2-way and 5/2-way single solenoid valve with converting seal, plastic cover cap and brass armature tube, for controlling single- or double-acting actuators	34
2	VSNC-...-F8 Solenoid valves	5/2-way double solenoid valve with plastic cover cap and brass armature tube, for controlling double-acting actuators	39
3	VSNC-...-F8 Solenoid valves	5/3-way single solenoid valve, normally open, closed or exhausted, with plastic cover cap and brass armature tube, for controlling double-acting actuators	42
4	VSNC-...-F8 Solenoid valves	3/2-way and 5/2-way single solenoid valve with converting seal, plastic cover cap, brass armature tube and 24 V DC solenoid coil, for controlling single- or double-acting actuators	34
5	VSNC-...-F8 Solenoid valves	5/2-way double solenoid valve with plastic cover cap, brass armature tube and 24 V DC solenoid coil, for controlling double-acting actuators	39
6	VSNC-...-F8 Solenoid valves	5/3-way single solenoid valve, normally open, closed or exhausted, with plastic cover cap, brass armature tube and 24 V DC solenoid coil, for controlling double-acting actuators	42
7	QS Push-in fitting	For connecting tubing with standard outside diameters	83
8	U Silencer	–	83
9	VABD-D3-SN-G14 Exhaust protection	Exhaust protection to IP65. The spring chamber of the actuator is protected against the ingress of aggressive ambient air and water by the one-way flow control system	83
10	VABS-S7-S-G14 Connection kit	Mounting plate for attaching the valve to a NAMUR rib	82
11	VAME-S7-Y Mounting bracket	Alternative option (instead of screw) of attaching the valve to a NAMUR rib with the help of a mounting bracket	82
12	VACF-A Solenoid coil	Electrical connection to DIN EN 175301-803, type A	67
13	VACF-B Solenoid coil	Electrical connection to Festo standard for MSSD-F	69
14	MC-LD Illuminating seal	Illuminating seal for displaying the switching status	83
15	MF-LD Illuminating seal	Illuminating seal for displaying the switching status	83
16	KMC Connecting cable	–	73
17	MSSD-C Plug socket	Electrical connection to DIN EN 175301-803, type A	83
18	MSSD-F Plug socket	Electrical connection to Festo standard with screw terminal connection	83
19	MSSD-F-S Plug socket	Electrical connection to Festo standard with insulation displacement connection	83
20	KMF Connecting cable	–	kmf

Solenoid valves VSNC

Key features and product range overview – VSNC-...-FN

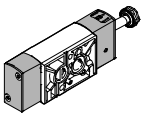
VSNC-F ... -FN



- Design of piston spool
- Valve cover cap material: Aluminium/metal
- Armature material: Stainless steel
- Pilot air (incoming air of armature tube), protected

Version	Type	Pneumatic connection 1, 3, 5	Pneumatic connection 2, 4, based on standard	Standard nominal flow rate [l/min]	→ Page
3/2-way or 5/2-way valve -...-FN, convertible, single solenoid					
	VSNC-FC-M52-MD-G14-FN	G 1/4	VDI/VDE 3845 NAMUR	1250	46
	VSNC-FC-M52-MD-N14-FN	NPT 1/4-18			
	VSNC-FC-M52-MD-G14-FN-1A1-EX4-A	G 1/4			
	VSNC-FC-M52-MD-N14-FN-1A1-EX4-A	NPT 1/4-18			
	VSNC-FC-M52-MD-G14-GN-1A1+G	G 1/4			
	VSNC-FC-M52-MD-G14-FN-3AA1+G	G 1/4			
5/2-way valve -...-FN, double solenoid					
	VSNC-F-B52-D-G14-FN	G 1/4	VDI/VDE 3845 NAMUR	1350	51
	VSNC-F-B52-D-N14-FN	NPT 1/4-18			
	VSNC-F-B52-D-G14-FN-1A1-EX4-A	G 1/4			
	VSNC-F-B52-D-N14-FN-1A1-EX4-A	NPT 1/4-18			
5/3-way valve -...-FN					
	VSNC-F-P53C-MD-G14-FN	G 1/4	VDI/VDE 3845 NAMUR	1250	55
	VSNC-F-P53U-MD-G14-FN			950	
	VSNC-F-P53E-MD-G14-FN			1050	
	VSNC-F-P53C-MD-N14-FN	NPT 1/4-18		1250	
	VSNC-F-P53U-MD-N14-FN			950	
	VSNC-F-P53E-MD-N14-FN			1050	

VSNC-FT ... -FN

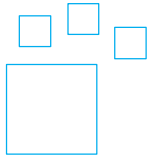


- Design of poppet seat
- Valve cover cap material: Aluminium/metal
- Armature material: Stainless steel
- Pilot air (incoming air of armature tube), protected

Version	Type	Pneumatic connection 1, 3, 5	Pneumatic connection 2, 4, based on standard	Standard nominal flow rate [l/min]	→ Page
3/2-way or 5/2-way valve -...-FN, convertible, single solenoid					
	VSNC-FTC-M52-MD-G14-FN	G 1/4	VDI/VDE 3845 NAMUR	800	59
	VSNC-FTC-M52-MD-N14-FN	NPT 1/4-18			
	VSNC-FTC-M52-MD-G14-FN-1A1	G 1/4			
5/2-way valve -...-FN, double solenoid					
	VSNC-FT-B52-D-G14-FN	G 1/4	VDI/VDE 3845 NAMUR	1000	62
	VSNC-FT-B52-D-N14-FN	NPT 1/4-18			
	VSNC-FT-B52-D-G14-FN-1A1	G 1/4			

Key features and product range overview – VSNC-...-FN

Ordering data – Product options



Configurable product
This product and all its product options can be ordered using the configurator.

The configurator can be found at
→ www.festo.com/catalogue/...

Part No. Type
8026033 VSNC

Coils Valve function	IP 65			Ex-nA			Ex-ia	Ex-mb			AEx-m		
	24 V DC	120 V AC	230 V AC	24 V DC	120 V AC	230 V AC	24 ... 32 V DC	24 V DC	120 V AC	230 V AC	24 V DC	120 V AC	230 V AC
5/2-way and 3/2-way, single solenoid	■ Part no.	■	■	■	■	■	■	■	■	■	■	■	■
5/2-way, double solenoid	■ Part no.	■	■	■	■	■	■	■	■	■	■	■	■
5/3 G	■	■	■	■	■	■	■	■	■	■	■	■	■
5/3 B	■	■	■	■	■	■	■	■	■	■	■	■	■
5/3 E	■	■	■	■	■	■	■	■	■	■	■	■	■

■ = Can be combined using a modular system
Part no. = Can be ordered with part number as a fast seller

Intrinsically safe coils VACN-...-Ex4A



- Category II 2G II 2D
- Type of ignition protection Ex-ia
- IEC Ex certification
- ATEX certification

Non-sparking coils VACN-...-Ex2N



- Category II 3G II 3D
- Type of ignition protection nA
- ATEX certification

Encapsulated coils VACN-...-Ex4M



- Category II 2G II 2D
- Type of ignition protection Ex-m
- IEC Ex certification
- ATEX certification

Encapsulated coils with conduit, connection VACN-...-U4M



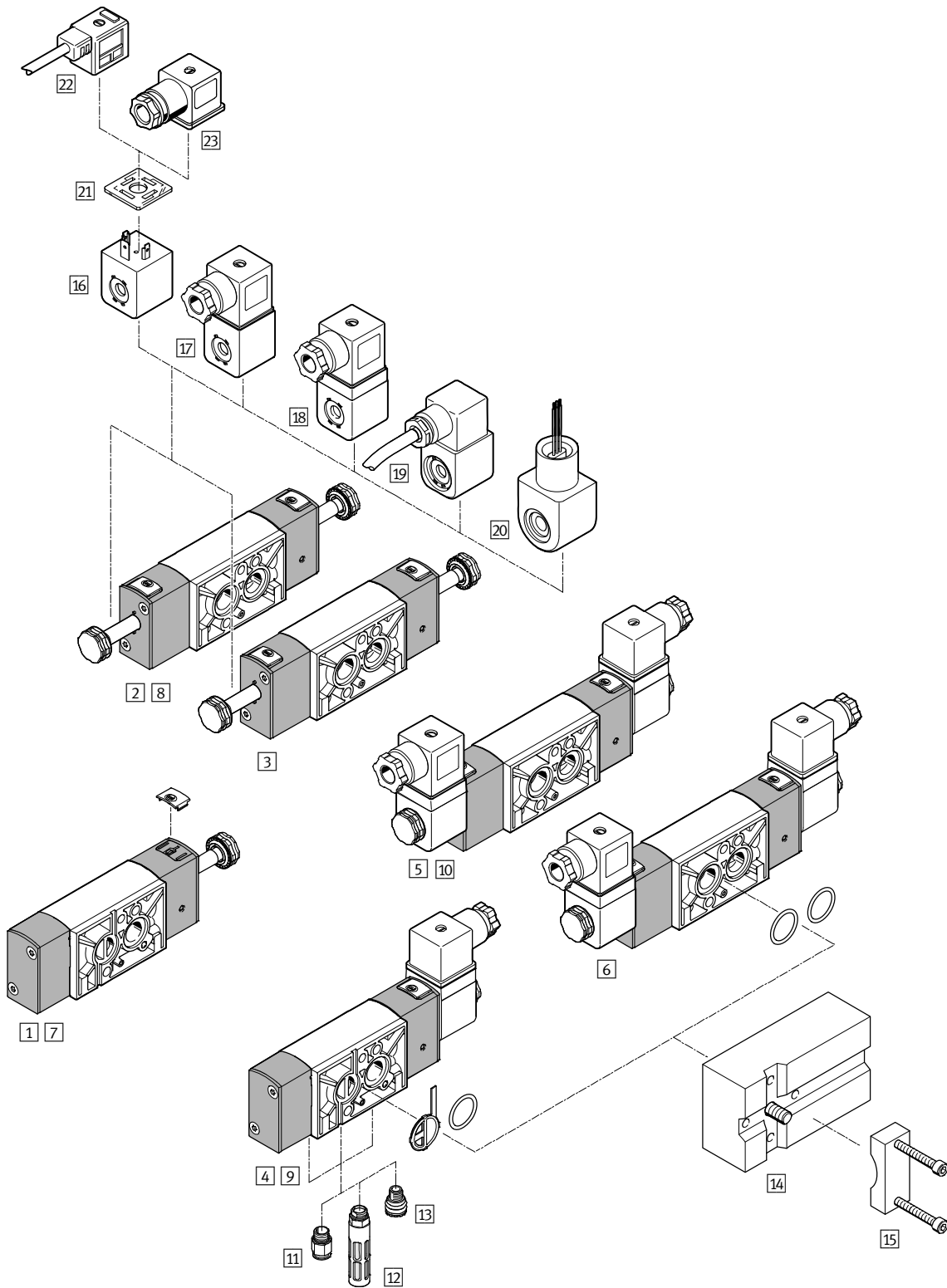
- Class I; Div I
- Type of ignition protection AEx-...-m
- FM approval

Solenoid valves VSNC

Peripherals overview – VSNC-F...-FN

01

Pilot valves



Peripherals overview – VSNC-F...-FN

Mounting components and accessories			
	Brief description	→ Page/Internet	
1	VSNC-F ...-FN Piston spool	3/2-way and 5/2-way single solenoid valve with converting seal, aluminium cover cap and stainless steel armature tube	46
2		5/2-way double solenoid valve with aluminium cover cap and stainless steel armature tube	51
3		5/3-way single solenoid valve, normally open, closed or exhausted, with aluminium cover cap and stainless steel armature tube	55
4		3/2-way and 5/2-way single solenoid valve with converting seal, aluminium cover cap and stainless steel armature tube and Ex ia solenoid coil	46
5		5/2-way double solenoid valve with aluminium cover cap and stainless steel armature tube and Ex ia solenoid coil	51
6		5/3-way single solenoid valve, normally open, closed or exhausted, with aluminium cover cap and stainless steel armature tube and Ex ia solenoid coil	55
7	VSNC-FT- ... -FN Poppet seat	3/2-way and 5/2-way single solenoid valve with converting seal, aluminium cover cap and stainless steel armature tube	59
8		5/2-way double solenoid valve with aluminium cover cap and stainless steel armature tube	62
9		3/2-way and 5/2-way single solenoid valve with converting seal, aluminium cover cap and stainless steel armature tube and 24 V DC solenoid coil	59
10		5/2-way double solenoid valve with aluminium cover cap, stainless steel armature tube and 24 V DC solenoid coil	62
11	QS Push-in fitting	For connecting tubing with standard outside diameter	83
12	U Silencer	–	83
13	VABD-D3-SN-G14 Exhaust protection	Exhaust protection to IP65. The spring chamber of the actuator is protected against the ingress of aggressive ambient air and water by the one-way flow control system	83
14	VABS-S7-S-G14 Connection kit	Mounting plate for attaching the valve to a NAMUR rib	82
15	VAME-S7-Y Mounting bracket	Alternative option (instead of screw) for attaching the valve to a NAMUR rib with the help of a mounting bracket	82
16	VACN-N Solenoid coil	Electrical connection to DIN EN 175301-803, type A	72
17	VACN-N- ... -Ex2-N Solenoid coil	Type of ignition protection nA = non-sparking, for use in zone 2	74
18	VACN-N- ... -Ex4-A Solenoid coil	Type of ignition protection iA = intrinsically safe, for use in zone 1	80
19	VACN-N- ... -Ex4-M Solenoid coil	Type of ignition protection m = encapsulated, for use in zone 1	78
20	VACN-N- ... -U4-M Solenoid coil	Type of ignition protection m = encapsulated, for use in Class I, Div I (American FM approval to NEC 500)	76
21	MC-LD Illuminating seal	Illuminating seal for displaying the switching status	83
22	KMC Connecting cable	–	73
23	MSSD-C Plug socket	Electrical connection to DIN EN 175301-803, type A	83

Solenoid valves VSNC

Type codes

VSNC - F - - - - - - - - - -

Type

VSNC	Solenoid valves
------	-----------------

Type of directional control valve

F	Flanged valve
---	---------------

Design principle

	Piston spool
T	Poppet seat

Additional function

	None
C	Convertible valve function

Valve function

B52	5/2-way valve, double solenoid
M52	5/2-way valve, single solenoid
P53C	5/3-way valve, mid-position closed
P53E	5/3-way valve, mid-position exhausted
P53U	5/3-way valve, mid-position pressurised

Reset method for single solenoid valves

	None
M	Mechanical spring

Manual override

D	Non-detenting, detenting
H	Non-detenting, resetting
S	Covered

Pneumatic connection

Q6	Push-in connector 6 mm
Q8	Push-in connector 8 mm
G14	G 1/4
N14	N 1/4
Q10	Push-in connector 10 mm
T14	Push-in connector 1/4
T38	Push-in connector 3/8
T516	Push-in connector 5/16

Venting

	Without fitting
QN	With fitting
U1	Silencer with metal housing
U3	Silencer with polymer housing

Interface to valve pilot

F8	With armature tube 8 mm long
FN	With armature tube 9 mm long

01

Pilot valves

Type codes

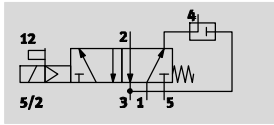
Nominal operating voltage							
	None						
1A	24 V AC/50-60 Hz						
3A	230 V AC/50-60 Hz						
3W	230 V AC/240 V AC/50-60 Hz						
16B	120 V AC/60 Hz and 110 V AC/50-60 Hz						
1	24 V DC						
5	12 V DC						
Electrical connection							
	None						
A1	Connection pattern type A, to EN 175301						
B2	Connection pattern type B, industry standard						
C3	Cable, 3 m						
K11	Cable with insulating conduit connection						
Degree of protection for electrics							
	Standard						
S8	IP67						
EU certification							
	None						
EX2	II 3GD						
EX4	II 2GD						
Approval							
	None						
U4	Class 1 Div 1 to NEC 500						
Type of ignition protection							
	None						
A	Intrinsically safe						
M	Encapsulation						
N	Non-sparking						
Electrical accessories, valve							
	None						
G	Connector socket without LED						

Solenoid valves VSNC

Technical data – 3/2-way or 5/2-way valve, convertible, single solenoid

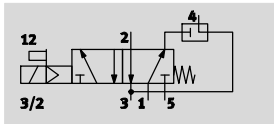
Function¹⁾

5/2-way valve



3/2-way valve

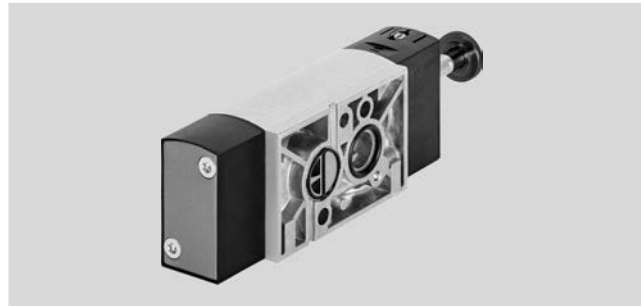
with exhaust return



Voltage
24 V DC

Operating pressure
2.5 ... 10 bar

Temperature range
-20 ... +60 °C



¹⁾ Can be changed by exchanging the seal plate

General technical data

		VSNC-FC- ... -G14-F8 VSNC-FC- ... -N14-F8	VSNC-FC- ... -G14-F8-1B2	VSNC-FC- ... -G14-F8-1A1
Valve function		3/2-way or 5/2-way, convertible		
Width	[mm]	32		
Design		Piston spool		
Sealing principle		Soft		
Type of pilot		Electrical		
Reset method		Mechanical spring		
Type of control		Piloted		
Manual override		Detenting, non-detenting		
Exhaust function		Flow control		
Vent connection		Not ducted		
Pilot air supply		Internal		
Type of mounting		With through-hole		
Mounting position		Any		
Max. tightening torque of valve mounting		[Nm]	3.5	-
Non-overlapping		Yes		
Standard nominal flow rate		1 → 2 [l/min]	1250	
Exhaust air return		4 → 3 [l/min]	110	
b value		0.4		
C value		[l/sbar]	5.2	
Pneumatic connection		1, 3, 5 2, 4	G 1/4, NPT 1/4 G 1/4	G 1/4
Conforms to standard		VDI/VDE 3845 NAMUR		
Certificate issuing authority		DNVGL-TAA000011]		
Product weight		[g]	335	390
				335

01

Pilot valves

Technical data – 3/2-way or 5/2-way valve, convertible, single solenoid

Operating and environmental conditions		VSNC-FC- ... -G14-F8 VSNC-FC- ... -N14-F8	VSNC-FC- ... -G14-F8-1B2	VSNC-FC- ... -G14-F8-1A1
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure	[bar]	2.5 ... 10		
Ambient temperature	[°C]	-20 ... +60		
Temperature of medium	[°C]	-20 ... +60		
Corrosion resistance class CRC ¹⁾		2		
Certification		-		c UL us - Recognized (OL)
Maritime classification ²⁾		See certificate		-

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) Additional information www.festo.com/sp → Certificates.

Electrical data		VSNC-FC- ... -G14-F8 VSNC-FC- ... -N14-F8	VSNC-FC- ... -G14-F8-1B2	VSNC-FC- ... -G14-F8-1A1
Electrical connection		-	3-pin push-in connector, type B to industry standard (11 mm)	To EN 175301-803 type A
Coil characteristics, 24 V DC	[W]	See solenoid coil, to be ordered separately	3.3	2.6
Permissible voltage fluctuations	[%]	-	±10	±10
Duty cycle	[%]	-	100	100
Degree of protection		-	IP65, IP67	IP65, IP67 to IEC 60529 with socket
Switching time on	[ms]	11	11	11
Switching time off	[ms]	38	48	48

Materials

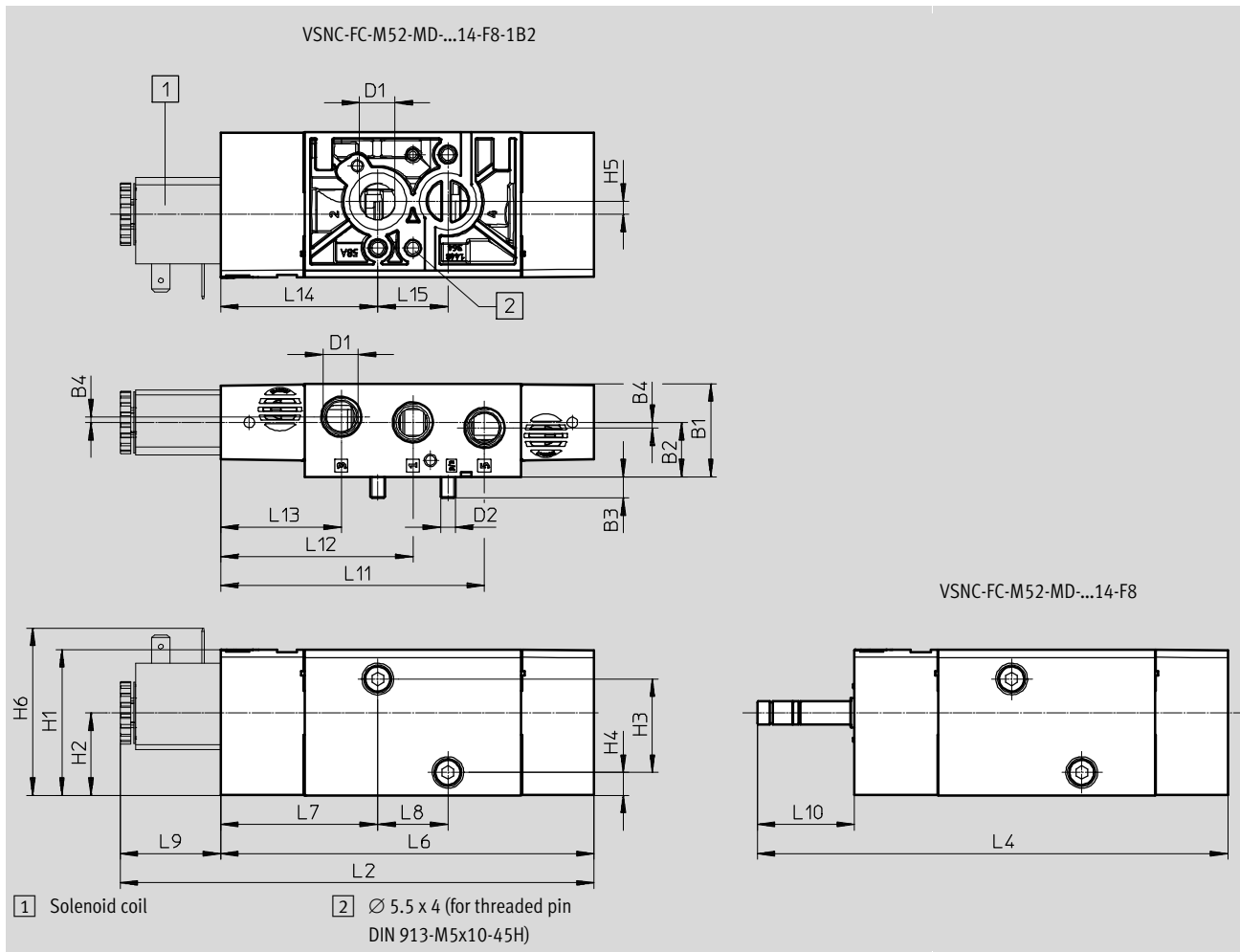
[1] Housing	Wrought aluminium alloy
[2] Seals	NBR
-	RoHS compliant

Solenoid valves VSNC

Technical data – 3/2-way or 5/2-way valve, convertible, single solenoid

Dimensions

Download CAD data → www.festo.com



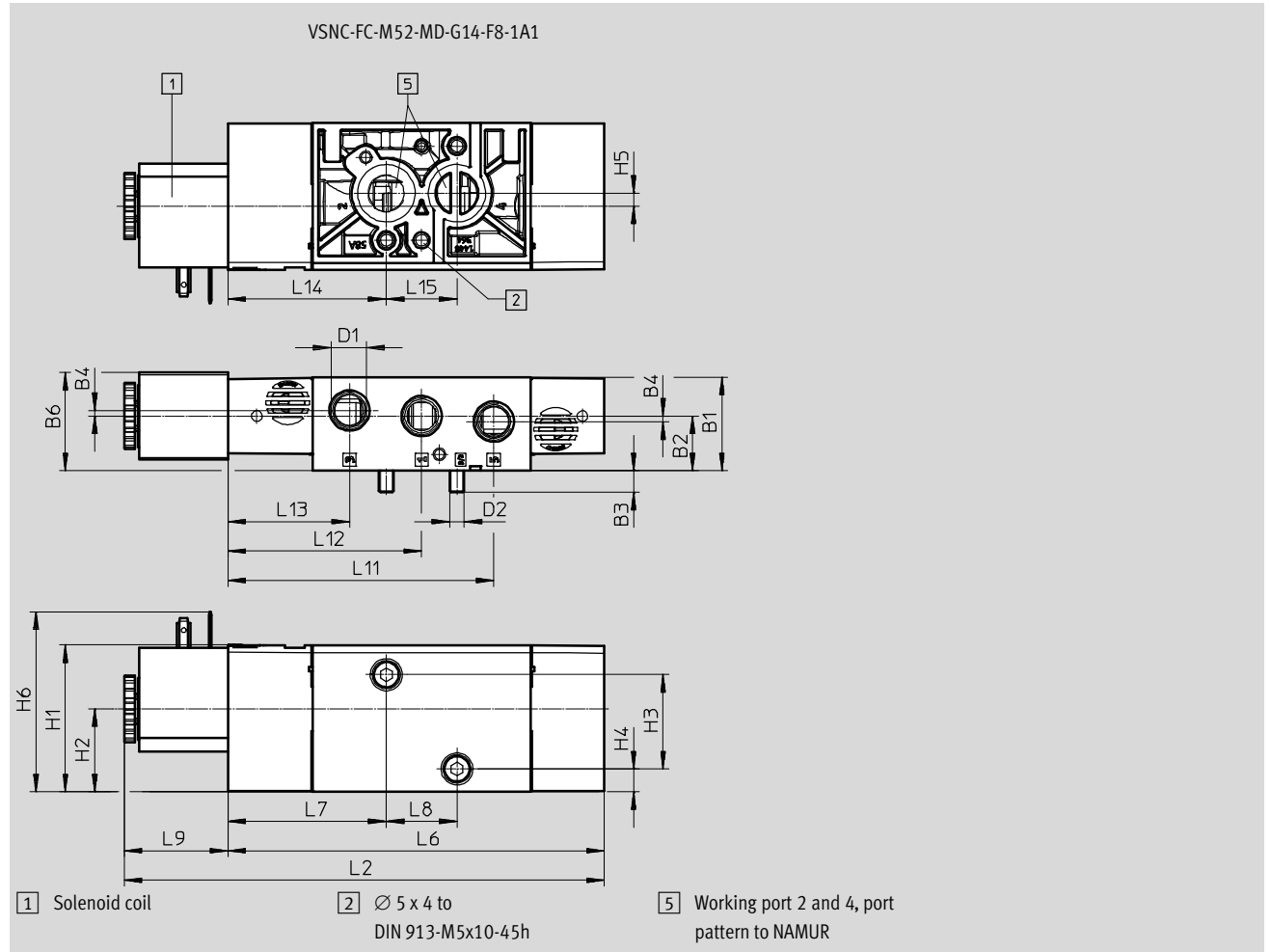
Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6
VSNC-FC-M52-MD-G14-F8	31.8	18.6	7.3	1.9	G 1/4	M5	49.9	28.2	32	7.8	4.4	-
VSNC-FC-M52-MD-N14-F8					NPT 1/4-18							57.2
VSNC-FC-M52-MD-G14-F8-1B2					G 1/4							

Type	L2	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15
VSNC-FC-M52-MD-G14-F8	162.2	161.1	127.8	53.8	24	34.4	33.3	90.3	65.8	41.3	53.8	24
VSNC-FC-M52-MD-N14-F8												
VSNC-FC-M52-MD-G14-F8-1B2												

Technical data – 3/2-way or 5/2-way valve, convertible, single solenoid

Dimensions

Download CAD data → www.festo.com



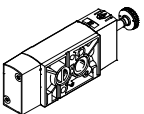
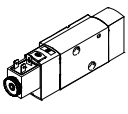
Type	B1	B2	B3	B4	B6	D1	D2	H1	H2	H3	H4	H5
VSNC-FC-M52-MD-G14-F8-1A1	31.8	18.6	7.3	1.9	33.3	G 1/4	M5	49.9	28.2	32	7.8	4.4

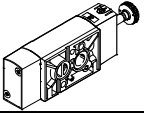
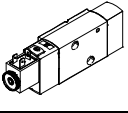
Type	H6	L2	L6	L7	L8	L9	L11	L12	L13	L14	L15
VSNC-FC-M52-MD-G14-F8-1A1	61.1	163	127.8	53.8	24	35.2	90.3	65.8	41.3	53.8	24

Solenoid valves VSNC

Technical data – 3/2-way or 5/2-way valve, convertible, single solenoid

★ Core product range

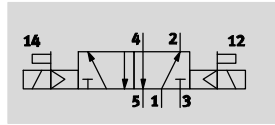
Ordering data – Valves			Ordering data – Valves		
Directional control valve without solenoid coil			Directional control valve with 24 V DC solenoid coil, without socket		
	Part No.	Type		Part No.	Type
	★ 577257	VSNC-FC-M52-MD-G14-F8		★ 577295	VSNC-FC-M52-MD-G14-F8-1B2




Ordering data – Valves			Ordering data – Valves		
Directional control valve without solenoid coil			Directional control valve with 24 V DC solenoid coil, without socket		
	Part No.	Type		Part No.	Type
	577262	VSNC-FC-M52-MD-N14-F8		8074945	VSNC-FC-M52-MD-G14-F8-1A1

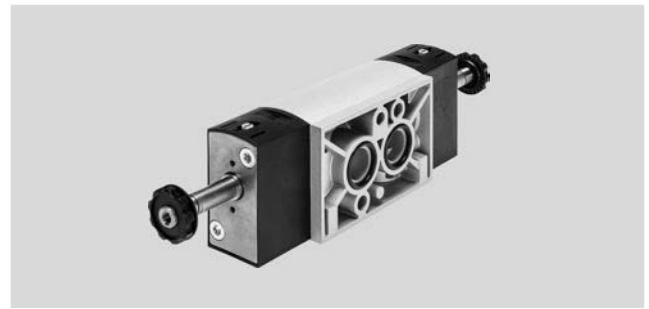
01

Pilot valves

Technical data – 5/2-way valve, double solenoid

Function
5/2-way valve

-  Voltage
24 V DC
-  Operating pressure
1.5 ... 10 bar
-  Temperature range
-20 ... +60 °C



General technical data	VSNC-F-B52-D-G14-F8 VSNC-F-B52-D-N14-F8		VSNC-F-B52-D-G14-F8-1B2
	Valve function	5/2-way, double solenoid	
Width	[mm]	32	
Nominal size DN	[mm]	7.2	
Design	Piston spool		
Sealing principle	Soft		
Type of actuation	Electrical		
Type of reset	–		
Type of actuation	Piloted		
Manual override	Detenting, non-detenting		
Type of mounting	With through-hole		
Mounting position	Any		
Max. tightening torque of valve mounting	[Nm]	3.2	
Non-overlapping	Yes		
Standard nominal flow rate	1 → 2	[l/min]	1200
b value	0.4		
C value	[l/sbar]	5.6	
Pneumatic connection	1, 3, 5 2, 4	G 1/4, NPT 1/4-18 Port pattern to NAMUR	
Conforms to standard	VDI/VDE 3845 (NAMUR)		
Certificate issuing authority	DNVGL-TAA000011J		
Product weight	[g]	345	455

Solenoid valves VSNC

Technical data – 5/2-way valve, double solenoid

Operating and environmental conditions		VSNC-F-B52-D-G14-F8 VSNC-F-B52-D-N14-F8	VSNC-F-B52-D-G14-F8-1B2
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	[bar]	1.5 ... 10	
Ambient temperature	[°C]	-20 ... +60	
Temperature of medium	[°C]	-20 ... +60	
Corrosion resistance class CRC ¹⁾		2	
Maritime classification ²⁾		See certificate	

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
- 2) Additional information www.festo.com/sp → Certificates.

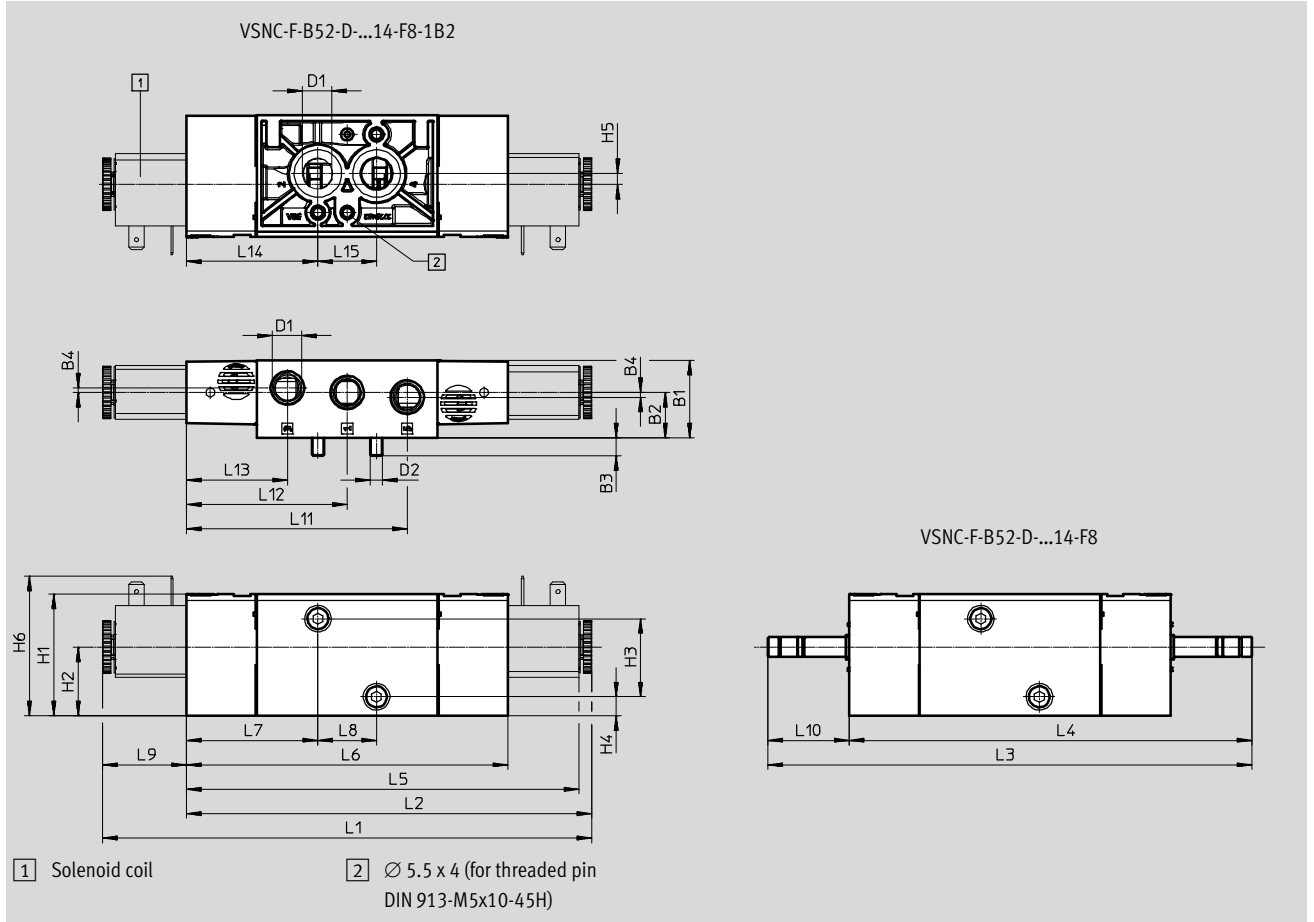
Electrical data		VSNC-F-B52-D-G14-F8 VSNC-F-B52-D-N14-F8	VSNC-F-B52-D-G14-F8-1B2
Electrical connection		–	3-pin push-in connector, to industry standard (11 mm), type B
Coil characteristics, 24 V DC	[W]	See solenoid coil, to be ordered separately	
Permissible voltage fluctuations	[%]	–	±10
Degree of protection		–	IP65, IP67
Switching time on	[ms]	11	

Materials		
1	Housing	Wrought aluminium alloy
2	Seals	NBR
–		RoHS compliant

Technical data – 5/2-way valve, double solenoid

Dimensions

Download CAD data → www.festo.com



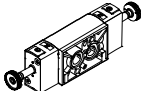
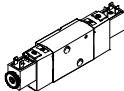
Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6	L1	L2
VSNC-F-B52-D-G14-F8	31.8	18.6	7.3	1.9	G 1/4	M5	49.9	28.2	32	7.8	4.4	-	-	-
VSNC-F-B52-D-N14-F8					NPT 1/4-18									
VSNC-F-B52-D-G14-F8-1B2					G 1/4									

Type	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15
VSNC-F-B52-D-G14-F8	198.2	164.9	-	131.6	53.8	24	-	33.3	90.3	65.8	41.3	53.8	24
VSNC-F-B52-D-N14-F8			160.6				34.4						
VSNC-F-B52-D-G14-F8-1B2													

Ordering data – Valves

Directional control valve without solenoid coil

Directional control valve with solenoid coil

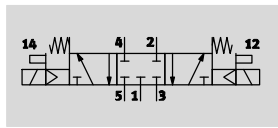
	Part No.	Type		Part No.	Type
	577258	VSNC-F-B52-D-G14-F8		577296	VSNC-F-B52-D-G14-F8-1B2
	577263	VSNC-F-B52-D-N14-F8			

Solenoid valves VSNC

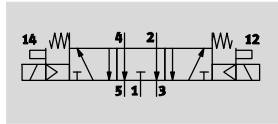
Technical data – 5/3-way valve

Function

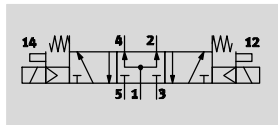
5/3-way valve, closed



5/3-way valve, exhausted

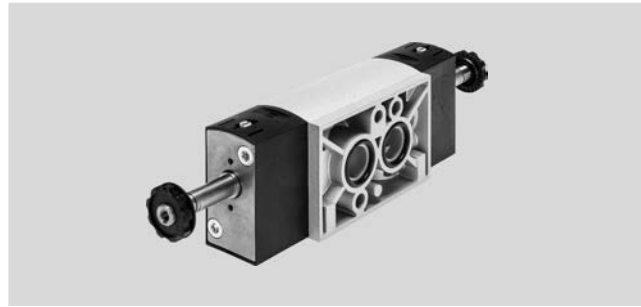


5/3-way valve, pressurised



Operating pressure
3 ... 10 bar

Temperature range
-20 ... +60 °C



01

Pilot valves

General technical data

		VSNC-F-P53C-MD-G14-F8 VSNC-F-P53C-MD-N14-F8	VSNC-F-P53E-MD-G14-F8 VSNC-F-P53E-MD-N14-F8	VSNC-F-P53U-MD-G14-F8 VSNC-F-P53U-MD-N14-F8
Valve function		5/3-way, closed	5/3-way, exhausted	5/3-way, pressurised
Width	[mm]	32		
Nominal width	[mm]	7.2	6	6
Design		Piston spool		
Sealing principle		Soft		
Type of actuation		Electrical		
Reset method		Mechanical spring		
Type of control		Piloted		
Manual override		Non-detenting, non-detenting		
Type of mounting		With through-hole		
Mounting position		Any		
Max. tightening torque of valve mounting	[Nm]	3.5		
Non-overlapping		Yes		
Standard nominal flow rate	1 → 2 [l/min]	1200	800	800
b value		0.4	0.4	0.5
C value	[l/sbar]	5.2	4.4	2.1
Pneumatic connection	1, 3, 5 2, 4	G 1/4, NPT 1/4-18		
Conforms to standard		Port pattern to NAMUR VDI/VDE 3845 (NAMUR)		
Certificate issuing authority		DNVGL-TAA000011]		
Product weight	[g]	345		

Technical data – 5/3-way valve

Operating and environmental conditions		VSNC-F-P53C-MD-G14-F8	VSNC-F-P53E-MD-G14-F8	VSNC-F-P53U-MD-G14-F8
		VSNC-F-P53C-MD-N14-F8	VSNC-F-P53E-MD-N14-F8	VSNC-F-P53U-MD-N14-F8
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure	[bar]	3 ... 10		
Ambient temperature	[°C]	-20 ... +60		
Temperature of medium	[°C]	-20 ... +60		
Corrosion resistance class CRC ¹⁾		2		
Maritime classification ²⁾		See certificate		

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) Additional information www.festo.com/sp → Certificates.

Electrical data		VSNC-F-P53C-MD-G14-F8	VSNC-F-P53E-MD-G14-F8	VSNC-F-P53U-MD-G14-F8
		VSNC-F-P53C-MD-N14-F8	VSNC-F-P53E-MD-N14-F8	VSNC-F-P53U-MD-N14-F8
Coil characteristics		See solenoid coil, to be ordered separately		
Switching time on	[ms]	13	14	14
Switching time off	[ms]	42	48	48
Changeover time	[ms]	26	25	25

Materials

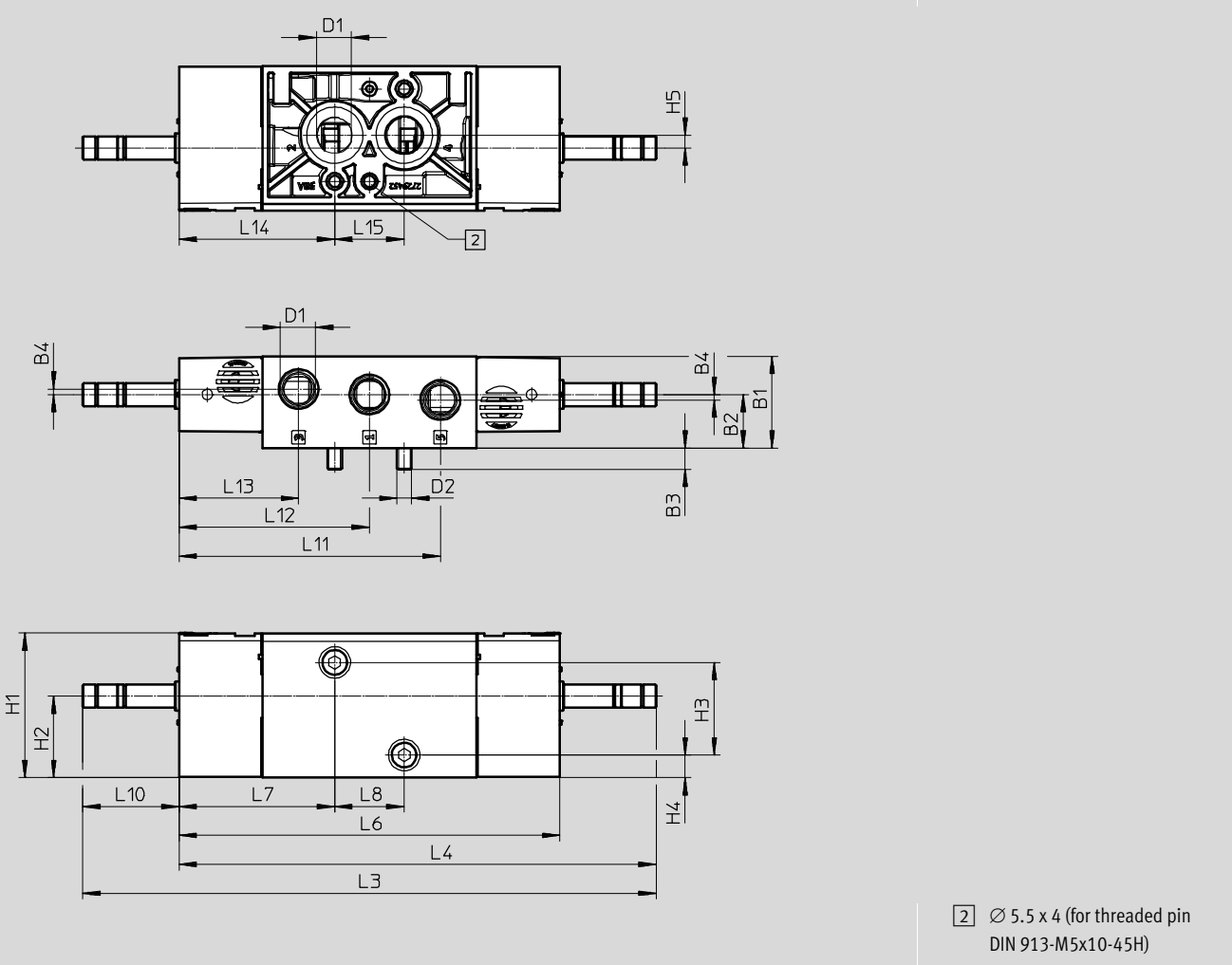
1	Housing	Wrought aluminium alloy
2	Seals	NBR
-		RoHS compliant

Solenoid valves VSNC

Technical data – 5/3-way valve

Dimensions

Download CAD data → www.festo.com



2 Ø 5.5 x 4 (for threaded pin DIN 913-M5x10-45H)

Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5
VSNC-F-P53C-MD-G14-F8	31.8	18.6	7.3	1.9	G 1/4	M5	49.9	28.2	32	7.8	4.4
VSNC-F-P53U-MD-G14-F8											
VSNC-F-P53E-MD-G14-F8											
VSNC-F-P53C-MD-N14-F8											
VSNC-F-P53U-MD-N14-F8											
VSNC-F-P53E-MD-N14-F8											

Type	L3	L4	L6	L7	L8	L10	L11	L12	L13	L14	L15
VSNC-F-P53C-MD-G14-F8	198.2	164.9	131.6	53.8	24	33.3	90.3	65.8	41.3	53.8	24
VSNC-F-P53U-MD-G14-F8											
VSNC-F-P53E-MD-G14-F8											
VSNC-F-P53C-MD-N14-F8											
VSNC-F-P53U-MD-N14-F8											
VSNC-F-P53E-MD-N14-F8											

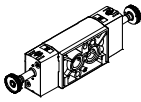
01

Pilot valves

Technical data – 5/3-way valve

Ordering data – Valves

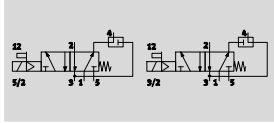
Directional control valve without solenoid coil

	Part No.	Type
	577259	VSNC-F-P53C-MD-G14-F8
	577260	VSNC-F-P53U-MD-G14-F8
	577261	VSNC-F-P53E-MD-G14-F8
	577264	VSNC-F-P53C-MD-N14-F8
	577265	VSNC-F-P53U-MD-N14-F8
	577266	VSNC-F-P53E-MD-N14-F8

Solenoid valves VSNC

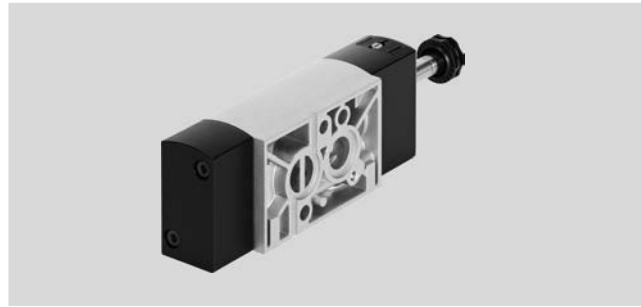
Technical data – 3/2-way or 5/2-way ...-FN, convertible, single solenoid

Function
3/2-way or 5/2-way valve,
convertible



Operating pressure
2.5 ... 8 bar

Temperature range
-20 ... +60 °C



01

Pilot valves

General technical data

	VSNC- ... -G14-FN VSNC- ... -N14-FN	VSNC- ... -G14-FN-1A1-EX4-A VSNC- ... -N14-FN-1A1-EX4-A	VSNC- ... -G14-FN-1A1+G VSNC- ... -G14-FN-3AA1+G
Valve function	3/2-way or 5/2-way, convertible		
Width [mm]	32		
Design	Piston spool		
Sealing principle	Soft		
Type of actuation	Electrical		
Reset method	Mechanical spring		
Type of control	Piloted		
Pilot air supply port	Internal		
Exhaust air function	With flow control		
Manual override	Detenting, non-detenting		
Type of mounting	With through-hole		
Connection for venting hole	Not ducted		
Mounting position	Any		
Non-overlapping	Yes		
Standard nominal flow rate 1 → 2 [l/min]	1250		
Exhaust return 4 → 3 [l/min]	110		
b value	0.4		
C value [l/sbar]	5.2		
Pneumatic connection 1, 3, 5 2, 4	G 1/4, NPT 1/4		G 1/4
Conforms to standard	VDI/VDE 3845 (NAMUR)		
Certificate issuing authority	DNVGL-TAA000011)		
Product weight [g]	415		

Operating and environmental conditions

	VSNC- ... -G14-FN VSNC- ... -N14-FN	VSNC- ... -G14-FN-1A1-EX4-A VSNC- ... -N14-FN-1A1-EX4-A	VSNC- ... -G14-FN-1A1+G VSNC- ... -G14-FN-3AA1+G
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure [bar]	2.5 ... 8		
Ambient temperature [°C]	-20 ... +60		
Temperature of medium [°C]	-20 ... +60		
Corrosion resistance class CRC ¹⁾	2		
Maritime classification ²⁾	See certificate		

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
- 2) Additional information www.festo.com/sp → Certificates.

Technical data – 3/2-way or 5/2-way -...-FN, convertible, single solenoid

ATEX	VSNC- ... -G14-FN	VSNC- ... -G14-FN-1A1-EX4-A	VSNC- ... -G14-FN-1A1+G
	VSNC- ... -N14-FN	VSNC- ... -N14-FN-1A1-EX4-A	VSNC- ... -G14-FN-3AA1+G
ATEX category gas	–	II 2G	–
Type of ignition protection for gas	–	Ex ia IIC T6 Ga	–
ATEX category dust	–	II 2D	–
Type of ignition protection for dust	–	Ex t IIIC T80°C Db	–
Explosion protection certification outside the EU	–	EPL Db (IEC-EX)	–
	–	EPL Ga (IEC-EX)	–
Explosion-proof temperature [°C]	–	-40 °C ≤ Ta ≤ +50 °C	–
Degree of protection	–	IP65	IP65
	–	IP67	IP67
	–	–	To IEC 60529, with socket
CE marking (see declaration of conformity)	As per EU Explosion Protection Directive (ATEX)		–

Electrical data	VSNC- ... -G14-FN	VSNC- ... -G14-FN-1A1-EX4-A	VSNC- ... -G14-FN-1A1+G
	VSNC- ... -N14-FN	VSNC- ... -N14-FN-1A1-EX4-A	VSNC- ... -G14-FN-3AA1+G
Electrical connection	–	Type A, to EN 175301-803	Type A, to EN 175301-803
Coil characteristics 24 V DC [W]	See solenoid coil, to be ordered separately	–	0.7
Coil characteristics 230 V AC, 50/60 Hz			
Pick-up power rating [VA]	–	–	6.2
Holding power [VA]	–	–	3.7
Duty cycle [%]			
	100		
Switching time on [ms]	32	35	35
Switching time off [ms]	92		
Permissible voltage fluctuations [%]	–	± 10	± 10

Materials	
1 Housing	Wrought aluminium alloy
2 Seals	NBR
3 Screws	High-alloy stainless steel
–	RoHS compliant

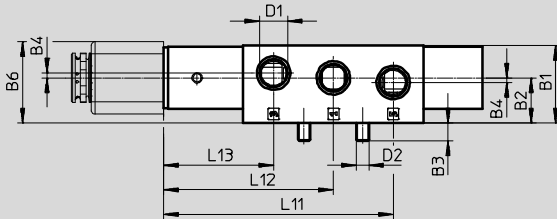
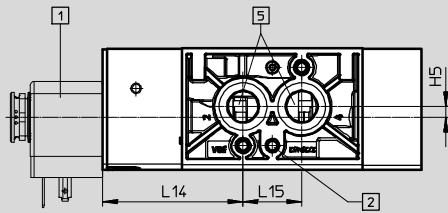
Solenoid valves VSNC

Technical data – 3/2-way or 5/2-way -...-FN, convertible, single solenoid

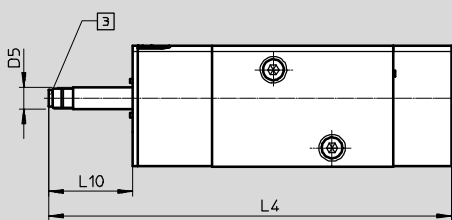
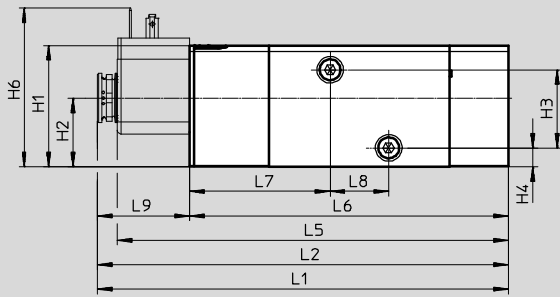
Dimensions

Download CAD data → www.festo.com

VSNC-FC-M52-MD-...14-FN-1A1-Ex4-A



VSNC-FC-M52-MD-...14-FN



- 1 Solenoid coil
- 2 \varnothing 5x4 to DIN 913-M5x10-45h
- 3 Auxiliary pilot air exhaust port 82, M5
- 5 Working port 2 and 4, port pattern to NAMUR

Type	B1	B2	B3	B4	B6	D1	D2	D5 - Ø	H1	H2	H3	H4	H5	H6
VSNC-FC-M52-MD-G14-FN	31.8	18.6	7.3	1.9	33.4	G 1/4	M5	9	49.8	28.2	32	7.8	4.4	-
VSNC-FC-M52-MD-G14-FN-1A1-Ex4-A						65.1								
VSNC-FC-M52-MD-N14-FN						-								
VSNC-FC-M52-MD-N14-FN-1A1-Ex4-A						65.1								

Type	L2	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15
VSNC-FC-M52-MD-G14-FN	-	165	-	130.6	57.6	24	-	34.4	94.1	69.6	45.1	57.6	24
VSNC-FC-M52-MD-G14-FN-1A1-Ex4-A	168.3		160.1				37.7						
VSNC-FC-M52-MD-N14-FN	-		-				-						
VSNC-FC-M52-MD-N14-FN-1A1-Ex4-A	168.3		160.1				37.7						

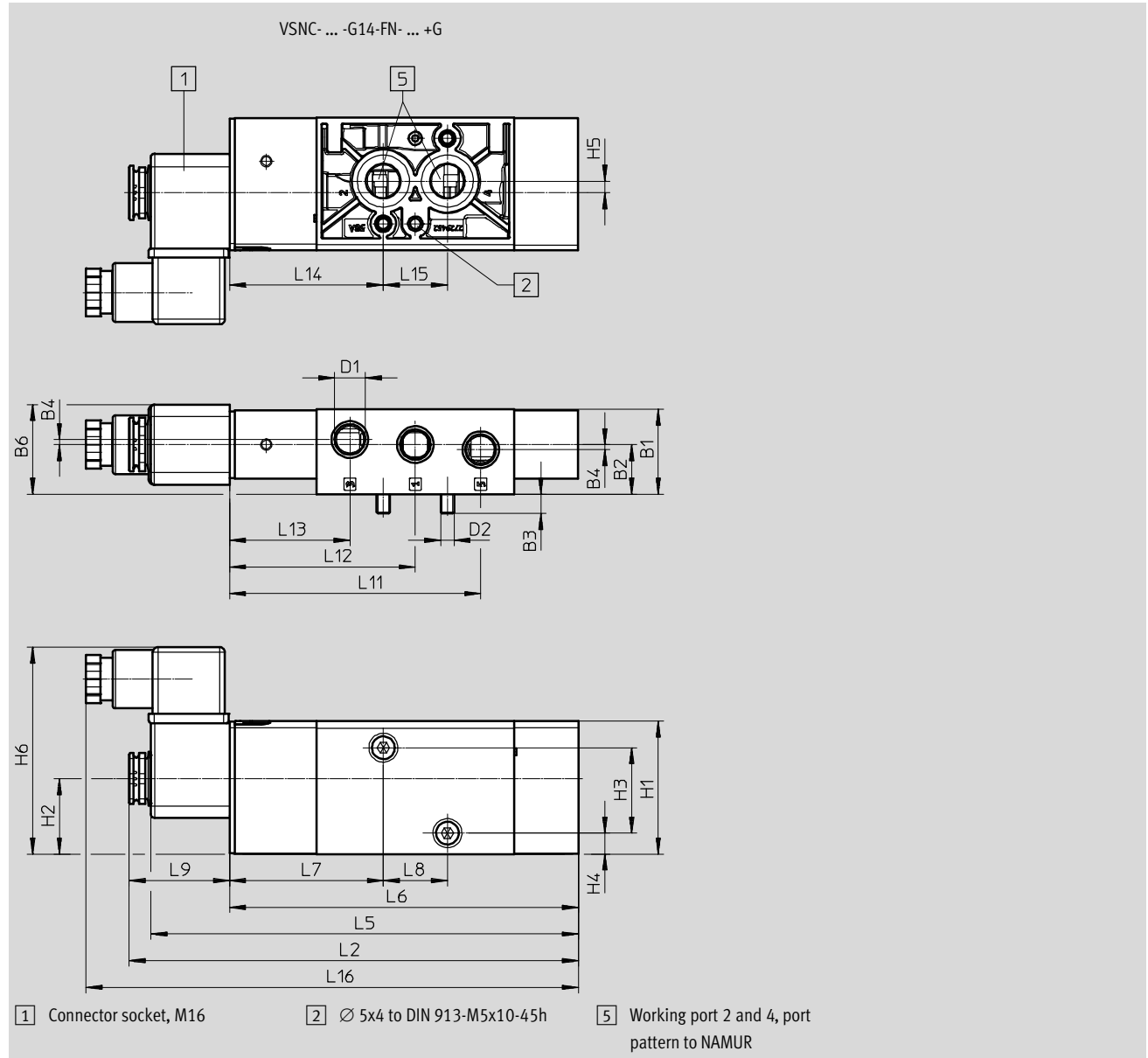
01

Pilot valves

Technical data – 3/2-way or 5/2-way -...-FN, convertible, single solenoid

Dimensions

Download CAD data → www.festo.com



Type	B1	B2	B3	B4	B6	D1	D2	H1	H2	H3	H4	H5	H6
VSNC-FC-M52-MD-G14-FN- ... +G	31.8	18.6	7.3	1.9	33.3	G 1/4	M5	49.8	28.2	32	7.8	4.4	77.5

Type	L2	L5	L6	L7	L8	L9	L11	L12	L13	L14	L15	L16
VSNC-FC-M52-MD-G14-FN- ... +G	168.3	160.1	130.6	57.6	24	37.7	94.1	69.6	45.1	57.6	24	184.4

Solenoid valves VSNC

Technical data – 3/2-way or 5/2-way -...-FN, convertible, single solenoid

★ Core product range

Ordering data – Valves

Directional control valve without solenoid coil

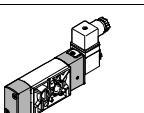
	Part No.	Type
	★ 577267	VSNC-FC-M52-MD-G14-FN

Ordering data – Valves

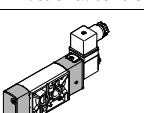
Directional control valve without solenoid coil

	Part No.	Type
	577272	VSNC-FC-M52-MD-N14-FN

Directional control valve with solenoid coil and socket

	Part No.	Type
	8078398	VSNC-FC-M52-MD-G14-FN-1A1+G
	8078399	VSNC-FC-M52-MD-G14-FN-3AA1+G

Directional control valve with Ex i solenoid coil including socket

	Part No.	Type
	577281	VSNC-FC-M52-MD-G14-FN-1A1-Ex4-A
	577286	VSNC-FC-M52-MD-N14-FN-1A1-Ex4-A

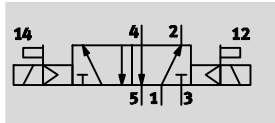

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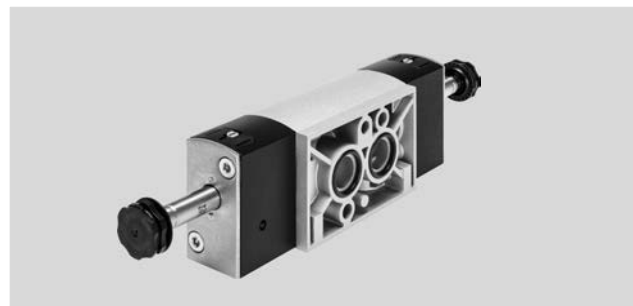
Pilot valves

Technical data – 5/2-way -...-FN, double solenoid

Function

5/2-way valve, double solenoid


 Operating pressure
1.5 ... 8 bar

 Temperature range
-20 ... +60 °C


General technical data

	VSNC-F-B52-D-G14-FN VSNC-F-B52-D-N14-FN	VSNC-F-B52-D-G14-FN-1A1-EX4-A VSNC-F-B52-D-N14-FN-1A1-EX4-A
Valve function	5/2-way, double solenoid	
Width [mm]	32	
Design	Piston spool	
Sealing principle	Soft	
Type of actuation	Electrical	
Type of control	Piloted	
Pilot air supply port	Internal	
Exhaust air function	With flow control	
Manual override	Non-detenting, detenting	
Type of mounting	With through-hole	
Connection for venting hole	Not ducted	
Mounting position	Any	
Non-overlapping	Yes	
Standard nominal flow rate [l/min]	1350	
b value	0.4	
C value [l/sbar]	5.6	
Pneumatic connection	1, 3, 5 2, 4	G 1/4, NPT 1/4-18 Port pattern to NAMUR
Conforms to standard	VDI/VDE 3845 (NAMUR)	
Certificate issuing authority	DNVGL-TAA000011J	
Product weight [g]	461	

Operating and environmental conditions

	VSNC-F-B52-D-G14-FN VSNC-F-B52-D-N14-FN	VSNC-F-B52-D-G14-FN-1A1-EX4-A VSNC-F-B52-D-N14-FN-1A1-EX4-A
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure [bar]	1.5 ... 8	
Ambient temperature [°C]	-20 ... +60	
Temperature of medium [°C]	-20 ... +60	
Corrosion resistance class CRC ¹⁾	2	
Maritime classification ²⁾	See certificate	

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) Additional information www.festo.com/sp → Certificates.

Solenoid valves VSNC

Technical data – 5/2-way -...-FN, double solenoid

ATEX		
	VSNC-F-B52-D-G14-FN VSNC-F-B52-D-N14-FN	VSNC-F-B52-D-G14-FN-1A1-Ex4-A VSNC-F-B52-D-N14-FN-1A1-Ex4-A
ATEX category gas	–	II 2G
Type of ignition protection for gas	–	Ex ia IIC T6 Ga
ATEX category dust	–	II 2D
Type of ignition protection for dust	–	Ex t IIIC T80°C Db
Explosion protection certification outside the EU	–	EPL Db (IEC-EX)
	–	EPL Ga (IEC-EX)
Explosion-proof temperature [°C]	–	–40 °C ≤ Ta ≤ +50 °C
Degree of protection	–	IP65
	–	IP67
CE marking (see declaration of conformity)	As per EU Explosion Protection Directive (ATEX)	
Electrical data		
	VSNC-F-B52-D-G14-FN VSNC-F-B52-D-N14-FN	VSNC-F-B52-D-G14-FN-1A1-Ex4-A VSNC-F-B52-D-N14-FN-1A1-Ex4-A
Electrical connection	–	Type A, to EN 175301-803
Coil characteristics	See solenoid coil, to be ordered separately	
Changeover time [ms]	20	
Permissible voltage fluctuations [%]	–	± 10
Materials		
1 Housing	Wrought aluminium alloy	
2 Seals	NBR	
–	RoHS compliant	

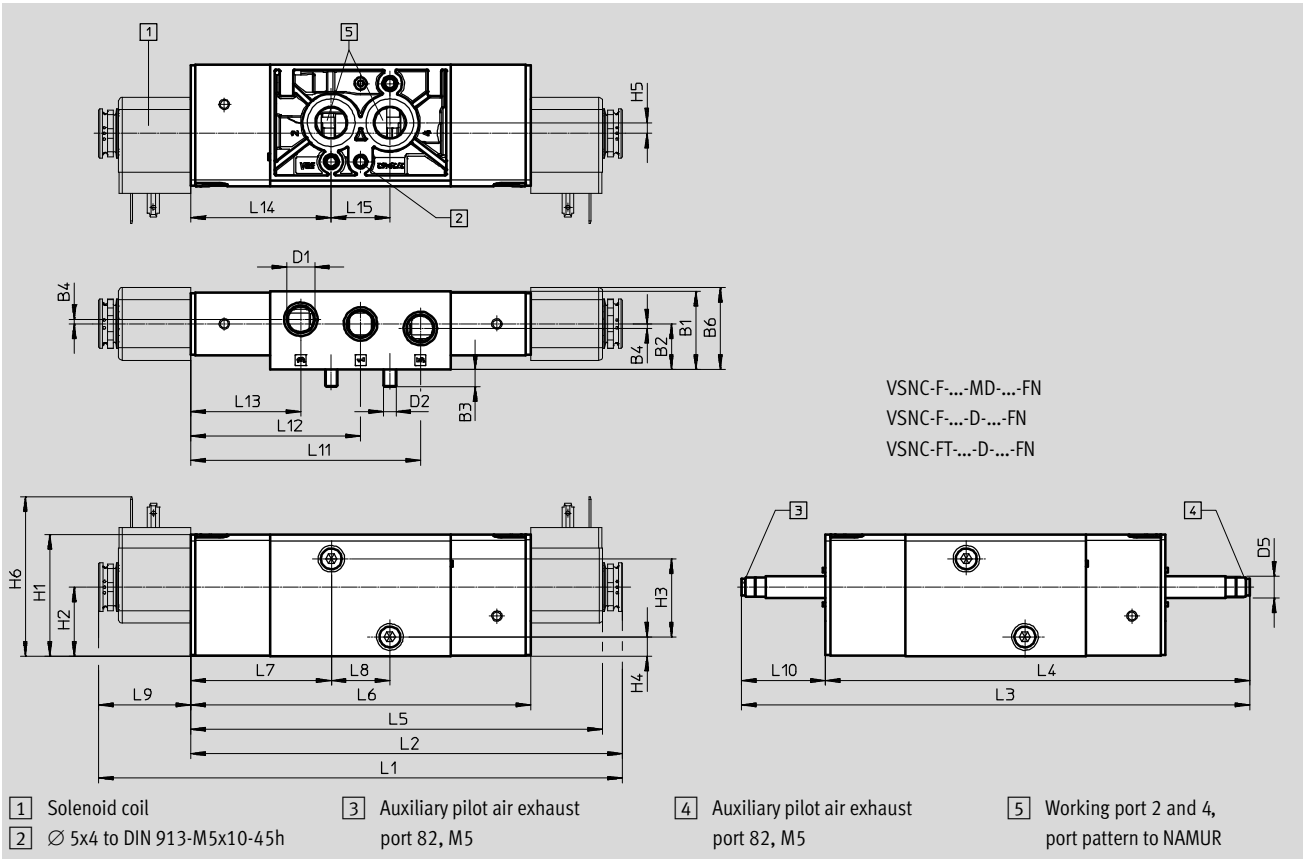
01

Pilot valves

Technical data – 5/2-way -...-FN, double solenoid

Dimensions

Download CAD data → www.festo.com



Type	B1	B2	B3	B4	B6	D1	D2	D5	H1	H2	H3	H4	H5	H6	L1
VSNC-F-B52-D-G14-FN	31.8	18.6	7.3	1.9	33.4	G 1/4	M5	9	49.8	28.2	32	7.8	4.4	-	-
VSNC-F-B52-D-G14-FN-1A1-Ex4-A						65.1								214.5	
VSNC-F-B52-D-N14-FN						-								-	
VSNC-F-B52-D-N14-FN-1A1-Ex4-A						65.1								214.5	

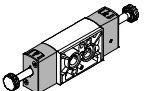
Type	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15
VSNC-F-B52-D-G14-FN	-	208	173.6	-	139.2	57.6	24	-	34.4	94.1	69.6	45.1	57.6	24
VSNC-F-B52-D-G14-FN-1A1-Ex4-A	176.9			168.7				37.7						
VSNC-F-B52-D-N14-FN	-			-				-						
VSNC-F-B52-D-N14-FN-1A1-Ex4-A	176.9			168.7				37.7						

Solenoid valves VSNC

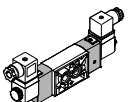
Technical data – 5/2-way -...-FN, double solenoid

Ordering data – Valves

Directional control valve without solenoid coil

	Part No.	Type
	577268	VSNC-F-B52-D-G14-FN
	577273	VSNC-F-B52-D-N14-FN

Directional control valve with Ex i solenoid coil including socket

	577282	VSNC-F-B52-D-G14-FN-1A1-Ex4-A
	577287	VSNC-F-B52-D-N14-FN-1A1-Ex4-A

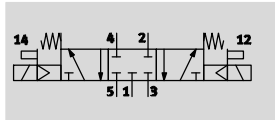
01

Pilot valves

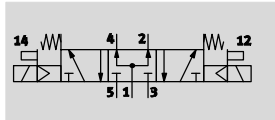
Technical data – 5/3-way -...-FN

Function

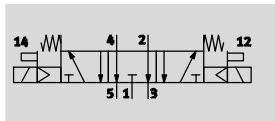

5/3-way valve, closed

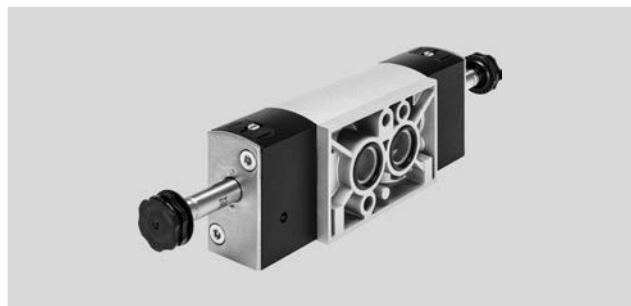


5/3-way valve, exhausted



5/3-way valve, pressurised


 Operating pressure
3 ... 8 bar

 Temperature range
-20 ... +60 °C


General technical data

	VSNC-F-P53C-MD-G14-FN VSNC-F-P53C-MD-N14-FN	VSNC-F-P53U-MD-G14-FN VSNC-F-P53U-MD-N14-FN	VSNC-F-P53E-MD-G14-FN VSNC-F-P53E-MD-N14-FN
Valve function	5/3		
	Closed	Pressurised	Exhausted
Width [mm]	32		
Design	Piston spool		
Sealing principle	Soft		
Type of actuation	Electrical		
Reset method	Mechanical spring		
Type of control	Piloted		
Pilot air supply port	Internal		
Exhaust air function	With flow control		
Manual override	Non-detenting, detenting		
Type of mounting	With through-hole		
Connection for venting hole	Not ducted		
Mounting position	Any		
Non-overlapping	Yes		
Standard nominal flow rate [l/min]	1250	950	1050
b value	0.4	0.5	0.4
C value [l/sbar]	5.2	2.1	4.4
Pneumatic connection	1, 3, 5 2, 4		
	G 1/4, NPT 1/4-18 Port pattern to NAMUR		
Conforms to standard	VDI/VDE 3845 (NAMUR)		
Certificate issuing authority	DNVGL-TAA000011J		
Product weight [g]	461		

Solenoid valves VSNC

Technical data – 5/3-way -...-FN

Operating and environmental conditions		VSNC-F-P53C-MD-G14-FN VSNC-F-P53C-MD-N14-FN	VSNC-F-P53U-MD-G14-FN VSNC-F-P53U-MD-N14-FN	VSNC-F-P53E-MD-G14-FN VSNC-F-P53E-MD-N14-FN
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure	[bar]	3 ... 8		
Ambient temperature	[°C]	-20 ... +60		
Temperature of medium	[°C]	-20 ... +60		
Corrosion resistance class CRC ¹⁾		2		
Maritime classification ²⁾		See certificate		

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
- 2) Additional information www.festo.com/sp → Certificates.

Electrical data		VSNC-F-P53C-MD-G14-FN VSNC-F-P53C-MD-N14-FN	VSNC-F-P53U-MD-G14-FN VSNC-F-P53U-MD-N14-FN	VSNC-F-P53E-MD-G14-FN VSNC-F-P53E-MD-N14-FN
Coil characteristics		See solenoid coil, to be ordered separately		
Switching time on	[ms]	23		
Switching time off	[ms]	103		
Changeover time	[ms]	55		

Materials		
1	Housing	Wrought aluminium alloy
2	Seals	NBR
-		RoHS compliant

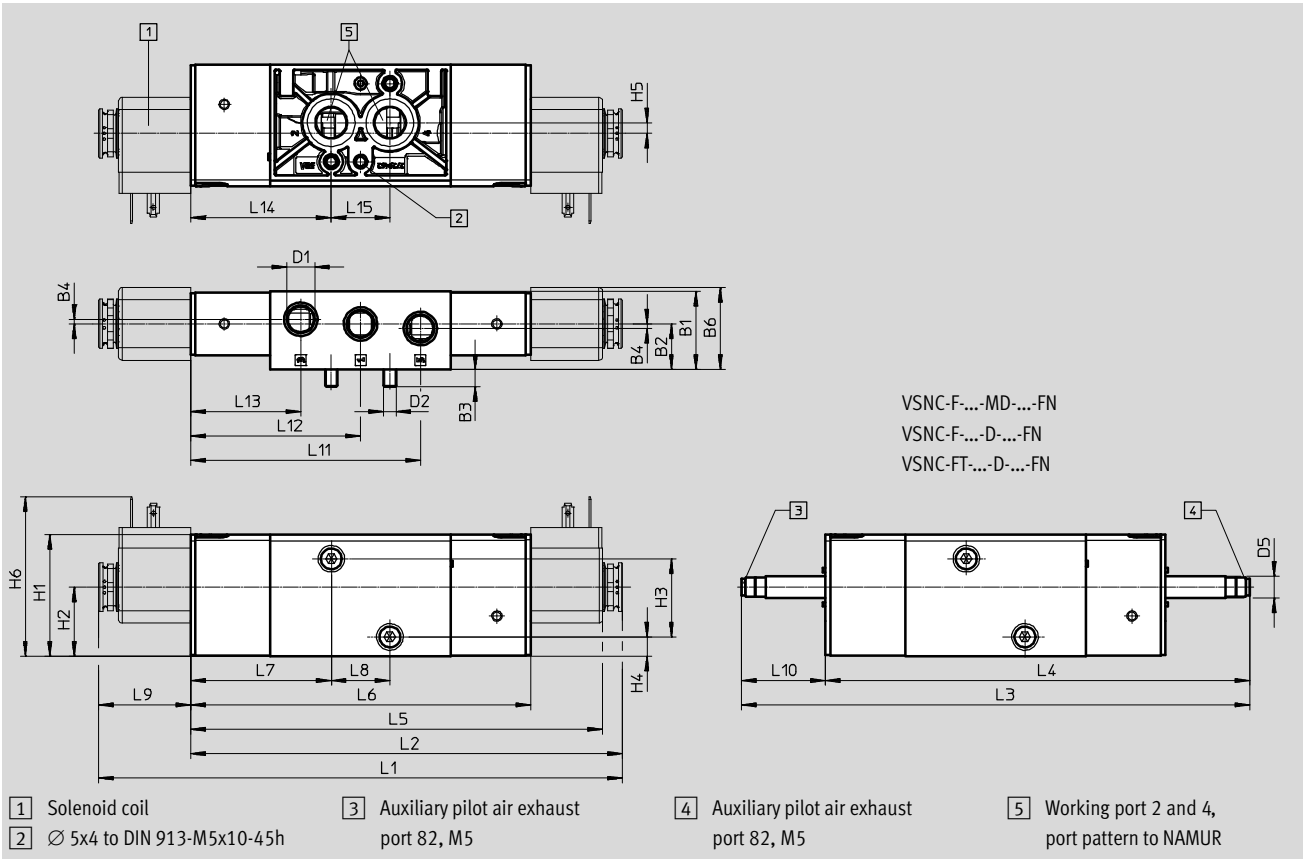
01

Pilot valves

Technical data – 5/3-way -...-FN

Dimensions

Download CAD data → www.festo.com



Type	B1	B2	B3	B4	B6	D1	D2	D5	H1	H2	H3	H4	H5	H6	L1
VSNC-F-P53C-MD-G14-FN	31.8	18.6	7.3	1.9	33.4	G 1/4	M5	9	49.8	28.2	32	7.8	4.4	-	-
VSNC-F-P53U-MD-G14-FN															
VSNC-F-P53E-MD-G14-FN						NPT 1/4									
VSNC-F-P53C-MD-N14-FN															
VSNC-F-P53U-MD-N14-FN															
VSNC-F-P53E-MD-N14-FN															

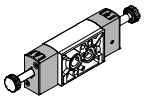
Type	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15
VSNC-F-P53C-MD-G14-FN	-	208	173.6	-	139.2	57.6	24	-	34.4	94.1	69.6	45.1	57.6	24
VSNC-F-P53U-MD-G14-FN														
VSNC-F-P53E-MD-G14-FN														
VSNC-F-P53C-MD-N14-FN														
VSNC-F-P53U-MD-N14-FN														
VSNC-F-P53E-MD-N14-FN														

Solenoid valves VSNC

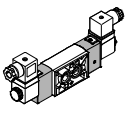
Technical data – 5/3-way -...-FN

Ordering data – Valves

Directional control valve without solenoid coil

	Part No.	Type
	577269	VSNC-F-P53C-MD-G14-FN
	577270	VSNC-F-P53U-MD-G14-FN
	577271	VSNC-F-P53E-MD-G14-FN

Directional control valve with 24 V DC solenoid coil

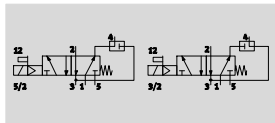

	577274	VSNC-F-P53C-MD-N14-FN
	577275	VSNC-F-P53U-MD-N14-FN
	577276	VSNC-F-P53E-MD-N14-FN

01

Pilot valves

Technical data – 3/2-way or 5/2-way -...-FN poppet seat, convertible, single solenoid

Function

3/2-way or 5/2-way valve,
convertible
 Operating pressure
2.5 ... 8 bar

 Temperature range
-20 ... +60 °C


General technical data

	VSNC-FTC-M52-MD-G14-FN VSNC-FTC-M52-MD-N14-FN	VSNC-FTC-M52-MD-G14-FN-1A1
Valve function	3/2-way or 5/2-way, convertible	
Width [mm]	32	
Design	Poppet seat	
Sealing principle	Soft	
Type of actuation	Electrical	
Reset method	Mechanical spring	
Type of control	Piloted	
Pilot air supply port	Internal	
Exhaust air function	With flow control	
Manual override	Non-detenting, detenting	
Type of mounting	With through-hole	
Connection for venting hole	Not ducted	
Mounting position	Any	
Non-overlapping	No	
Direction of flow	Non-reversible	
Standard nominal flow rate	1 → 2 [l/min]	800
Exhaust return	4 → 3 [l/min]	800
b value	0.15	
C value [l/sbar]	3.96	
Pneumatic connection	1, 3, 5 2, 4	G 1/4 Port pattern to NAMUR
Conforms to standard	VDI/VDE 3845 (NAMUR)	
Certificate issuing authority	DNVGL-TAA000011J	
Degree of protection	– IP65, IP67	
Product weight [g]	404	440

Solenoid valves VSNC

Technical data – 3/2-way or 5/2-way -...-FN poppet seat, convertible, single solenoid

Operating and environmental conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure	[bar]	2.5 ... 8
Ambient temperature	[°C]	-20 ... 60
Temperature of medium	[°C]	-20 ... 60
Corrosion resistance class CRC ¹⁾		2
Maritime classification ²⁾		See certificate

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
- 2) Additional information www.festo.com/sp → Certificates.

Electrical data	VSNC-FTC-M52-MD-G14-FN VSNC-FTC-M52-MD-N14-FN		VSNC-FTC-M52-MD-G14-FN-1A1
	Electrical connection	-	
Coil characteristics, 24 V DC	[W]	See solenoid coil, to be ordered separately	0.7
Switching time on	[ms]	16	16
Switching time off	[ms]	120	120
Permissible voltage fluctuations	[%]	-	±10

Materials		
1	Housing	Wrought aluminium alloy
2	Seals	NBR
-	-	RoHS compliant

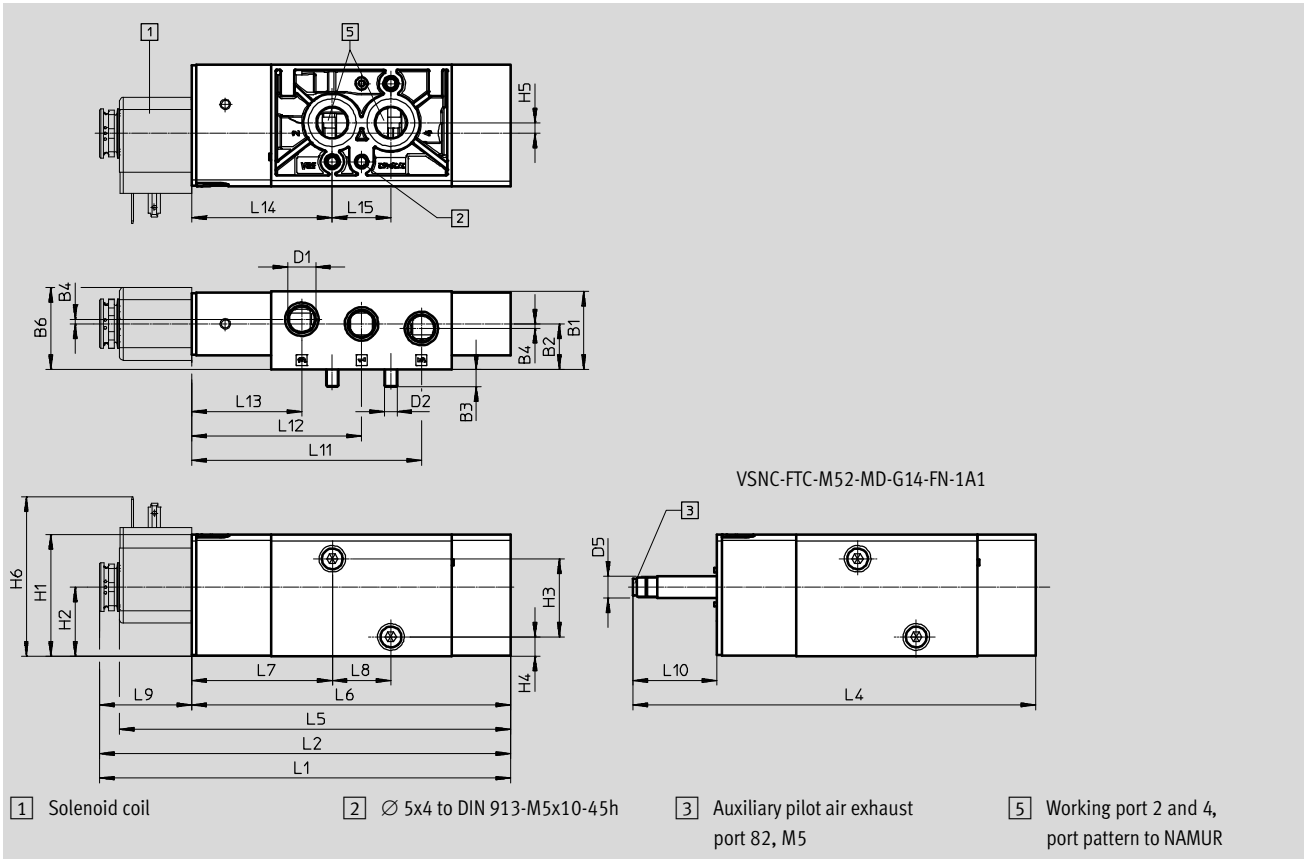
01

Pilot valves

Technical data – 3/2-way or 5/2-way -...-FN poppet seat, convertible, single solenoid

Dimensions

Download CAD data → www.festo.com



Type	B1	B2	B3	B4	B6	D1	D2	D5	H1	H2	H3	H4	H5	H6
VSNC-FTC-M52-MD-G14-FN	31.8	18.6	7.3	1.9	33.4	G 1/4	M5	9	49.8	28.2	32	7.8	4.4	-
VSNC-FTC-M52-MD-G14-FN-1A1														
VSNC-FTC-M52-MD-N14-FN-1A1														

Type	L2	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15
VSNC-FTC-M52-MD-G14-FN	-	165	-	130.6	57.6	24	-	34.4	94.1	69.6	45.1	57.6	24
VSNC-FTC-M52-MD-G14-FN-1A1			-										
VSNC-FTC-M52-MD-N14-FN-1A1			1601										

Ordering data – Valves

Directional control valve without solenoid coil

	Part No.	Type
	577277	VSNC-FTC-M52-MD-G14-FN
	577279	VSNC-FTC-M52-MD-N14-FN

Directional control valve with 24 V DC solenoid coil

	577297	VSNC-FTC-M52-MD-G14-FN-1A1
--	--------	----------------------------

Solenoid valves VSNC

Technical data – 5/2-way, double solenoid

Function
3/2-way or 5/2-way valve,
convertible



- Operating pressure
1.5 ... 8 bar

- Temperature range
-20 ... +60 °C



01

Pilot valves

General technical data

	VSNC-FT-B52-D-G14-FN VSNC-FT-B52-D-N14-FN	VSNC-FT-B52-D-G14-FN-1A1
Valve function	5/2-way, double solenoid	
Width [mm]	32	
Design	Poppet seat	
Sealing principle	Soft	
Type of actuation	Electrical	
Reset method	Mechanical spring	
Type of control	Piloted	
Pilot air supply port	Internal	
Exhaust air function	With flow control	
Manual override	Non-detenting, detenting	
Type of mounting	With through-hole	
Connection for venting hole	Not ducted	
Mounting position	Any	
Non-overlapping	No	
Direction of flow	Non-reversible	
Standard nominal flow rate [l/min]	1000	
b value	0.24	
C value [l/sbar]	4.6	
Pneumatic connection	1, 3, 5 2, 4	G 1/4 or NPT 1/4-18 Port pattern to NAMUR
Conforms to standard	VDI/VDE 3845 (NAMUR)	
Certificate issuing authority	DNVGL-TAA000011)	
Degree of protection	-	IP65, IP67
Product weight [g]	519	670

Technical data – 5/2-way, double solenoid

Operating and environmental conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure [bar]	1.5 ... 8
Ambient temperature [°C]	-20 ... +60
Temperature of medium [°C]	-20 ... +60
Corrosion resistance class CRC ¹⁾	2
Maritime classification ²⁾	See certificate

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) Additional information www.festo.com/sp → Certificates.

Electrical data	VSNC-FT-B52-D-G14-FN VSNC-FT-B52-D-N14-FN		VSNC-FT-B52-D-G14-FN-1A1
	Electrical connection	-	
Coil characteristics, 24 V DC [W]	See solenoid coil, to be ordered separately		0.7
Changeover time [ms]	16		16
Permissible voltage fluctuations [%]	-		±10

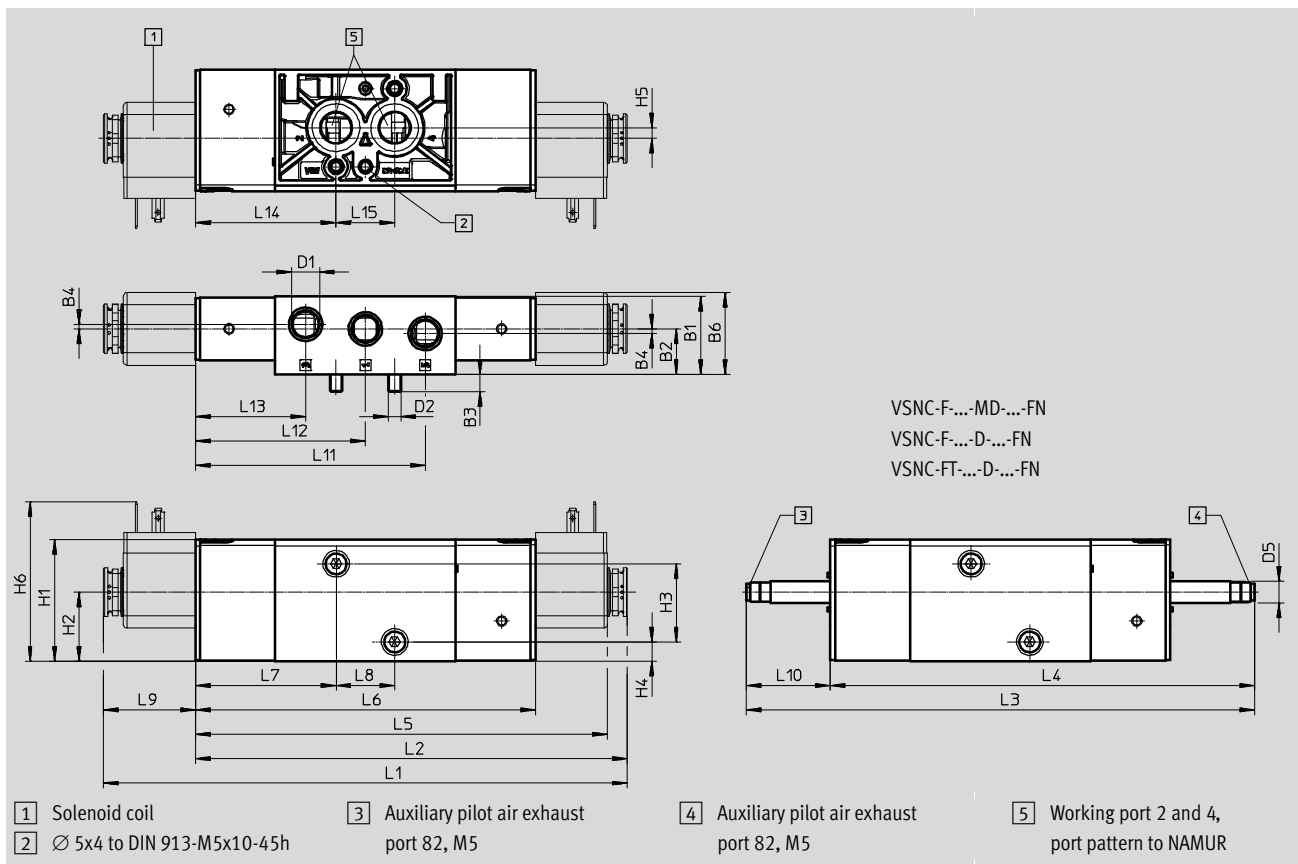
Materials	
[1] Housing	Wrought aluminium alloy
[2] Seals	NBR
-	RoHS compliant

Solenoid valves VSNC

Technical data – 5/2-way, double solenoid

Download CAD data → www.festo.com

Dimensions

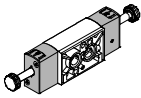
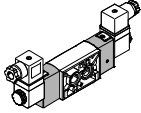


Pilot valves

Type	B1	B2	B3	B4	B6	D1	D2	D5 ∅	H1	H2	H3	H4	H5	H6	L1
VSNC-F-P53C-MD-G14-FN	31.8	18.6	7.3	1.9	33.4	G 1/4	M5	9	49.8	28.2	32	7.8	4.4	-	-
VSNC-F-P53U-MD-G14-FN															
VSNC-F-P53E-MD-G14-FN															
VSNC-F-P53C-MD-N14-FN						NPT 1/4									
VSNC-F-P53U-MD-N14-FN															
VSNC-F-P53E-MD-N14-FN															

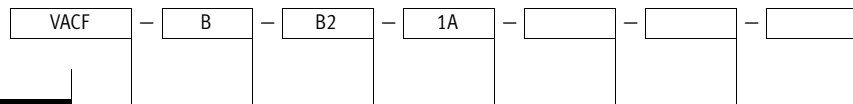
Type	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15
VSNC-F-P53C-MD-G14-FN	-	208	173.6	-	139.2	57.6	24	-	34.4	94.1	69.6	45.1	57.6	24
VSNC-F-P53U-MD-G14-FN														
VSNC-F-P53E-MD-G14-FN														
VSNC-F-P53C-MD-N14-FN														
VSNC-F-P53U-MD-N14-FN														
VSNC-F-P53E-MD-N14-FN														

Technical data – 5/2-way, double solenoid

Ordering data – Valves	
Directional control valve without solenoid coil	
	Part No. Type
	577278 VSNC-FT-B52-D-G14-FN
	577280 VSNC-FT-B52-D-N14-FN
Directional control valve with solenoid coil	
	577298 VSNC-FT-B52-D-G14-FN-1A1

Solenoid coils VACF

Type codes





01

Pilot valves

Type	
VACF	Solenoid coil, F series
Solenoid coil type	
A	Width 30 mm, for 8 mm armature tube
B	Width 22 mm, for 8 mm armature tube
Electrical connection	
A1	Connection pattern type A, to EN 175301
B2	Connection pattern type B, to industry standard
C1	Connection pattern type C, to EN 175301
K1	Cable
Operating voltage	
5	12 V DC
1	24 V DC
7	48 V DC
1A	24 V AC, 50/60 Hz
7A	48 V AC, 50/60 Hz
16B	110/120 V AC, 50/60 Hz
3A	230 V AC, 50/60 Hz
3W	230/240 V AC, 50/60 Hz
Cable length	
-	None
1	12 V DC
5	24 V DC
20	24 V DC
ATEX certification EU	
-	None
EX4	ATEX category II 2GD
Type of ignition protection	
-	None
M	Moulded encapsulation

Technical data

 Voltage
 12 ... 48 V DC
 24 ... 240 V AC

 Temperature range
 -20 ... +50 °C

- In accordance with VDE regulation 0580, insulation class H
- Can be replaced without interrupting the pneumatic circuit



General technical data

Type of mounting	Via knurled nut
Mounting position	Any (can be rotated in increments of 45° on the armature tube)

Materials

Housing seal set	Aluminium, HNBR
Housing	PA, steel
Winding	Copper
Note on materials	RoHS compliant

Electrical data

Electrical connection	Plug pins, 3-pin, with connection pattern to EN 175301-803, type A
Permissible voltage fluctuations [%]	-10 / +10
Duty cycle [%]	100
Degree of protection to EN 60529	IP65 with plug socket
Insulation class	H

Characteristic coil data

Operating voltage	12 V DC	24 V DC	48 V DC	24 V AC	48 V AC	110/120 V AC	230/240 V AC
Power [W]	2.8	2.6	2.8	-	-	-	-
Pick-up power, 50 Hz [VA]	-	-	-	2.5	2.5	2.7	3.9
Holding power, 50 Hz [VA]	-	-	-	1.7	1.7	1.9	2.8
Frequency [Hz]	-	-	-	50/60	50/60	50/60	50/60

Operating and environmental conditions

Operating voltage	12 V DC	24 V DC	48 V DC	24 V AC	48 V AC	110/120 V AC	230/240 V AC
Ambient temperature [°C]	-20 ... +50					-20 ... +50	
Corrosion resistance class CRC ¹⁾	2					2	
CE marking (see declaration of conformity) ²⁾	-					To EU Low Voltage Directive	
Certification	c UL us - Recognized (OL)	-	-	c UL us - Recognized (OL)	-	-	
Maritime classification ²⁾	See certificate					See certificate	
Certificate issuing authority	DNVGL-TAA000011J					DNVGL-TAA000011J	

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) Additional information www.festo.com/sp → Certificates.

Solenoid coils VACF-A-A1

Technical data

★ Core product range

Dimensions

Download CAD data → www.festo.com

1 Plug pattern to EN 175301-803, type A
 2 Knurled nut (seal set for solenoid coil)
 3 Solenoid coil (can be rotated in increments of 45° on the armature tube, push on in any direction)

Type	B1	B2	B3	B4	D1	D2	D3	H1	H2	H3	H4	H5	H6	L1	L2	T1
VACF-A-A1...	29.5	24	18	6.3	8.2	22.5	M3	47.4	35.3	15	9.9	20.8	24	30	7.9	5


Ordering data


Description	Part No.	Type
Solenoid coil		
Without plug socket, connection pattern to EN 175301-803, type A	12 V DC	8030821 VACF-A-A1-5
	24 V DC	★ 8030822 VACF-A-A1-1
	48 V DC	8030823 VACF-A-A1-7
	24 V AC	8030824 VACF-A-A1-1A
	48 V AC	8030825 VACF-A-A1-7A
	110/120 V AC	8030826 VACF-A-A1-16B
	230/240 V AC	8030828 VACF-A-A1-3W
Seal set		
To achieve degree of protection IP67	For solenoid coil VACF	8034611 VAMC-B10-A-B-S8

01

Pilot valves

Technical data

 Voltage
 12 ... 48 V DC
 24 ... 240 V AC

 Temperature range
 -10 ... +50 °C

- In accordance with VDE regulation 0580, insulation class H
- Can be replaced without interrupting the pneumatic circuit



General technical data

Type of mounting	Via knurled nut
Mounting position	Any (can be rotated in increments of 45° on the armature tube)

Materials

Housing seal set	Aluminium, HNBR
Housing	PA, steel
Winding	Copper
Note on materials	RoHS compliant

Electrical data

Electrical connection	Plug pins, 3-pin, with connection pattern to industry standard, type B
Permissible voltage fluctuations [%]	-10 / +10
Duty cycle [%]	100
Degree of protection to EN 60529	IP65 with plug socket
Insulation class	H

Characteristic coil data

Operating voltage	12 V DC	24 V DC	48 V DC	24 V AC	48 V AC	110/120 V AC	230/240 V AC
Power [W]	3.4	3.3	3.4	–	–	–	–
Pick-up power, 50 Hz [VA]	–	–	–	3.9	3.9	4.4	5.8
Holding power, 50 Hz [VA]	–	–	–	2.6	2.7	3.3	4.6
Frequency [Hz]	–	–	–	50/60	50/60	50/60	50/60
Surge resistance [kV]	–	–	–	–	–	2.5	4

Operating and environmental conditions

Operating voltage	12 V DC	24 V DC	48 V DC	24 V AC	48 V AC	110/120 V AC	230/240 V AC
Ambient temperature [°C]	-20 ... +50					-20 ... +50	
Corrosion resistance class CRC ¹⁾	2					2	
Degree of contamination	–					3	
CE marking (see declaration of conformity) ²⁾	–					To EU Low Voltage Directive	
Certification	c UL us - Recognized (OL)	–	–	c UL us - Recognized (OL)	–	–	
Maritime classification ²⁾	See certificate					See certificate	
Certificate issuing authority	DNVGL-TAA000011J					DNVGL-TAA000011J	

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

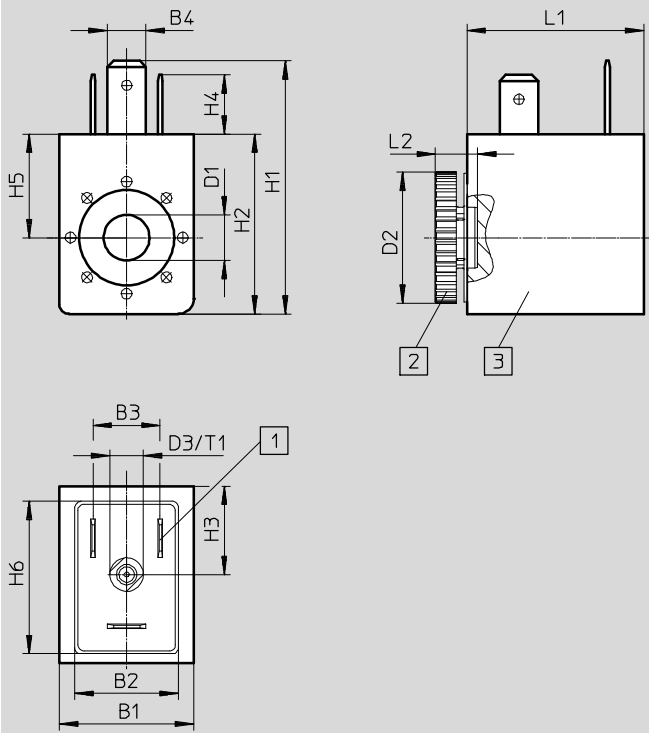
2) Additional information www.festo.com/sp → Certificates.

Solenoid coils VACF-B-B2

Technical data

Dimensions

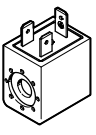
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- 1 Plug pattern to industry standard, type B
- 2 Knurled nut (seal set for solenoid coil)
- 3 Solenoid coil (can be rotated in increments of 45° on the armature tube, push on in any direction)

Type	B1	B2	B3	B4	D1	D2	D3	H1	H2	H3	H4	H5	H6	L1	L2	T1
VACF-B-B2-...	22	17	11	6.3	8.2	21.5	M3	41.5	29.5	14.5	9.7	17	25	29	6.9	5

Ordering data

Description	Part No.	Type
Solenoid coil		
 Without plug socket, connection pattern to industry standard, type B	12 V DC	8030801 VACF-B-B2-5
	24 V DC	8030802 VACF-B-B2-1
	48 V DC	8030803 VACF-B-B2-7
	24 V AC	8030804 VACF-B-B2-1A
	48 V AC	8030805 VACF-B-B2-7A
	110/120 V AC	8030806 VACF-B-B2-16B
	230/240 V AC	8030808 VACF-B-B2-3W
Seal set		
To achieve degree of protection IP67	8034609	VAMC-B10-B-B-S8

01

Pilot valves



Type codes

VACN - N - K11 - 16B - 0,5 - [] - U4 - M

Type	
VACN	Solenoid coil, N series
Solenoid coil type	
N	N solenoid coil, for 9 mm armature tube
Electrical connection	
A1	Connection pattern type A, to EN 175301
K1	With 3 m cable
K11	With 0.6 m cable
Operating voltage	
1	24 V DC
3A	230 V AC, 50/60 Hz
16B	120 V AC or 110 V AC
Cable length	
-	3 m
0,5	0.6 m
ATEX certification EU	
-	Without certification
EX2	ATEX category II 3D
EX4	ATEX category II 2D
Additional certifications	
-	Without certification
U4	Explosion protection certification for USA
Type of ignition protection	
-	None
A	Intrinsically safe
M	Encapsulation
N	Non-sparking

Solenoid coils VACN-N

Technical data

-  Voltage
24 V DC
110, 230 V AC
-  Temperature range
-20 ... +60 °C
- Can be replaced without interrupting the pneumatic circuit



General technical data

Type of mounting	Via knurled nut
Mounting position	Any (can be rotated in increments of 45° on the armature tube)
Product weight [g]	95

Materials

Housing	Steel, polymer
Winding	Copper
Pin contacts	Brass
Note on materials	RoHS compliant

Electrical data

Electrical connection	Plug pins, 3-pin, with connection pattern to EN 175301-803, type A	
Permissible voltage [%] fluctuations	-10 / +10	
Duty cycle [%]	100	
Insulation class	F	
Enamelled wire insulation class	F	
Degree of protection to EN 60529	IP65 with plug socket	

Characteristic coil data

Nominal operating voltage [V]	24 DC	110 AC		230 AC	
Frequency [Hz]	-	50	60	50	60
Power [W]	0.7	-	-	-	-
Pick-up power [VA]	-	5.2	4.2	6.2	4.9
Holding power [VA]	-	3.1	2.5	3.7	2.9
Surge resistance [kV]	-	2.5		4	

Operating and environmental conditions

Nominal operating voltage [V]	24 DC	110 AC	230 AC
Ambient temperature [°C]	-20 ... +60	-20 ... +60	
Corrosion resistance class CRC ¹⁾	2	2	
Degree of contamination	-	3	
CE marking (see declaration of conformity) ²⁾	-	To EU Low Voltage Directive	
Maritime classification ²⁾	See certificate		
Certificate issuing authority	DNVGL-TAA000011J		

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) Additional information www.festo.com/sp → Certificates.

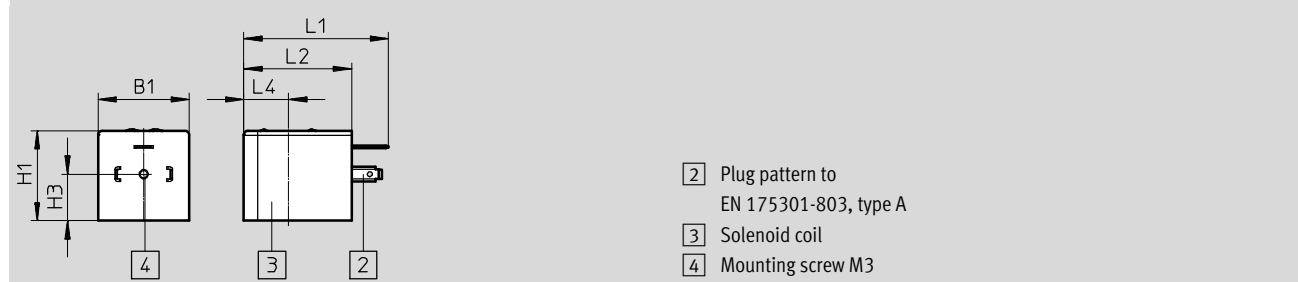
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Pilot valves

Technical data


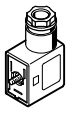
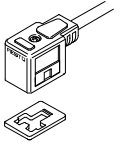
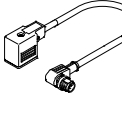

★ Core product range

Dimensions

Download CAD data → www.festo.com

Type	B1	H1	H3	L1	L2	L4
VACN-N-A1-...	30	29.5	15.3	47.6	35.5	14.7

Ordering data

Description	Part No.	Type
Solenoid coil		
 Without plug socket, connection pattern to EN 175301-803, type A	24 V DC	★ 8029144 VACN-N-A1-1
	110 V AC	8029134 VACN-N-A1-16B
	230 V AC	8029135 VACN-N-A1-3A
Plug socket		
 Operating voltage 230 V DC/V AC	Cable fitting Pg9	34583 MSSD-C
	Cable fitting M16	539709 MSSD-C-M16
	Operating voltage 24 V DC, signal status display with LED	177617 MSSD-C-TY-24DC
Connecting cable		
 Operating voltage 24 V DC, signal status display with LED	Cable length 0.6 m	3679776 NEBV-A1W3F-P-K-0.6-N-LE3
	Cable length 2.5 m	30931 KMC-1-24DC-2,5-LED
	Cable length 5 m	30933 KMC-1-24DC-5-LED
	Cable length 10 m	193459 KMC-1-24-10-LED
	Operating voltage 230 V DC/V AC	
	Cable length 0.6 m	3579466 NEBV-A1W3-K-0.6-N-LE3
 Electrical connection 2, M12x1, A-coded Operating voltage 24 V DC, signal status display with LED	Cable length 0.3 m	3679771 NEBV-A1W3F-P-K-0.3-N-M12W3
	Cable length 0.6 m	3679772 NEBV-A1W3F-P-K-0.6-N-M12W3
	Electrical connection 2, M12x1, A-coded	
	Cable length 0.3 m	3579461 NEBV-A1W3-K-0.3-N-M12W3
	Cable length 0.6 m	3579462 NEBV-A1W3-K-0.6-N-M12W3
	Operating voltage 230 V DC/V AC	
Illuminating seal		
 Operating voltage 24 V DC	19145 MC-LD-12-24DC	
	Operating voltage 230 V DC/V AC	
		19146 MC-LD-230AC

Solenoid coils VACN-N-...-EX2-N

Technical data



- Non-sparking solenoid coil
- Category "II 3G" and "II 3D"
- Type of ignition protection for gas "Ex nA"
- ATEX certification
- Can be replaced without interrupting the pneumatic circuit



General technical data

Type of mounting	Via knurled nut
Mounting position	Any (can be rotated in increments of 45° on the armature tube)
Product weight [g]	95

Materials

Housing	Steel, polymer
Winding	Copper
Pin contacts	Brass
Note on materials	RoHS compliant

Electrical data

Electrical connection	Plug pins, 3-pin, with connection pattern to EN 175301-803, type A
Permissible voltage [%] fluctuations	-10 / +10
Duty cycle [%]	100
Insulation class	F
Enamelled wire insulation class	H
Degree of protection to EN 60529	IP65 with plug socket

Characteristic coil data

	[V]	24 DC		110 AC		230 AC	
Nominal operating voltage							
Frequency	[Hz]	-	-	50	60	50	60
Power	[W]	2.1	-	-	-	-	-
Pick-up power	[VA]	-	6.9	5.4	6.9	5.4	5.4
Holding power	[VA]	-	4.1	3.2	4.1	3.3	3.3

Operating and environmental conditions

Ambient temperature [°C]	-20 ... +60
Corrosion resistance class CRC ¹⁾	2
CE marking (see declaration of conformity) ²⁾	To EU Explosion Protection Directive (ATEX)
Maritime classification ²⁾	See certificate
Certificate issuing authority	DNVGL-TAA000011J

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) Additional information www.festo.com/sp → Certificates.

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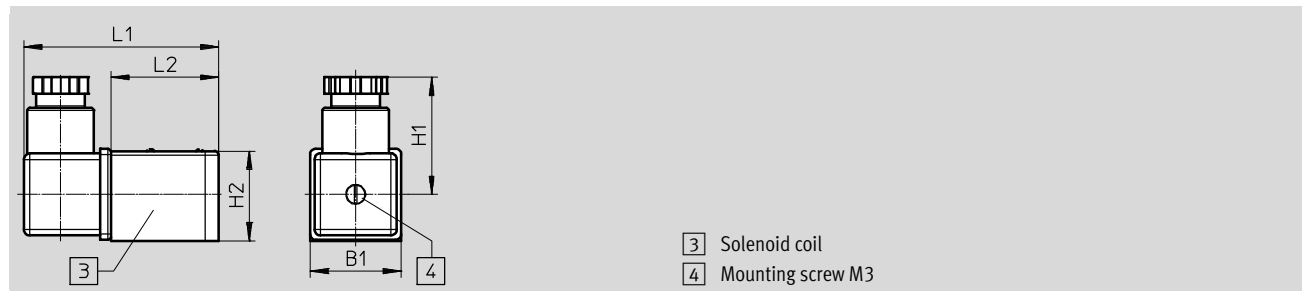
Pilot valves

Technical data

ATEX	
ATEX category for gas	II 3G
Type of ignition protection for gas	Ex nA IIC T5/T4 X Gc
ATEX category for dust	II 3D
Type of ignition protection for dust	Ex tc IIIC T95°C/T105°C X Dc
Explosion ambient temperature [°C]	-20 ≤ Ta ≤ +60

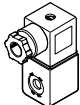
Dimensions

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Type	B1	H1	H2	L1	L2
VACN-N-A1-...-EX2-N	30	38.5	29.5	64	35.5

Ordering data

	Description	Part No.	Type
		24 V DC	8029136
110 V AC	8029137	VACN-N-A1-16B-EX2-N	
230 V AC	8029138	VACN-N-A1-3A-EX2-N	

Solenoid coils VACN-N-...-U4-M

Technical data



- Encapsulated solenoid coil with insulating conduit connection
- Explosion protection certification "Class I", "Class II" and "Class III"
- FM certification
- Can be replaced without interrupting the pneumatic circuit



General technical data

Type of mounting	Via knurled nut
Mounting position	Any (can be rotated in increments of 45° on the armature tube)
Product weight [g]	207

Materials

Housing	Steel, polymer
Winding	Copper
Note on materials	Contains paint-wetting impairment substances RoHS compliant

Electrical data

Electrical connection	Cable
Cable length [m]	0.61
Permissible voltage fluctuations [%]	-10 / +10
Duty cycle [%]	100
Insulation class	H
Enamelled wire insulation class	H
Degree of protection to EN 60529	IP65

Characteristic coil data

Nominal operating voltage [V]	24 DC	110 AC	230 AC
Frequency [Hz]	-	60	50
Power [W]	4.6	-	-
Pick-up power [VA]	-	10	11.5
Holding power [VA]	-	6.8	8

Operating and environmental conditions

Nominal operating voltage	24 V DC	110 V AC	230 V AC
Ambient temperature [°C]	-20 ... +60	-20 ... +60	
Corrosion resistance class CRC ¹⁾	2	2	
CE marking (see declaration of conformity) ²⁾	-	To EU Low Voltage Directive	
Maritime classification ²⁾	See certificate		
Certificate issuing authority	DNVGL-TAA000011J		

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) Additional information www.festo.com/sp → Certificates.

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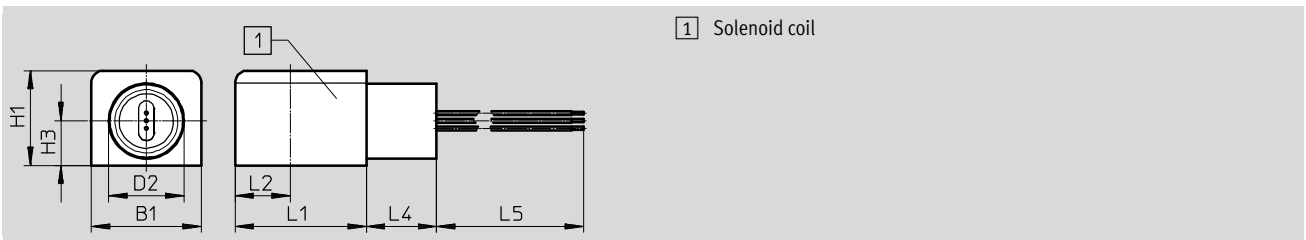
Pilot valves

Technical data

ATEX		
Type of ignition protection for gas	AEx m II T4 Ex m II T4	
Explosion ambient temperature [°C]	-20 ≤ Ta ≤ +60	
Explosion protection certification outside the EU	EPL Gb (US)	
	Class I, Div. 1 (US)	Class I, Div. 1 (CA)
	Class I, Div. 2 (US)	Class I, Div. 2 (CA)
	Class II, Div. 1 (US)	Class II, Div. 1 (CA)
	Class III, Div. 1 (US)	Class III, Div. 1 (CA)
Certificate issuing authority	CSA 265489	
	FM 3053936	

Dimensions

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Type	B1	D2	H1	H3	L1	L2	L4	L5
VACN-N-K11-...	36	24.6	31	14.5	43	18	23	610

Ordering data

	Description	Part No.	Type
	Moulded-in cable	24 V DC	8029146 VACN-N-K11-1-0.5-U4-M
		110 V AC	8029145 VACN-N-K11-16B-0.5-U4-M
		230 V AC	8029140 VACN-N-K11-3A-0.5-U4-M

Solenoid coils VACN-N-...-EX4-M

Technical data



- Category "II 2G" and "II 2D"
- Type of ignition protection for gas "Ex mb"
- ATEX certification
- Can be replaced without interrupting the pneumatic circuit



General technical data

Type of mounting	Via knurled nut
Mounting position	Any (can be rotated in increments of 45° on the armature tube)
Product weight [g]	353

Materials

Housing	Steel, polymer
Winding	Copper
Note on materials	RoHS compliant

Electrical data

Electrical connection	Cable
Cable length [m]	3
Cable diameter [mm]	7
Permissible voltage fluctuations [%]	-10 / +10
Duty cycle [%]	100
Insulation class	F
Enamelled wire insulation class	H
Degree of protection to EN 60529	IP65 with plug socket

Characteristic coil data

Nominal operating voltage [V]	24 DC	110 AC	230 AC
Frequency [Hz]	-	50/60	50/60
Power [W]	2.6	-	-
[VA]	-	2.4	2.1

Operating and environmental conditions

Ambient temperature [°C]	-20 ... +50
Corrosion resistance class CRC ¹⁾	2
CE marking (see declaration of conformity) ²⁾	To EU Explosion Protection Directive (ATEX)
Maritime classification ²⁾	See certificate
Certificate issuing authority	DNVGL-TAA000011J

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) Additional information www.festo.com/sp → Certificates.

01

Pilot valves

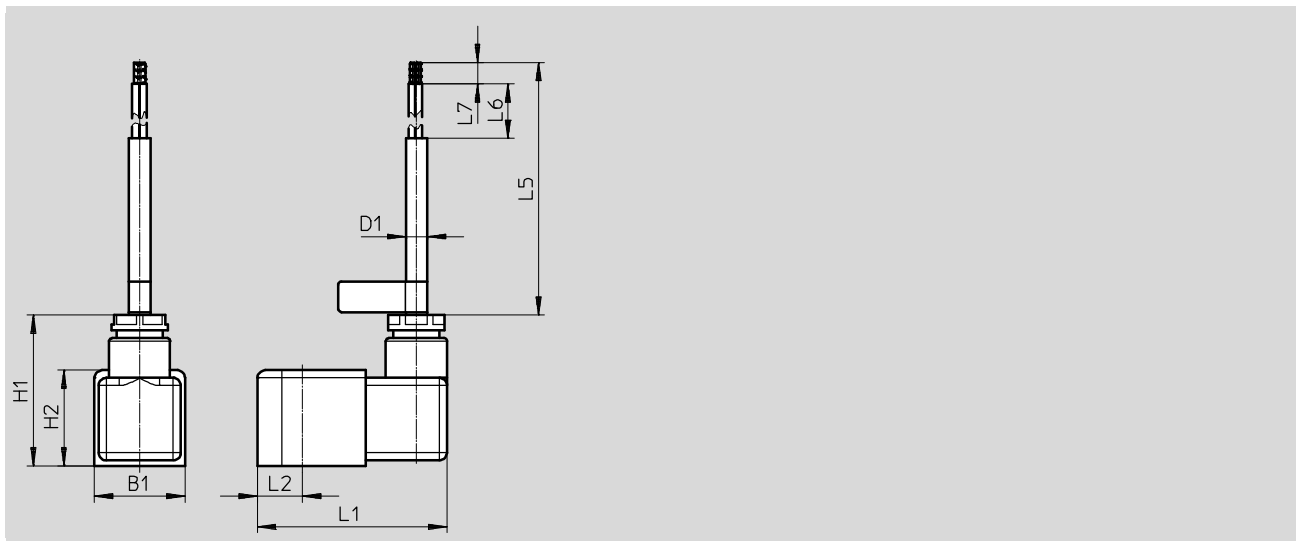
Solenoid coils VACN-N-...-EX4-M

Technical data

ATEX	
ATEX category for gas	II 2G
Type of ignition protection for gas	Ex mb IIC T6
ATEX category for dust	II 2D
Type of ignition protection for dust	Ex mb tb IIIC T80°C
Explosion ambient temperature [°C]	-20 ≤ Ta ≤ +50
Explosion protection certification outside the EU	EPL Db (BR), EPL Db (IEC-EX), EPL Gb (BR), EPL Gb (IEC-EX)
Certificate issuing authority	DNV 15.0189X IECEX PTB 15.0016X PTB 14 ATEX 2027 X

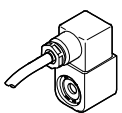
Dimensions

Download CAD data → www.festo.com



Type	B1	D1	H1	H2	L1	L2	L5	L6	L7
VACN-N-K1-...	29.7	7	49.3	31.3	67	14.8	3000	43	7

Ordering data

	Description	Part No.	Type
		24 V DC	8029143
110 V AC		8029142	VACN-N-K1-16B-EX4-M
230 V AC		8029141	VACN-N-K1-3A-EX4-M

Solenoid coils VACN-N-...-EX4-A

Technical data



- Intrinsically safe solenoid coil
- Category "II 2G" and "II 2D"
- Type of ignition protection for gas "Ex ia"
- ATEX certification
- Can be replaced without interrupting the pneumatic circuit



General technical data

Type of mounting	Via knurled nut
Mounting position	Any (can be rotated in increments of 45° on the armature tube)
Product weight [g]	114

Materials

Housing	Steel, polymer
Winding	Copper
Note on materials	RoHS compliant

Electrical data

Electrical connection	Plug connector, connection pattern to EN 175301-803, type A
Permissible voltage fluctuations [%]	-10 / +10
Duty cycle [%]	100
Insulation class	F
Enamelled wire insulation class	H
Degree of protection to EN 60529	IP65 with plug socket

Characteristic coil data

Nominal operating voltage [V]	24 DC
Max. input voltage [V]	28 DC
Max. input current [mA]	115
Required current consumption [mA]	≥27
Effective internal capacitance	Negligibly low
Effective internal inductance	Negligibly low

Operating and environmental conditions

Ambient temperature [°C]	-20 ... +50
Corrosion resistance class CRC ¹⁾	2
CE marking (see declaration of conformity) ²⁾	To EU Explosion Protection Directive (ATEX)
Maritime classification ²⁾	See certificate
Certificate issuing authority	DNVGL-TAA000011J

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) Additional information www.festo.com/sp → Certificates.

01

Pilot valves

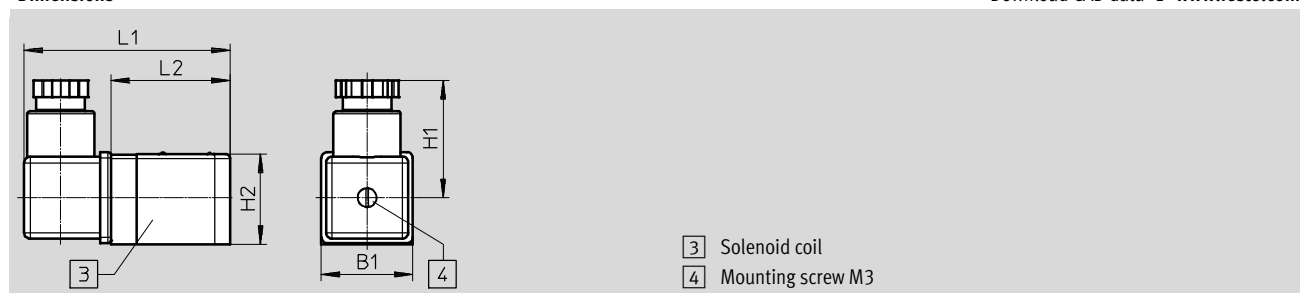
Solenoid coils VACN-N-...-EX4-A

Technical data

ATEX	
ATEX category for gas	II 2G
Type of ignition protection for gas	Ex ia IIC T6, T4 Ga
ATEX category for dust	II 2D
Type of ignition protection for dust	Ex tb IIIC T80°C, T130°C Db IP65
Explosion ambient temperature	[°C] T4, T130°C: -40°C ≤ Ta ≤ +85°C
	[°C] T6, T80°C: -40°C ≤ Ta ≤ +50°C
Explosion protection certification outside the EU	EPL Db (BR), EPL Db (IEC-EX), EPL Ga (BR), EPL Gb (IEC-EX), EPL Gb (IN), EPL Db (IN)
Certificate issuing authority	DNV 15.0188
	IECEx PTB 15.0013
	PTB 09 ATEX 2043

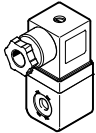
Dimensions

Download CAD data → www.festo.com



Type	B1	H1	H2	L1	L2
VACN-N-A1-...-EX4-A	30	38.5	29.5	67.7	39.2

Ordering data

	Description	Part No.	Type
	Intrinsically safe solenoid coil with plug socket included in delivery, connection pattern to EN 175301-803, type A	24 V DC 8029139	VACN-N-A1-1-EX4-A

Solenoid valves VSNC

Accessories

Connection kit

Mounting position: Any

Type of mounting: With through-hole

Operating pressure: 0 ... 10 bar

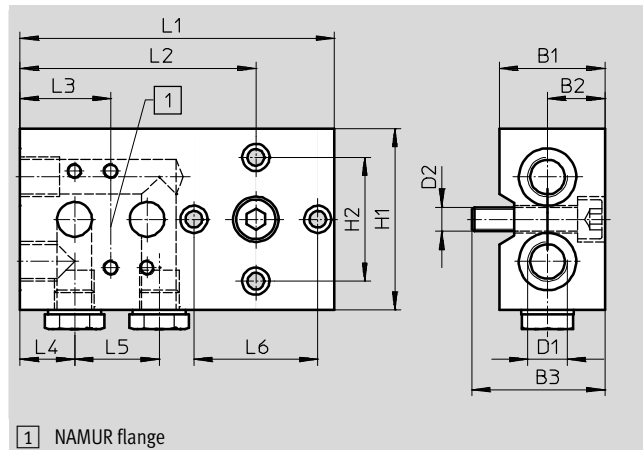
Operating medium: Compressed air to ISO 8573-1:2010 [7:-:-]

Degree of protection IP65

Materials: Wrought aluminium alloy

Seals: NBR

Contains paint-wetting impairment substances, RoHS-compliant



Dimensions [mm] and ordering data

B1	B2	B3	D1	D2	H1	H2	L1	L2	L3	L4	L5	L6	CRC ¹⁾	Part No.	Type
35	19	44	G $\frac{1}{4}$	M8	60	41	104	78	30	18	28	41	4	563396	VABS-S7-S-G14

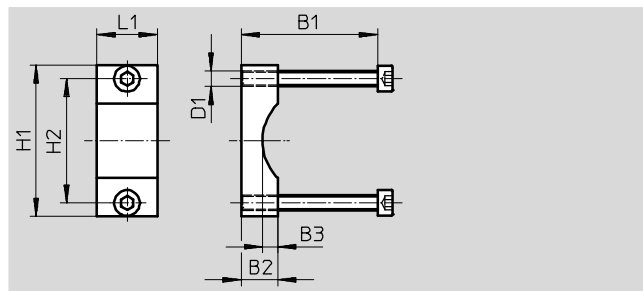
1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Mounting bracket

Materials: Bracket:

Wrought aluminium alloy

Contains paint-wetting impairment substances, RoHS-compliant



Dimensions [mm] and ordering data

B1	B2	B3	D1	H1	H2	L1	CRC ¹⁾	Part No.	Type
45/65	12	5	M5	50	41	20	3	563403	VAME-S7-Y

1) Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

01

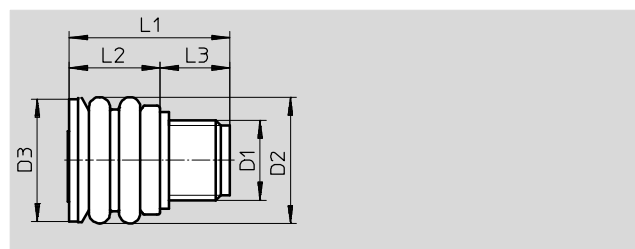
Pilot valves

Accessories

Exhaust protection

Materials:

EPDM, PA

Contains paint-wetting impairment
substances, RoHS-compliant









Dimensions [mm] and ordering data

D1	D2	D3	L1	L2	L3	CRC ¹⁾	Part No.	Type
G1/4, 1/4NPT	21	20.5	26.5	15	11.5	3	563400	VABD-D3-SN-G14

1) Corrosion resistance class CRC 3 to Festo standard FN 940070

High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Ordering data

	Description	Part No.	Type
Plug socket		Technical data → Internet: mssd	
	3-pin, angled socket, square design connection pattern type B, to industrial standard 11 mm	539710	MSSD-F-M16
	3-pin, angled socket, square design connection pattern type A, to DIN EN 175301-803, type A	539709	MSSD-C-M16
	3-pin, IP67 socket to IEC 60529, type B	192746	MSSD-F-S-M16
	4-pin, IP67 socket to IEC 60529, type A	192748	MSSD-C-S-M16
	3-pin, angled socket, square design, IP65 to DIN EN 175301-803, type A	34583	MSSD-C
Push-in fittings QS		Technical data → Internet: qs	
	G male thread with internal hex	186108	QS-G1/4-6-I
		186110	QS-G1/4-8-I
		186112	QS-G1/4-10-I
	NPT male thread with internal hex	572320	QB-1/4-1/4-I-U
		572321	QB-1/4-5/16-I-U
		572322	QB-1/4-3/8-I-U
Silencer U		Technical data → Internet: u	
	G male thread, polymer design	534223	U-1/4-20
		2316	U-1/4
	G male thread, die-cast metal design	6842	U-1/4-B
NPT male thread, die-cast metal design	12639	U-1/4-B-NPT	
Illuminating seal		Technical data → Internet: mc-ld	
	For F solenoid coils	19143	MF-LD-12-24 DC
		19144	MF-LD-230 AC
	For valves with D and N1 solenoid coils	19145	MC-LD-12-24 DC
		19146	MC-LD-230 AC
Cover cap			
	For valves	8028240	VAMC-B10-20-CH2

Solenoid valves

VOFC



Overview, configuration and ordering
→ www.festo.com/catalogue/vofc



Additional information, support and user documentation
→ www.festo.com/sp/vofc



Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/ex



- + Integrated shuttle valve for changing over between internal/external pilot air
- + Sturdy and corrosion-resistant thanks to hard Ematal surface

- + Valve function 3/2-way, 5/2-way, single and double solenoid
- + Connection G1/4, G1/2, NPT1/4, NPT1/2, NAMUR and NAMUR+
- + Voltage 24, 110, 230 V DC, UC
- + Explosion protection EX me and EX ia, ATEX

Solenoid valves VOFC

Features

General remarks

- The valves of series VOFC are special 3/2-way and 5/2-way valves for process automation and applications in chemical and petrochemical installations, where they are frequently used as pilot valves

for butterfly valves and actuators. Their sturdy design and high resistance to corrosion make these valves suitable for outdoor use under harsh ambient conditions.

- With the flange pattern to NAMUR,

the solenoid valves are particularly suitable for quarter turn actuators. The integrated spring chamber re-breather function protects quarter turn actuators with spring return (single-acting cylinders and

actuators) against contaminated ambient atmospheres and weather influences such as rain.

- Approved by the German Technical Control Board (TÜV) up to SIL-3

Function, design

- 3/2-way or 5/2-way, single or double solenoid, depending on the type
- Pilot-actuated piston spool and piston poppet valves

Robust

- The surface of the valve housing is Ematal coated. This treatment involves converting the aluminium surface into a very hard aluminium oxide layer with titanium oxide intercalations. This treatment makes the valves extremely resistant to wear and abrasion and gives them first-class sliding qualities. This provides optimum protection against atmospheric and chemical influences. The media resistance of the product can be found under → www.festo.com.

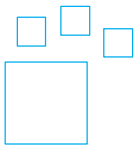
Flexible functionality

- Changeover between internal and external pilot air via automatic OR valve
- Suitable for vacuum

Economical

- Port pattern to NAMUR for direct mounting on the actuator and the G and NPT threaded connections in a valve housing

Ordering data – Product options



Configurable product
This product and all its options can be ordered using the configurator.

The configurator can be found at
→ www.festo.com/catalogue/...

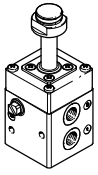
Part No.	Type
3344863	VOFC-L
2868687	VOFC-LT

01

Pilot valves

Key features

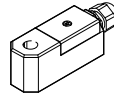
VOFC - Basic valves



- 3/2, 5/2-way valves
- Ports G $\frac{1}{4}$, $\frac{1}{4}$ NPT, G $\frac{1}{2}$, $\frac{1}{2}$ NPT, flange ports
- Port pattern to NAMUR, optionally with P duct

→ Page 92

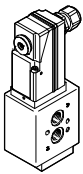
VACC - S13 coils



- AC and DC voltage 24 V, 60 V, 110 V, 230 V
- Types of ignition protection EX EMB II, EX IA IIC

→ Page 137

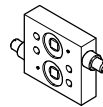
VOFC - Solenoid valves



- Combination of basic valve VOFC and P3 nozzle/baffle pilot control system
- 3/2, 5/2-way valves
- Types of ignition protection EX ia

→ Page 105, 118

VOFC - Accessories



- Flow control plate
- Sub-base
- Mounting plate
- Connection kit
- Adapter with filter
- Mounting bracket
- Manual override

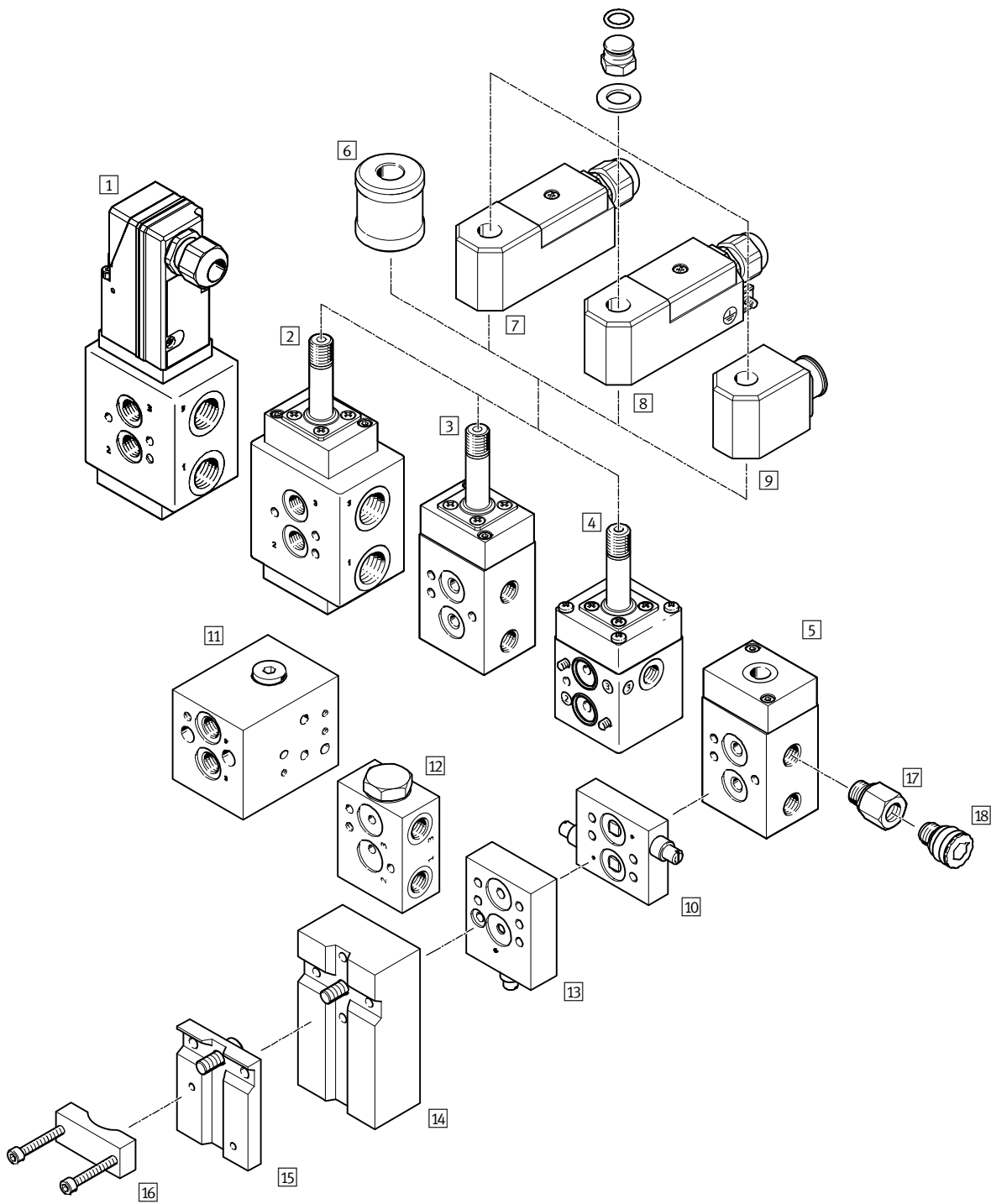
→ Page 144

Solenoid valves VOFC

Peripherals overview

01

Pilot valves



Peripherals overview

Mounting components and accessories			
	Brief description	→ Page/Internet	
1	Solenoid valve VOFC-LT-...-FG12-...-P3-...	Solenoid valve with valve pilot control, interface for pilot nozzle/baffle plate → Modular product system - Configurable via online configurator	86
2	Basic valve VOFC-LT-...-FG12-...-F19...	3/2-way valve, G1/2 port, poppet valve → Modular product system - Configurable via online configurator	86
3	Basic valve VOFC-L-...-FG14-...-F19...	3/2-way valve, G1/4 port, piston spool → Modular product system - Configurable via online configurator	86
4	Basic valve VOFC-LT-...-FG14-...-F19...	3/2-way valve, G1/4 port, poppet valve → Modular product system - Configurable via online configurator	86
5	Directional control valve VOFC-L-...-SG14/SN14-...	3/2-way valve, 5/2-way valve, G1/4 port, piston spool → Modular product system - Configurable via online configurator	86
6	Manual override VAOH-MB-S7-S13	Manual override (MO)	149
7	Solenoid coil VACC-S13-...3A	Type of ignition protection iA = intrinsically safe, for use in zone 1	140
8	Solenoid coil VACC-S13-...ME	Type of ignition protection ME = mould-encapsulated, for use in zone 1	142
9	Solenoid coil VACC-S13...A1	IP65, electrical port pattern type A to DIN EN 175-803	138
10	Flow control plate VABF-S7-F1B1P2-F	Exhaust-air flow control plate for NAMUR interface for installation between the solenoid valve and double-acting actuators	147
11	Sub-base VABS-S7-RB-B-...14-V14-A	For mounting two solenoid valves for redundant circuitry, with flange ¼, port pattern to NAMUR	144
12	Sub-base VABS-S7-BE-B-...14-V14-A	Pressurisation and exhaust block, with flange ¼, port pattern to NAMUR	144
13	Flow control plate VABF-S7-F1B5P1-F	Exhaust-air flow control plate for NAMUR interface for installation between the solenoid valve and single-acting actuators	147
14	Connection kit VABF-S7-S-G14	Mounting plate for attaching the valve to the NAMUR rib	147
15	Mounting plate VAME-S7-P	Mounting plate for attaching the valve to the NAMUR rib	146
16	Mounting bracket VAME-S7-Y	Alternative (instead of screw) for attaching the valve to the NAMUR rib using a mounting bracket	148
17	Adapter NPFV-AF-...-MF	Adapter with filter	148
18	Exhaust protection VABD-D3-SN-...	Exhaust protection IP65. The spring chamber of the solenoid valve is protected against the ingress of an aggressive ambient atmosphere and water by the non-return system	148

Type code VOFC



		-		-		-		-		-		-		-		-		-	
Exhaust																			
-	Without fitting																		
U6	With exhaust protection																		
Corrosion protection																			
-	Standard																		
R1	Stainless steel																		
Valve pilot control interface																			
P3	Interface for pilot nozzle/baffle plate																		
F19	Electrical system with armature tube for solenoid coil 13mm																		
F19A	Electrical system with armature tube for solenoid coil 13mm, intrinsically safe																		
SG14	Interface with thread G1/4																		
SN14	Interface with thread 1/4 NPT																		
Power consumption																			
-	Without																		
11	1.1 W																		
18	1.8 W																		
0,4	40 mW																		
0,09	9 mW																		
Nominal operating voltage																			
-	Without																		
1U	24 V DC and AC																		
2U	110 V DC and AC																		
3U	230 V DC and AC																		
1	24 V DC																		
27	60 V DC																		
Electrical connection																			
-	Without																		
A1	Plug pattern type A, to EN 175301																		
K4	Cable connector, metric																		
Circuitry																			
-	Without																		
F	Fuse																		
EU certification																			
-	Without																		
EX4	II 2GD																		
Type of ignition protection																			
-	Without																		
A	Intrinsically safe																		
ME	Moulded encapsulation, enhanced safety																		

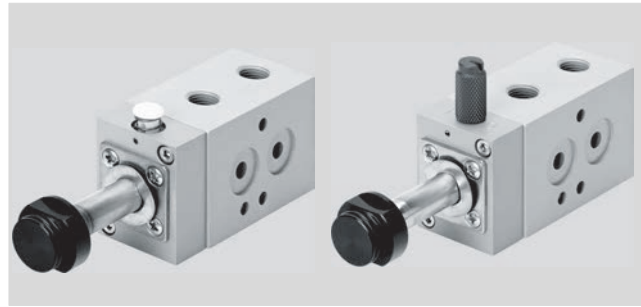
Solenoid valves VOFC-L ... F19/F19A/SN14/SG14

Technical data – Modular system, piston spool valve

Function

- 3/2-way solenoid valve
- 5/2-way single solenoid valve
- 5/2-way double solenoid valve

-  Temperature range
-25 ... +60 °C
-  Flow rate
913 ... 1030 l/min



01

Pilot valves

General technical data

Type VOFC-L-...	
Valve functions	3/2-way closed, single solenoid, 5/2-way single solenoid, 5/2-way double solenoid
Design	Piston spool
Sealing principle	Soft
Width [mm]	40
Mounting position	Any
Manual override	None Non-detenting Detenting
Reset method	Without Mechanical spring
Actuation type	Electrical
Type of pilot control	Pilot-actuated
Pilot air supply	Internal External
Flow rate for piston valve pressurisation [m³/h]	0.66 ... 1.08
Flow rate for piston valve exhaust [m³/h]	0.66 ... 1.08
Switching time off [ms]	22 (VOFC-L-B52-..., VOFC-L-M52-...)
Switching time on [ms]	26 (VOFC-L-B52-..., VOFC-L-M52-...)
Flow direction	Non-reversible
Nominal width [mm]	6
Standard nominal flow rate 1→2 [l/min.]	913 ... 1030
Standard nominal flow rate 2→3 [l/min.]	978 ... 983

Technical data, 5/2-way valve, single or double solenoid

VOFC-L-B52-G14-	1	G1/4	
VOFC-L-M52-...-G14-	2	G1/4	
	3	G1/4	
	4	G1/4	
	5	G1/4	
	VOFC-L-B52-N14-	1	1/4 NPT
VOFC-L-M52-...-N14-		2	1/4 NPT
		3	1/4 NPT
		4	1/4 NPT
		5	1/4 NPT
VOFC-L-B52-FG14-	1	G1/4	
	VOFC-L-M52-...-FG14-	2	Port pattern to NAMUR, flange 1/4
		3	G1/4
		4	Port pattern to NAMUR, flange 1/4
		5	G1/4
VOFC-L-B52-FN14-	1	1/4 NPT	
	VOFC-L-M52-...-FN14-	2	Port pattern to NAMUR, flange 1/4
		3	1/4 NPT
		4	Port pattern to NAMUR, flange 1/4
		5	1/4 NPT

Technical data – Modular system, piston spool valves

Technical data, 3/2-way valve, single or double solenoid		
VOFC-L-M32C-...-FG14-	1	G1/4
	2	Port pattern to NAMUR, flange 1/4
	3	G1/4

Technical data, weights		
Type	Weight of basic valve	Weight of pilot control -P3-
VOFC-L-B52-G14-...	790	170
VOFC-L-B52-N14-...	790	170
VOFC-L-B52-FG14-...	680	170
VOFC-L-M52-MH-G14-...	520	85
VOFC-L-M52-MY-G14-...	520	85
VOFC-L-M52-MH-FG14-...	520	85
VOFC-L-M52-MY-FG14-...	520	85
VOFC-L-M52-M-N14-...	520	85
VOFC-L-M32C-MH-FG14-...	520	85
VOFC-L-M32C-MY-FG14-...	520	85
VOFC-L-M52-MZ-...	430	-
VOFC-L-M32C-MZ-...	430	-

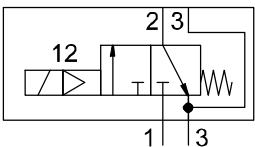
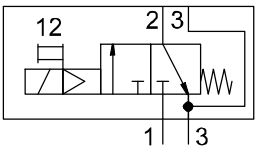
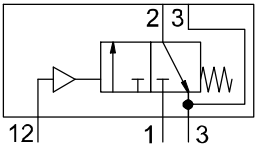
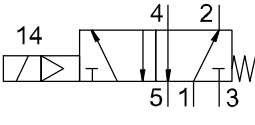
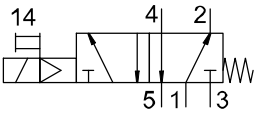
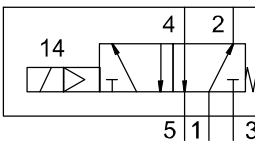
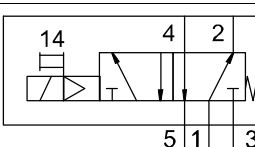
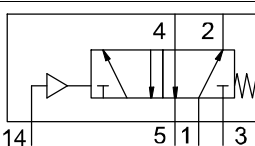
Operating and environmental conditions		
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]	
Degree of protection	IP50, IP65	
Operating pressure range	[bar]	2.5 ... 8
	[psi]	36 ... 116
Temperature of medium	[°C]	-25 ... +60
Ambient temperature	[°C]	-25 ... +60
Safety Integrity Level	[SIL]	Up to SIL2 Low Demand mode
		Up to SIL2 High Demand mode
Corrosion resistance class CRC ¹⁾	4	
Note on materials	Contains paint-wetting impairment substances	
	RoHS-compliant	

- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Materials	VOFC-L-...	VOFC-L-...-P3
	Housing	Aluminium (Ematal coated)
Seals	NBR	NBR, EPDM, VMQ

Solenoid valves VOFC-L

Technical data – Modular system, piston spool valves

Valve functions	Type code	Description
	VOFC-L-M32C-M-FG14-...	3/2-way valve, single solenoid, closed <ul style="list-style-type: none"> Electrically pilot-actuated Non-reversible With spring return Internal pilot air With NAMUR port Without manual override (MO)
	VOFC-L-M32C-MH-FG14-... (MO non-detenting) VOFC-L-M32C-MY-FG14-... (MO detenting)	3/2-way valve, single solenoid, closed <ul style="list-style-type: none"> Electrically pilot-actuated Non-reversible With spring return Internal pilot air With NAMUR port With manual override (MO)
	VOFC-L-M32C-MZ-...	3/2-way valve, single solenoid, closed <ul style="list-style-type: none"> Pneumatically pilot-actuated Non-reversible With spring return External pilot air supply With NAMUR port Without manual override (MO)
	VOFC-L-M52-M-G14-... VOFC-L-M52-M-N14-...	5/2-way valve, single solenoid <ul style="list-style-type: none"> Electrically pilot-actuated Non-reversible With spring return Internal pilot air Without manual override (MO)
	VOFC-L-M52-MH-G14-... (MO non-detenting) VOFC-L-M52-MY-G14-... (MO detenting) VOFC-L-M52-MH-N14-... (MO non-detenting) VOFC-L-M52-MY-N14-... (MO detenting)	5/2-way valve, single solenoid <ul style="list-style-type: none"> Electrically pilot-actuated Non-reversible With spring return Internal pilot air With manual override (MO)
	VOFC-L-M52-M-FG14-... VOFC-L-M52-M-FN14-...	5/2-way valve, single solenoid <ul style="list-style-type: none"> Electrically pilot-actuated Non-reversible With spring return Internal pilot air With NAMUR port Without manual override (MO)
	VOFC-L-M52-MH-FG14-... (MO non-detenting) VOFC-L-M52-MY-FG14-... (MO detenting) VOFC-L-M52-MH-FN14-... (MO non-detenting) VOFC-L-M52-MY-FN14-... (MO detenting)	5/2-way valve, single solenoid <ul style="list-style-type: none"> Electrically pilot-actuated Non-reversible With spring return Internal pilot air With NAMUR port With manual override (MO)
	VOFC-L-M52-MZ-...	5/2-way valve, single solenoid <ul style="list-style-type: none"> Pneumatically pilot-actuated Non-reversible With spring return External pilot air supply With NAMUR port Without manual override (MO)

01

Pilot valves

Technical data – Modular system, piston spool valves

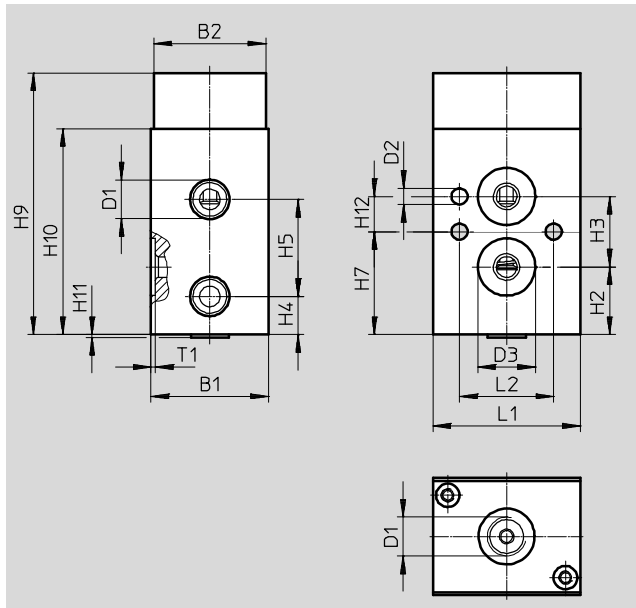
Valve functions		
Circuit symbol	Type code	Description
	VOFC-L-B52-G14-... VOFC-L-B52-N14-...	5/2-way solenoid valve, double solenoid <ul style="list-style-type: none"> • Electrically pilot-actuated • Non-reversible • Internal pilot air • Without manual override (MO)
	VOFC-L-B52-H-G14-... (MO non-detenting) VOFC-L-B52-H-N14-... (MO non-detenting)	5/2-way solenoid valve, double solenoid <ul style="list-style-type: none"> • Electrically pilot-actuated • Non-reversible • Internal pilot air • With manual override (MO)
	VOFC-L-B52-FG14-... VOFC-L-B52-FN14-...	5/2-way solenoid valve, double solenoid <ul style="list-style-type: none"> • Electrically pilot-actuated • Non-reversible • Internal pilot air • With NAMUR port • Without manual override (MO)
	VOFC-L-B52-H-FG14-... (MO non-detenting)	5/2-way solenoid valve, double solenoid <ul style="list-style-type: none"> • Electrically pilot-actuated • Non-reversible • Internal pilot air • With NAMUR port • With manual override (MO)

Solenoid valves VOFC-L ... SN14/SG14

Technical data – Modular system, piston spool valves

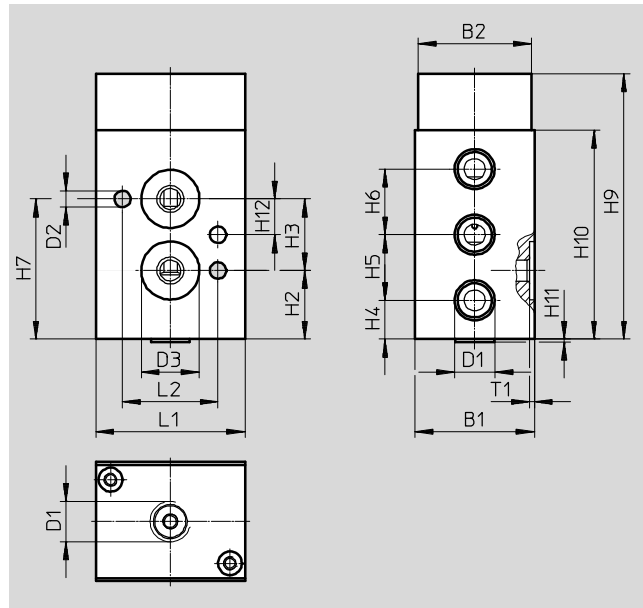
Dimensions

3/2-way valves (without armature tube)
Interface -SG14/-SN14



Download CAD data → www.festo.com

5/2-way valves (without armature tube)
Interface -SG14/-SN14



01

Pilot valves

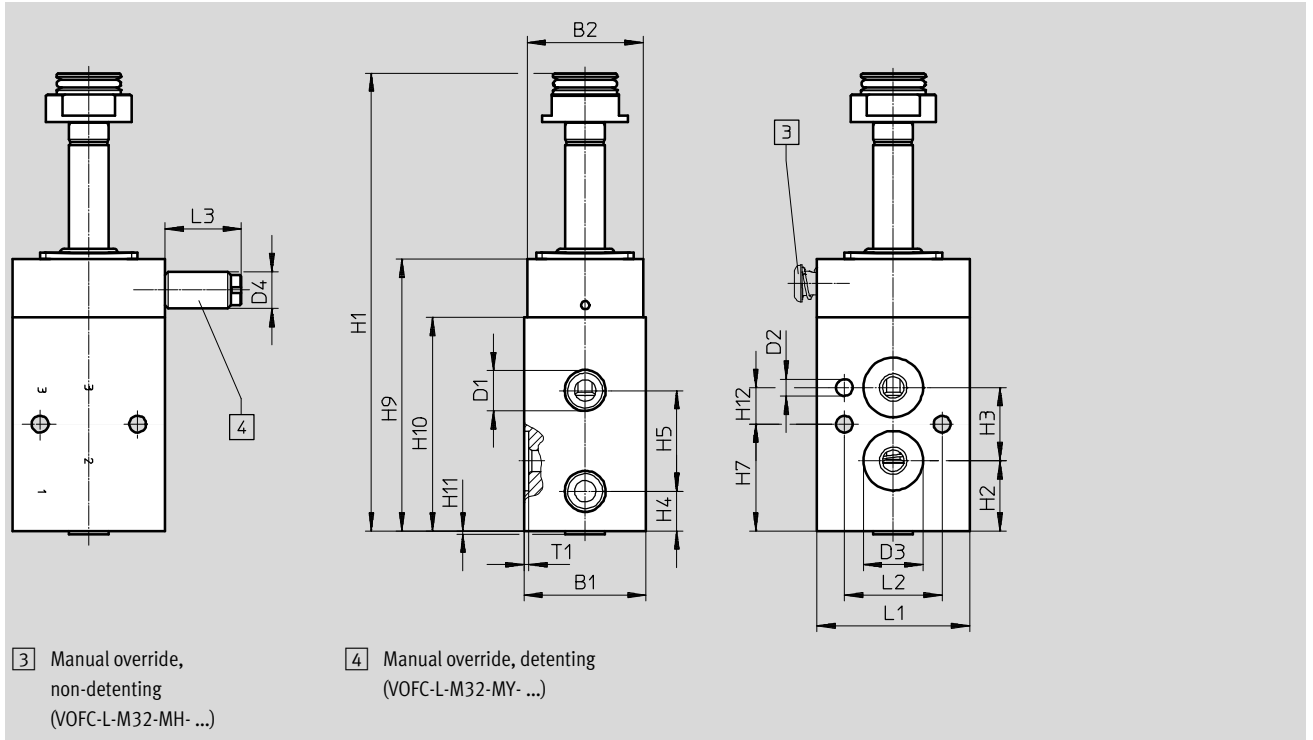
Type	B1	B2	D1	D2 ∅	D3 ∅	H2	H3	H4	H5	H6	H7	H9	H10	H11	H12	L1	L2	T1
VOFC-L-M32-MZ-FG14-SG14-...	40	38	G1/4	5.5	19.5	23	24	13	33	-	35	89	70	1	12	50	32	1.6
VOFC-L-M32-MZ-FN14-SN14-...			1/4 NPT															
VOFC-L-M52-MZ-FG14-SG14-...			G1/4						22	22	47							
VOFC-L-M52-MZ-FN14-SN14-...			1/4 NPT															

Technical data – Modular system, piston spool valves

Dimensions

Download CAD data → www.festo.com

3/2-way valves, basic valve



Type	B1	B2	D1	D2 ∅	D3 ∅	D4 ∅	H1	H2	H3	H4	H5	H7	H9	H10	H11	H12	L1	L2	L3	T1
VOFC-L-M32-M-FG14-...	40	38	G1/4	5.5	19.5	-	150	23	24	13	33	35	89	70	1	12	50	32	-	1.6
VOFC-L-M32-MH-FG14-...						25														
VOFC-L-M32-MY-FG14-...						12														

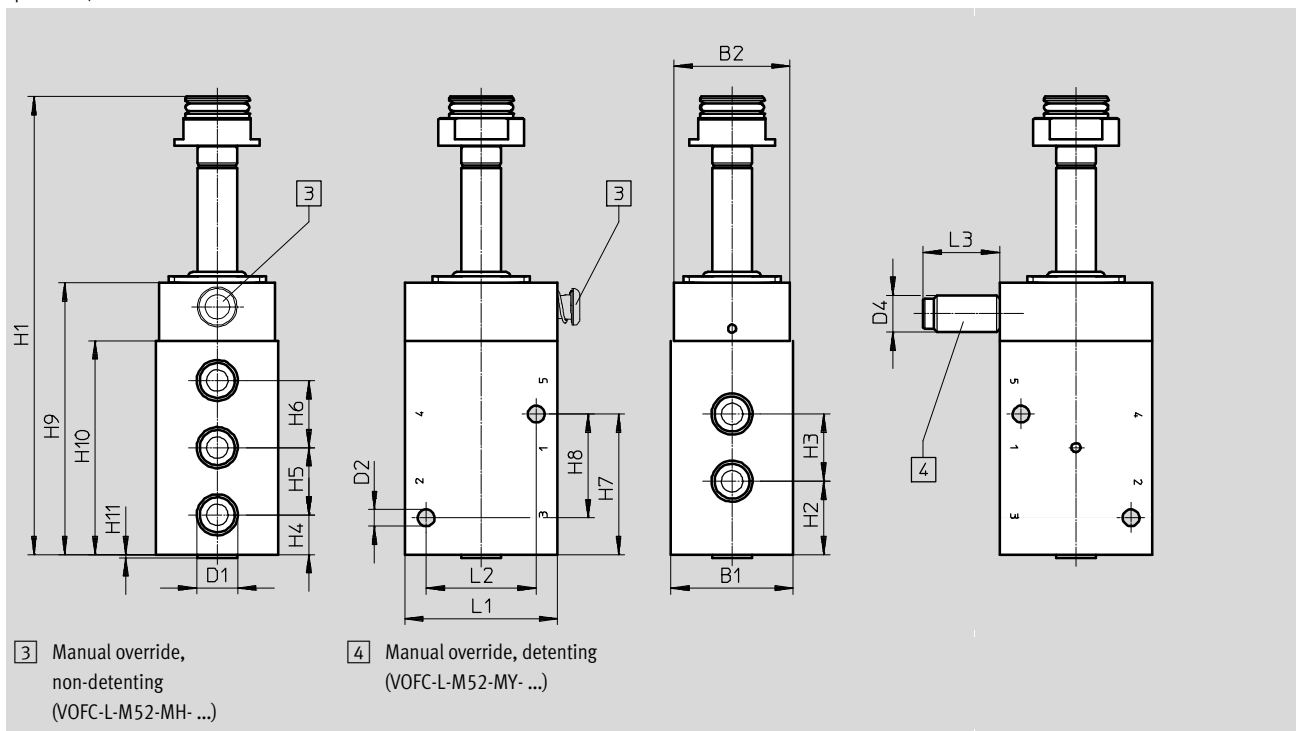
Solenoid valves VOFC-L ... F19/F19A

Technical data – Modular system, piston spool valves

Dimensions

5/2-way valves, basic valve,
port -G14/-N14

Download CAD data → www.festo.com



Type	B1	B2	D1	D2 Ø	D4 Ø	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	L1	L2	L3	
VOFC-L-M52-M-G14-...	40	38	G1/4	5.5	-	150	24	22	13	22	22	46	34	89	70	1	50	36	-	
VOFC-L-M52-MH-G14-...																				
VOFC-L-M52-M-N14-...			1/4 NPT																	
VOFC-L-M52-MH-N14-...																				
VOFC-L-M52-MY-G14-...			G1/4		12															25

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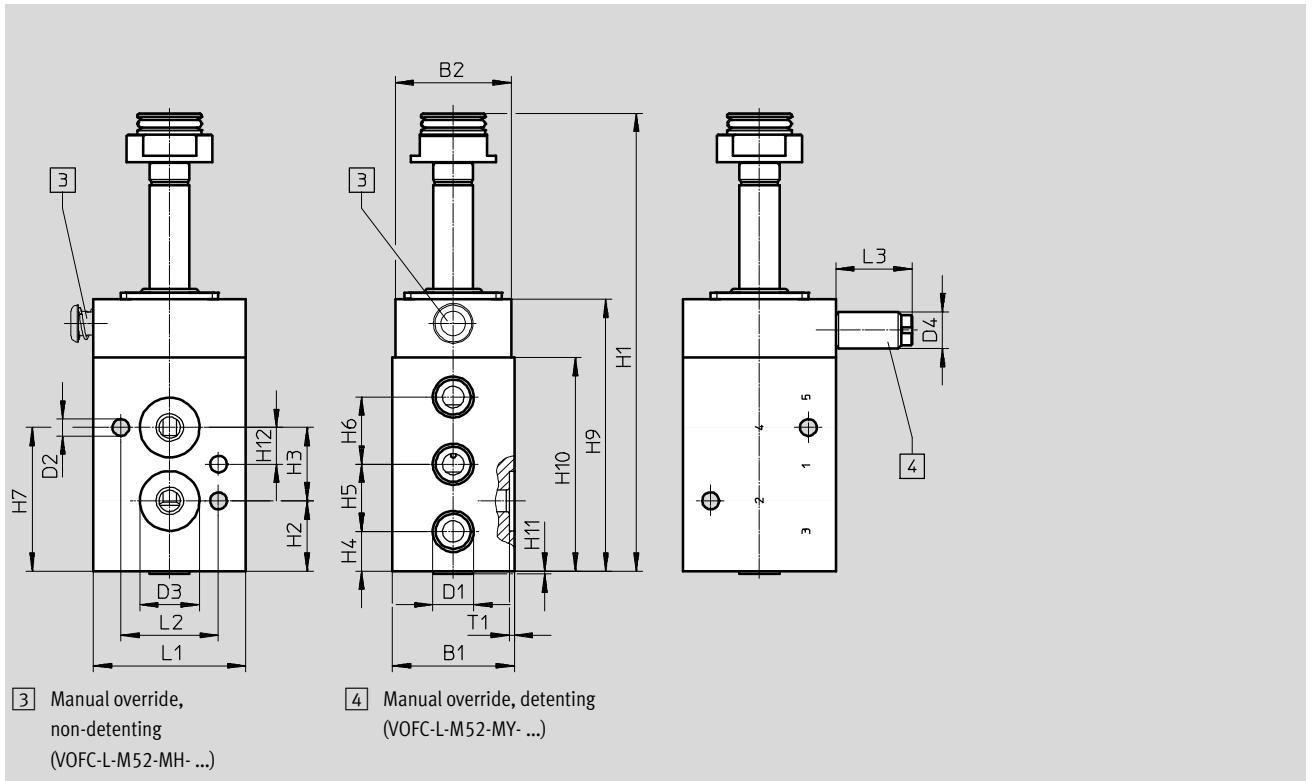
Pilot valves

Technical data – Modular system, piston spool valves

Dimensions

5/2-way valves, basic valve,
port -FG14

Download CAD data → www.festo.com



Type	B1	B2	D1	D2 ∅	D3 ∅	D4 ∅	H1	H2	H3	H4	H5	H6	H7	H9	H10	H11	H12	L1	L2	L3	T1
VOFC-L-M52-M-FG14-...	40	38	G1/4	5.5	19.5	-	150	23	24	13	22	22	47	89	70	1	12	50	32	-	1.6
VOFC-L-M52-MH-FG14-...						12														25	
VOFC-L-M52-MY-FG14-...																					

Solenoid valves VOFC-L ... F19/F19A

Technical data – Modular system, piston spool valves

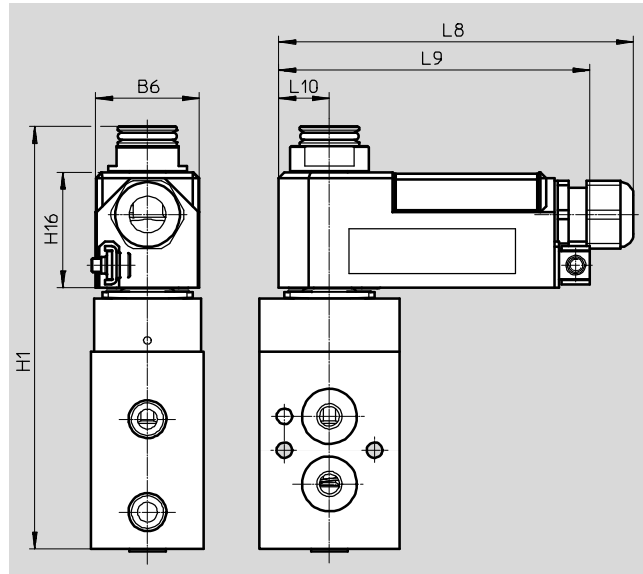
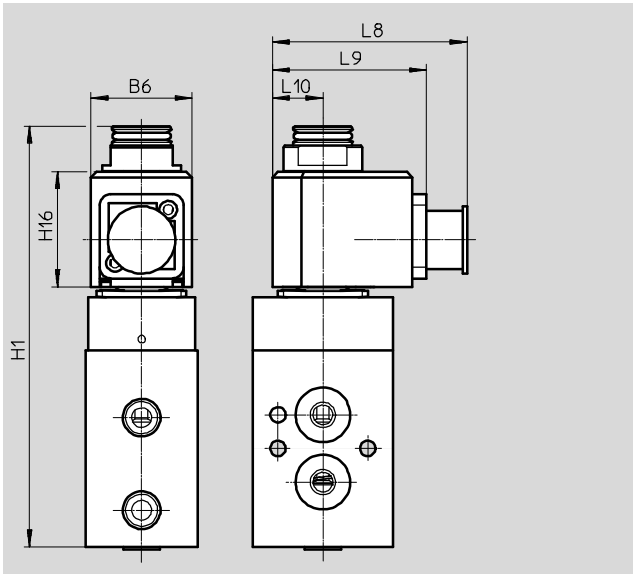
Dimensions

Single solenoid valves with solenoid coil

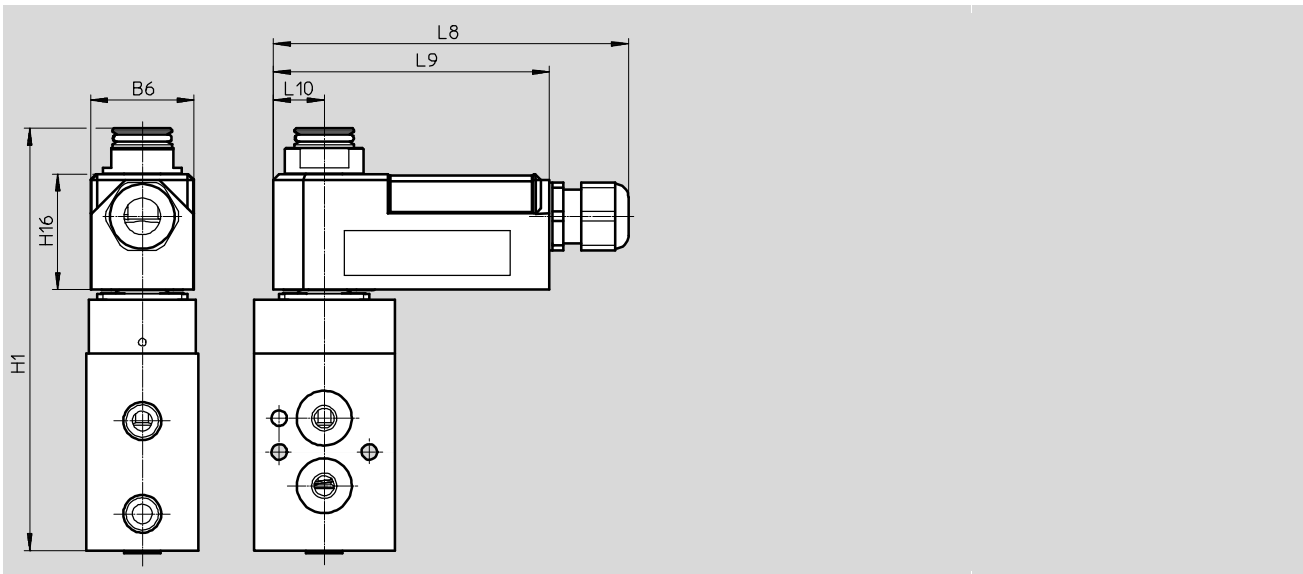
Download CAD data → www.festo.com

VOFC-...-18-A1-...

VOFC-...-18-K4-...-EX4ME



VOFC-...-11-K4-1-EX4A



Type	B6	H1	H16	L8	L9	L10
VOFC-...-18-A1-...	36	150	41	69.4	55	18
VOFC-...-18-K4-...-EX4ME	37	150	41	125	111	18
VOFC-...-11-K4-1-EX4A	37	150	41	125	98	18

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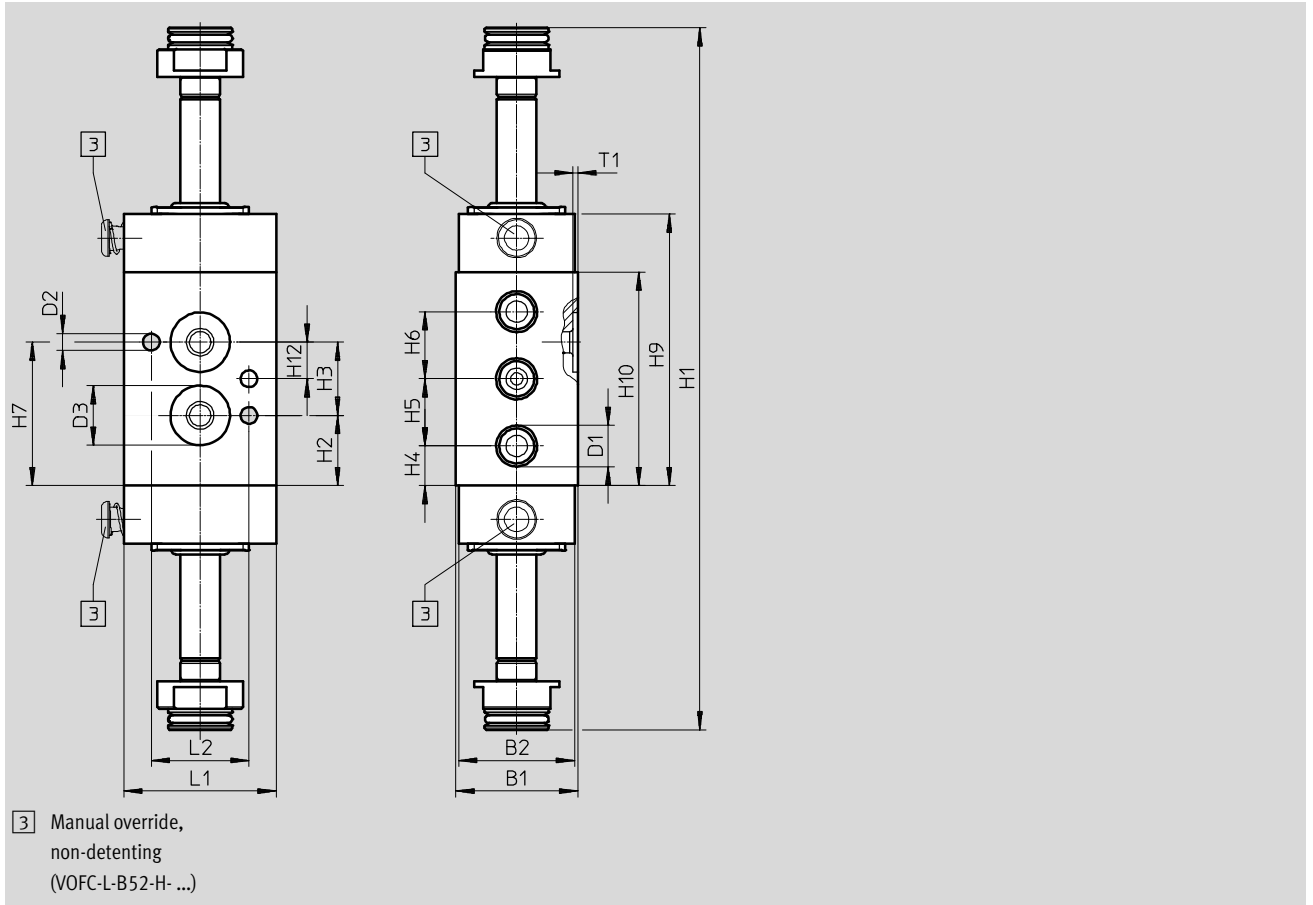
Pilot valves

Technical data – Modular system, piston spool valves

Dimensions

5/2-way valves, double solenoid, basic valve port -FG

Download CAD data → www.festo.com



Type	B1	B2	D1	D2 ∅	D3 ∅	H1	H2	H3	H4	H5	H6	H7	H9	H10	H12	L1	L2	T1
VOFC-L-B52-...-FG14-...	40	38	G1/4	5.5	19.5	230	23	24	13	22	22	47	89	70	12	50	32	1.6
VOFC-L-B52-H-...-FG14-...																		

Solenoid valves VOFC-L ... F19/F19A

Technical data – Modular system, piston spool valves

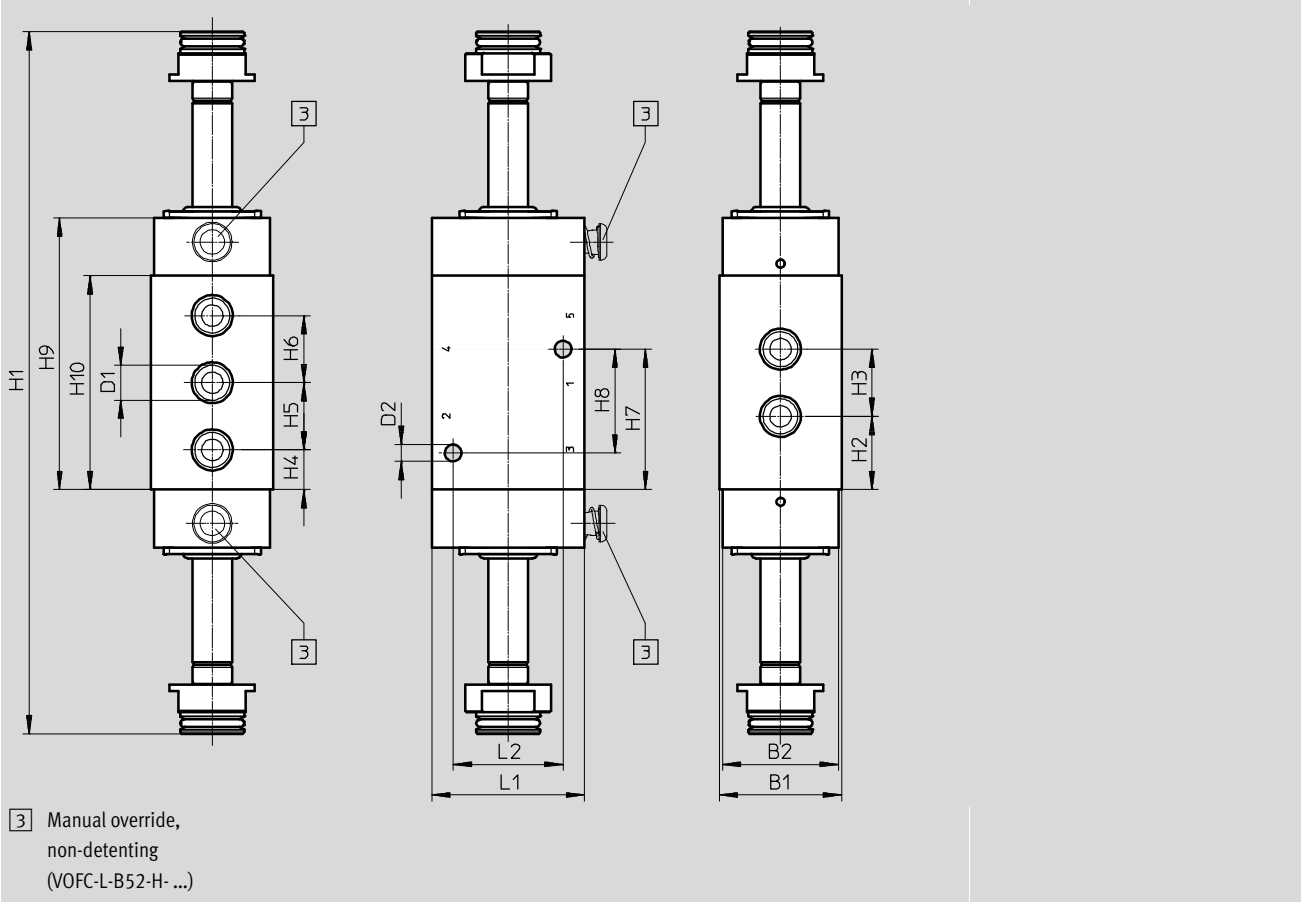
Dimensions

5/2-way valves, double solenoid, basic valve
port -G14/-N14

Download CAD data → www.festo.com

01

Pilot valves



Type	B1	B2	D1	D2 Ø	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	L1	L2
VOFC-L-B52-...-G14-...	40	38	G1/4	5.5	230	24	22	13	22	22	46	34	89	70	50	36
VOFC-L-B52-H-G14-...			1/4 NPT													
VOFC-L-B52-...-N14-...																
VOFC-L-B52-H-N14-...																

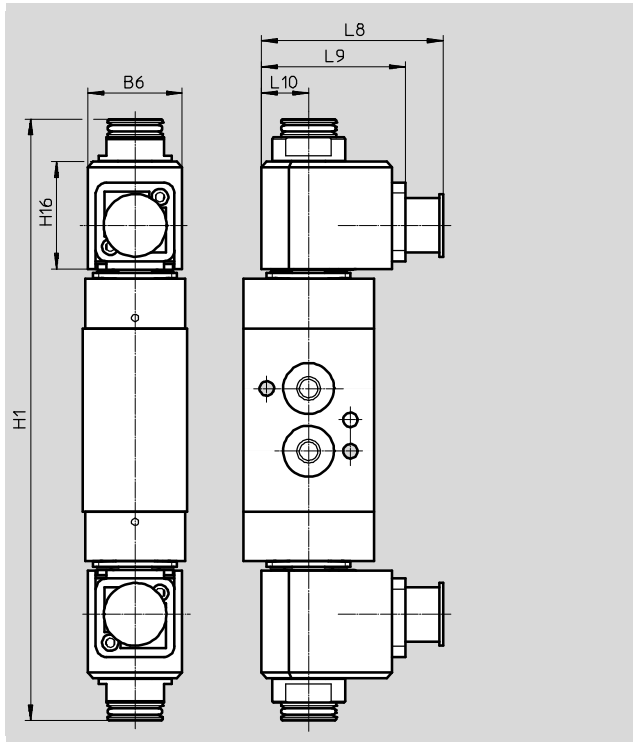
Solenoid valves VOFC-L ... F19/F19A

Technical data – Modular system, piston spool valves

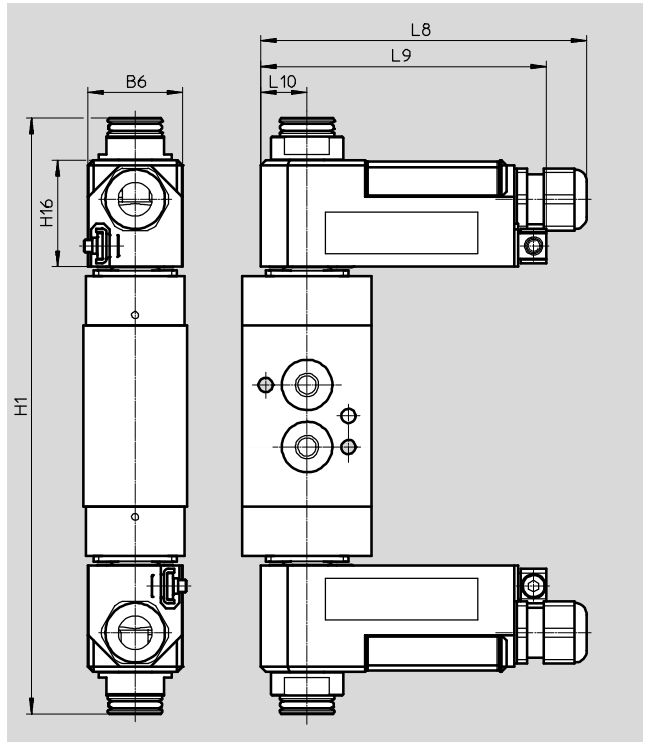
Dimensions

Double solenoid valves with solenoid coil
VOFC-...-18-A1-...

Download CAD data → www.festo.com



VOFC-...-18-K4-...-EX4ME



Type	B6	H1	H16	L8	L9	L10
VOFC-...-18-A1-...	36	230	41	69.4	55	18
VOFC-...-18-K4-...-EX4ME	37	230	41	125	111	18

Solenoid valves VOFC-L ... F19/F19A

Technical data – Modular system, piston spool valves

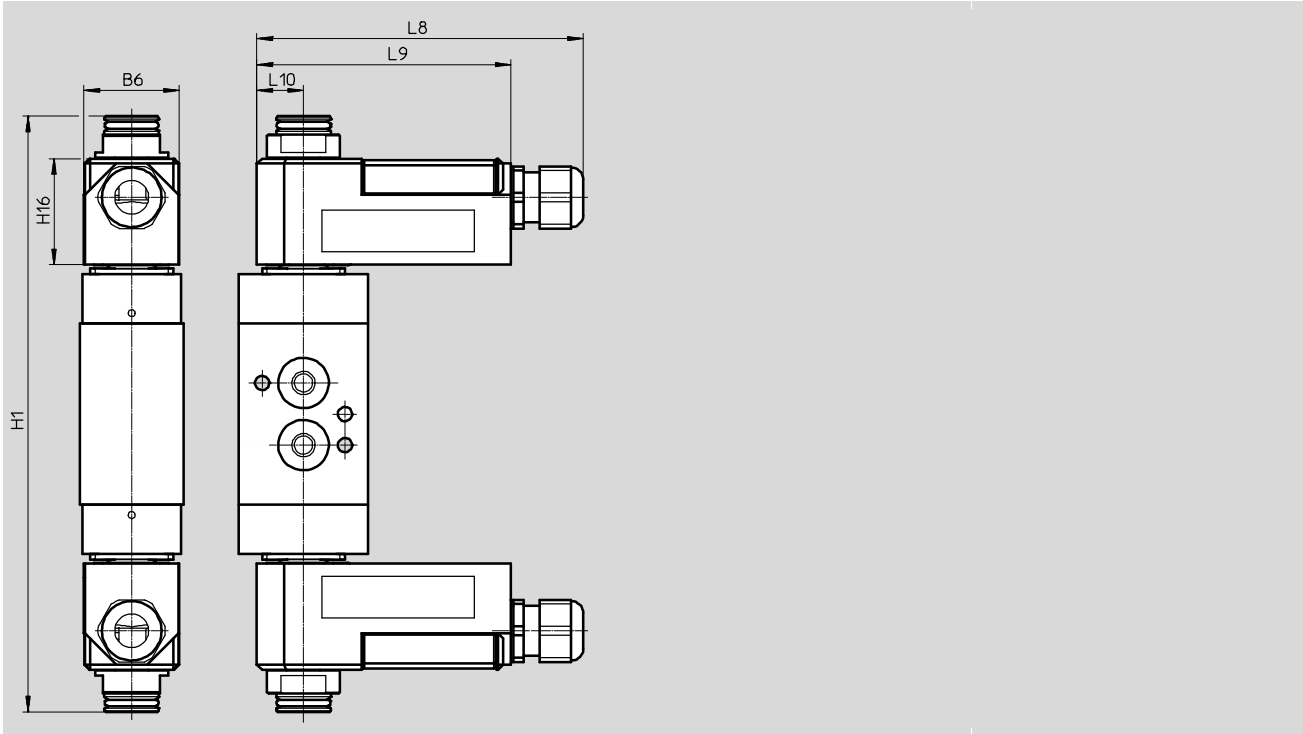
Dimensions

Double solenoid valves with solenoid coil
VOFC-...-11-K4-1-EX4A

Download CAD data → www.festo.com

01

Pilot valves



Type	B6	H1	H16	L8	L9	L10
VOFC-...-11-K4-1-EX4A	37	230	41	125	98	18

Technical data – Modular system, piston spool valves

Solenoid valve, nozzle/baffle plate
(VOFC-...-P3-...)



Technical data, solenoid valve, nozzle/baffle plate		
Type	VOFC-...-P3-...-0.09-...-EX4A	VOFC-...-P3-...-0.4-...-EX4A
With pilot control unit	VACC-P3-0.09-K4-1-EX4A	VACC-P3-0.4-K4-1-EX4A
Design	Nozzle/baffle plate pilot control	
Operating voltage range	[V DC] 6.4 ... 40	16 ... 40
Degree of protection	IP 50	
Reverse polarity protection	Bipolar	
Duty cycle	[%] 100	
Max. input power Pi	[mW] 650	
Max. input voltage Ui	[V] 40	
Max. input current Ii	[mA] 200	
Effective internal capacitance Ci	Negligibly low	
Effective internal inductance Li	Negligibly low	
ATEX category for gas	II 2G	
Type of ignition protection for gas	Ex ia IIC T6, T5 Gb	
ATEX category for dust	II 2D	
Type of ignition protection for dust	Ex ia IIIC T85°C, T125°C Db	
Explosion-proof ambient temperature	[°C]	T5, T125: -40 ≤ Ta ≤ +70 T6, T85: -40 ≤ Ta ≤ +30
Certificate issuing authority	BVS14ATEXE098X IECEx BVS14.0063X KGS15-GA4BO-0565X	
Notified body for quality testing	0344	
Explosion protection certification outside the EU	EPL Gb (IEC-EX) EPL Db (IEC-EX) EPL Gb (KR) EPL Db (KR)	
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)	
Insulation class	H	
Electrical connection	Terminal box, cable entry, thread M20 x 1.5, conductor cross-section max. 1.5 mm ² , cable diameter 5-9 mm	
Information on materials for solenoid coil	PBT-reinforced, UP	

Solenoid valves VOFC-L ... P3

Technical data – Modular system, piston spool valves

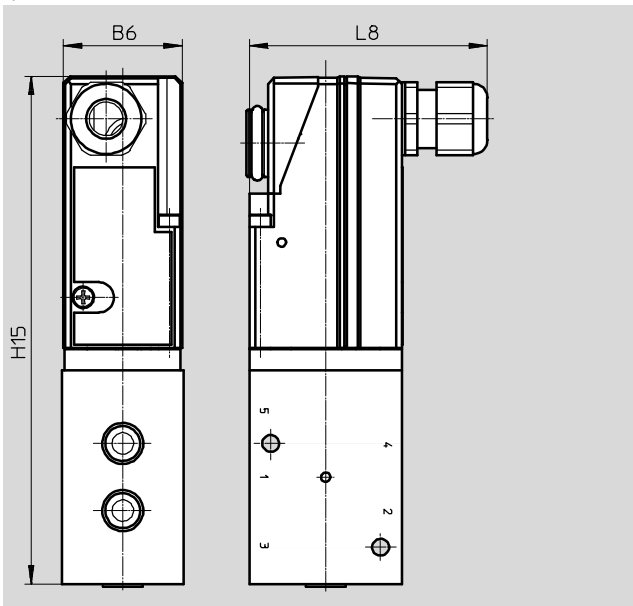
Dimensions

Solenoid valve with nozzle/baffle plate, pilot port -G14/-N14

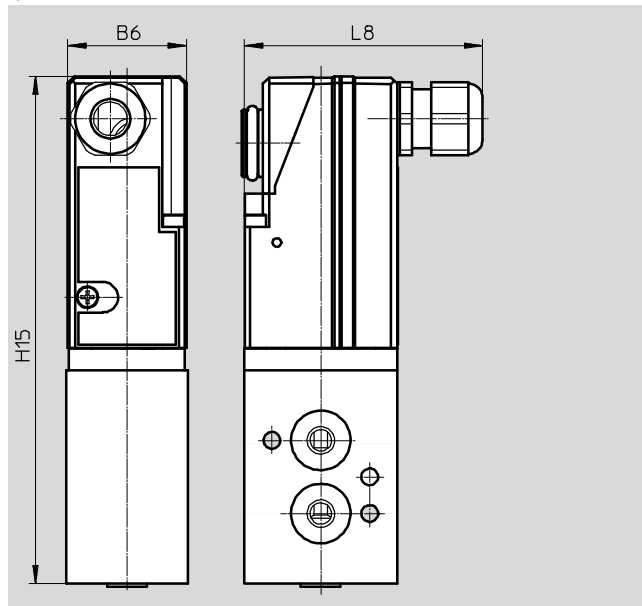
Download CAD data → www.festo.com

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Pilot valves



port -FG14



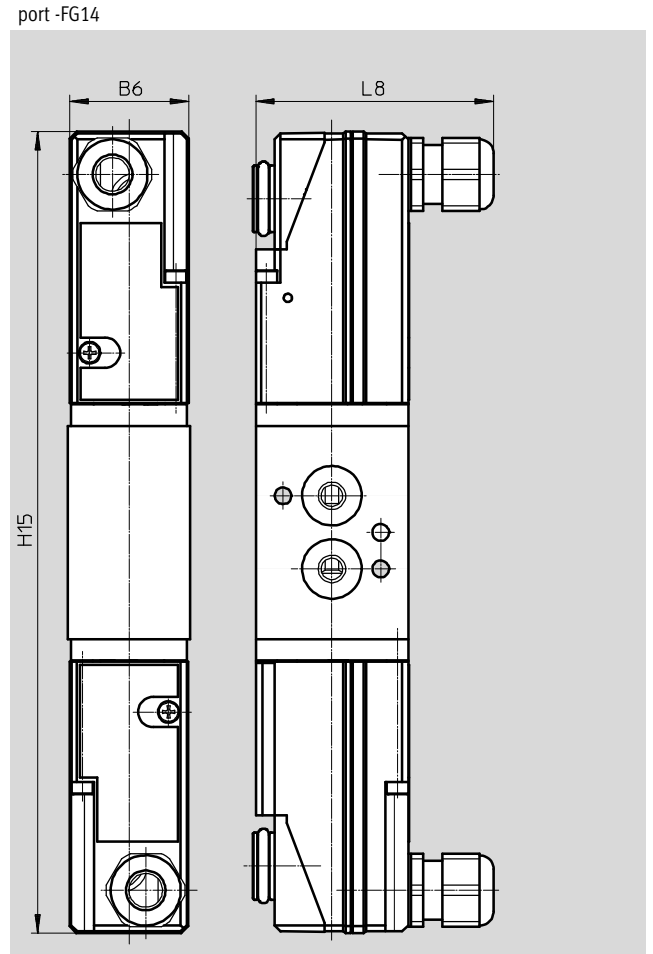
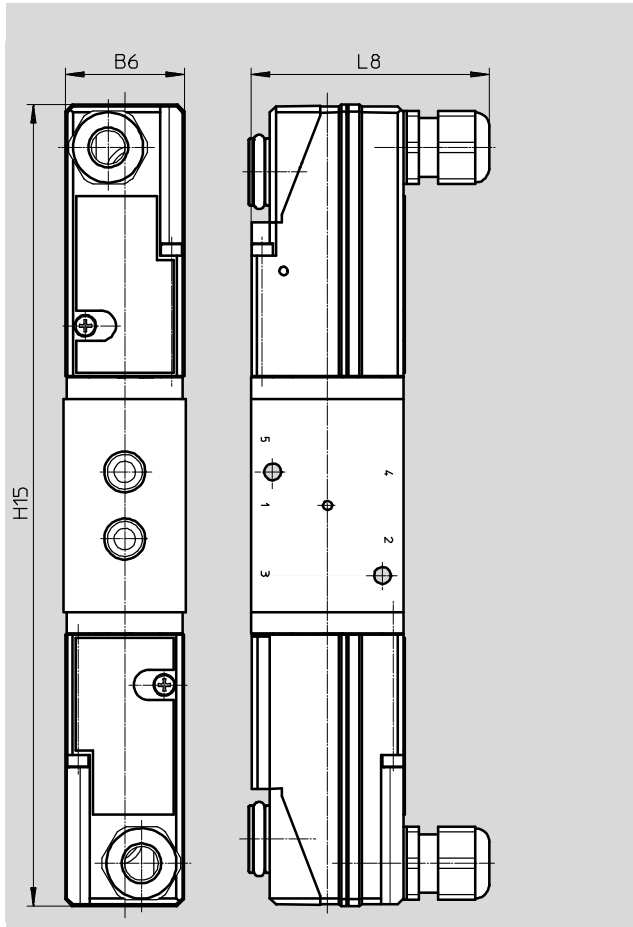
Type	B6	H15	L8
VOFC-L-M52-M...-G14-P3-0.4-1-K4-EX4A	39	167	76
VOFC-L-M52-M...-N14-P3-0.4-1-K4-EX4A			
VOFC-L-M52-M...-FG14-P3-0.4-1-K4-EX4A			
VOFC-L-M52-M...-G14-P3-0.09-1-K4-EX4A			
VOFC-L-M52-M...-N14-P3-0.09-1-K4-EX4A			
VOFC-L-M52-M...-FG14-P3-0.09-1-K4-EX4A			

Technical data – Modular system, piston spool valves

Dimensions

Double solenoid valve with nozzle/baffle plate pilot port -G14/-N14

Download CAD data → www.festo.com




Type	B6	H15	L8
VOFC-L-B52-...-G14-P3-0.4-1-K4-EX4A	39	263	76
VOFC-L-B52-...-N14-P3-0.4-1-K4-EX4A			
VOFC-L-B52-...-FG14-P3-0.4-1-K4-EX4A			
VOFC-L-B52-...-G14-P3-0.09-1-K4-EX4A			
VOFC-L-B52-...-N14-P3-0.09-1-K4-EX4A			
VOFC-L-B52-...-FG14-P3-0.09-1-K4-EX4A			


Solenoid valves VOFC-LT ... F19/F19A

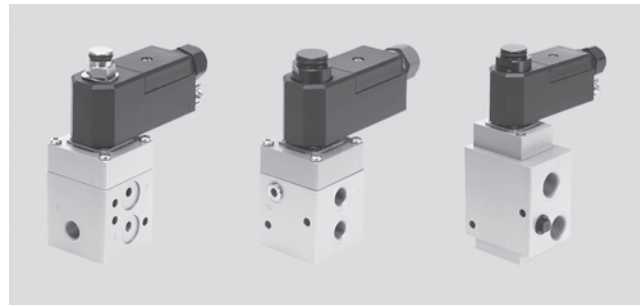
Technical data – Modular system, poppet valves

Function

- 3/2-way solenoid valve

-  - Temperature range
-25 ... +60 °C

-  - Flow rate
766 ... 2686 l/min



01

Pilot valves

General technical data

Type	VOFC-LT-M32C-M...12-... VOFC-LT-M32C-M...13-...	VOFC-LT-M32C-M...14-...
Valve functions	3/2-way single solenoid valve	
Design	Poppet valve	
Sealing principle	Hard	
Width [mm]	51	
Mounting position	Any	
Manual override	None	
Type of reset	Mechanical spring	
Actuation type	Electrical	
Type of control	Pilot-actuated	
Pilot air supply	Internal Internal/external	
Flow rate for piston valve pressurisation [m³/h]	0.5 ... 2.4	
Flow rate for piston valve exhaust [m³/h]	0.65 ... 3.3	
Switching time off [ms]	14	18
Switching time on [ms]	25	24
Direction of flow	Non-reversible	
Nominal width [mm]	6 ... 12	
Standard nominal flow rate 1 → 2 [l/min.]	766 ... 2686	
Standard nominal flow rate 2 → 3 [l/min.]	1467 ... 3462	

Technical data of pneumatic connection, type VOFC-LT-...14-...

VOFC-LT-M32C-...-G14-...	1	G1/4
	2	G1/4
	3	G1/4
VOFC-LT-M32C-...-N14-...	1	1/4 NPT
	2	1/4 NPT
	3	1/4 NPT
VOFC-LT-M32C-...-FG14-...	1	G1/4
	2	Port pattern to NAMUR, flange 1/4
	3	G1/4
VOFC-LT-M32C-...-FGP14-...	1	Port pattern to M 5 NAMUR
	2	Port pattern to NAMUR, flange 1/4
	3	G1/4
VOFC-LT-M32C-...-FNP14-...	1	Port pattern to M 5 NAMUR
	2	Port pattern to NAMUR, flange 1/4
	3	1/4 NPT
VOFC-LT-M32C-...-FN14-...	1	1/4 NPT
	2	Port pattern to NAMUR, flange 1/4
	3	1/4 NPT

Technical data – Modular system, poppet valves

Technical data of pneumatic connection, type VOFC-LT-...12-..., type VOFC-LT-...13-...		
VOFC-LT-M32C-...-G12-...	1	G1/2
	2	G1/2
	3	G1/2
VOFC-LT-M32C-...-N12-...	1	1/2 NPT
	2	1/2 NPT
	3	1/2 NPT
VOFC-LT-M32C-...-FG12-...	1	G1/2
	2	Port pattern to NAMUR, flange 1/4
	3	G1/2
VOFC-LT-M32C-...-FN12-...	1	1/2 NPT
	2	Port pattern to NAMUR, flange 1/4
	3	1/2 NPT
VOFC-LT-M32C-...-FG13-...	1	G1/2
	2	Port pattern to NAMUR, flange 1/2
	3	G1/2
VOFC-LT-M32C-...-FN13-...	1	1/2 NPT
	2	Port pattern to NAMUR, flange 1/2
	3	1/2 NPT

Technical data, weights		
Type	Weight of basic valve	Weight of pilot control -P3-
VOFC-LT-M32C-M...12-...	880	85
VOFC-LT-M32C-MC-G14-...	550	85
VOFC-LT-M32C-MC-N14-...	550	85
VOFC-LT-M32C-M-F...14-...	600	85
VOFC-LT-M32C-MC-F...P14-...	600	85
VOFC-LT-M32C-MC-F...13-...	900	85

Operating and environmental conditions					
Type VOFC-LT-...	-M32C-M-...12-...	-M32C-M-...14-...	-M32C-MC-...12-... -M32C-MC-...13-...	-M32C-MC-...14-...	-M32C-MZ-...14-...
Operating medium	Compressed air to ISO 8573-1:2010 [7: - : -]				
Degree of protection	IP50, IP65				
Operating pressure range	[bar] 2 ... 8	1 ... 8	2 ... 8	1 ... 8	0 ... 8
	[psi] 29 ... 116	15 ... 116	29 ... 116	15 ... 116	0 ... 116
Note on operating pressure	[bar] -	0 ... 8 (for external pilot air)			
Pilot pressure	[bar] -	>2			
Temperature of medium	[°C] -25 ... +60				
Ambient temperature	[°C] -25 ... +60				
Safety Integrity Level	[SIL] Up to SIL3 Low Demand mode Up to SIL3 High Demand mode				
Corrosion resistance class CRC ¹⁾	4				
Note on materials	Contains paint-wetting impairment substances RoHS compliant				

- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Materials			
Type	VOFC-LT-...	VOFC-LT-...-R1-...	VOFC-LT-...-P3-...
Housing	Aluminium (Ematal coated)	High-alloy stainless steel	Aluminium, Ematal coated, PBT-reinforced
Seals	NBR	NBR	NBR, EPDM, VMQ

Solenoid valves VOFC-LT

Technical data – Modular system, poppet valves

Valve functions		
Circuit symbol	Type code	Description
	VOFC-LT-M32C-M-FG12- VOFC-LT-M32C-M-FG14- VOFC-LT-M32C-M-FN12- VOFC-LT-M32C-M-FN14-	3/2-way valve, single solenoid, closed <ul style="list-style-type: none"> • Electrically pilot-actuated • Non-reversible • With spring return • Internal pilot air supply • With NAMUR port • Without manual override • One-way flow control valve
	VOFC-LT-M32C-MC-G12- VOFC-LT-M32C-MC-G14- VOFC-LT-M32C-MC-N12- VOFC-LT-M32C-MC-N14-	3/2-way valve, single solenoid, closed <ul style="list-style-type: none"> • Electrically pilot-actuated • Non-reversible • With spring return • Pilot air supply, internal/external • Without manual override • One-way flow control valve
	VOFC-LT-M32C-MC-FG13- VOFC-LT-M32C-MC-FN13-	3/2-way valve, single solenoid, closed <ul style="list-style-type: none"> • Electrically pilot-actuated • Non-reversible • With spring return • Pilot air supply, internal/external • With NAMUR port • Without manual override • One-way flow control valve
	VOFC-LT-M32C-MC-FGP14- VOFC-LT-M32C-MC-FNP14-	3/2-way valve, single solenoid, closed <ul style="list-style-type: none"> • Electrically pilot-actuated • Non-reversible • With spring return • Pilot air supply, internal/external • With NAMUR port and additional supply port • Without manual override • One-way flow control valve

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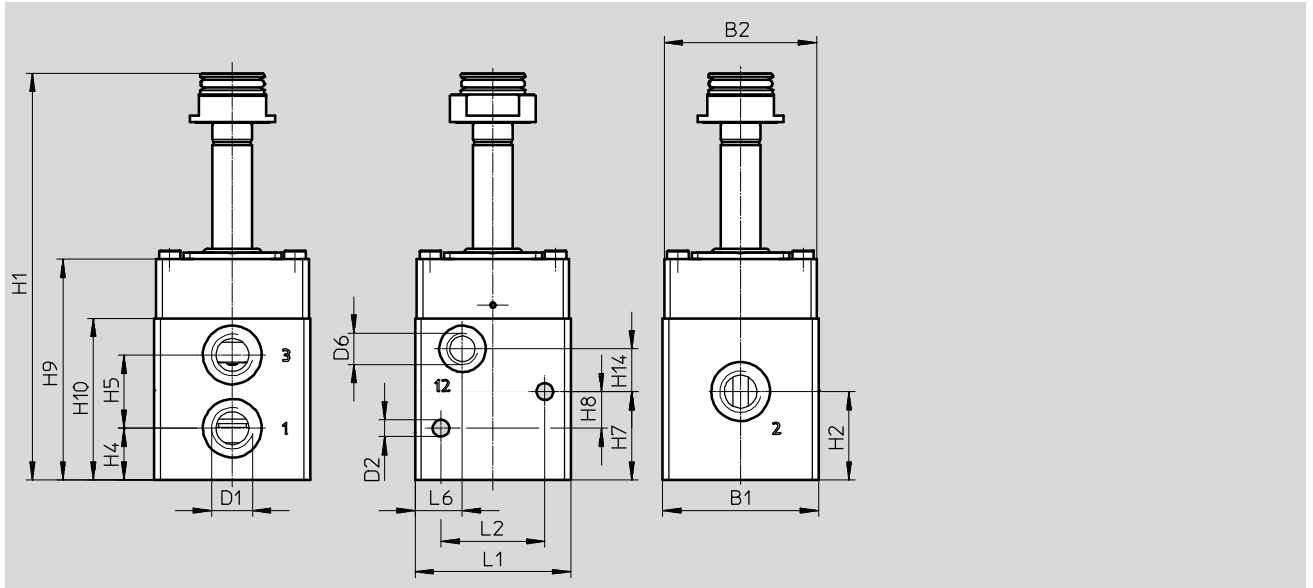
Pilot valves

Technical data – Modular system, poppet valves

Dimensions

Download CAD data → www.festo.com

3/2-way valves, basic valve, port - G14/-N14



Type	B1	B2	D1	D2 ∅	H1	H2	H4	H5
VOFC-LT-M32C-MC-G14-...	51	50	G1/4	5.5	133	29	17	24
VOFC-LT-M32C-MC-N14-...			1/4 NPT					

Type	H7	H8	H9	H10	H14	L1	L2	L6
VOFC-LT-M32C-MC-G14-...	29	12	72	53	14	51	34	15.5
VOFC-LT-M32C-MC-N14-...								

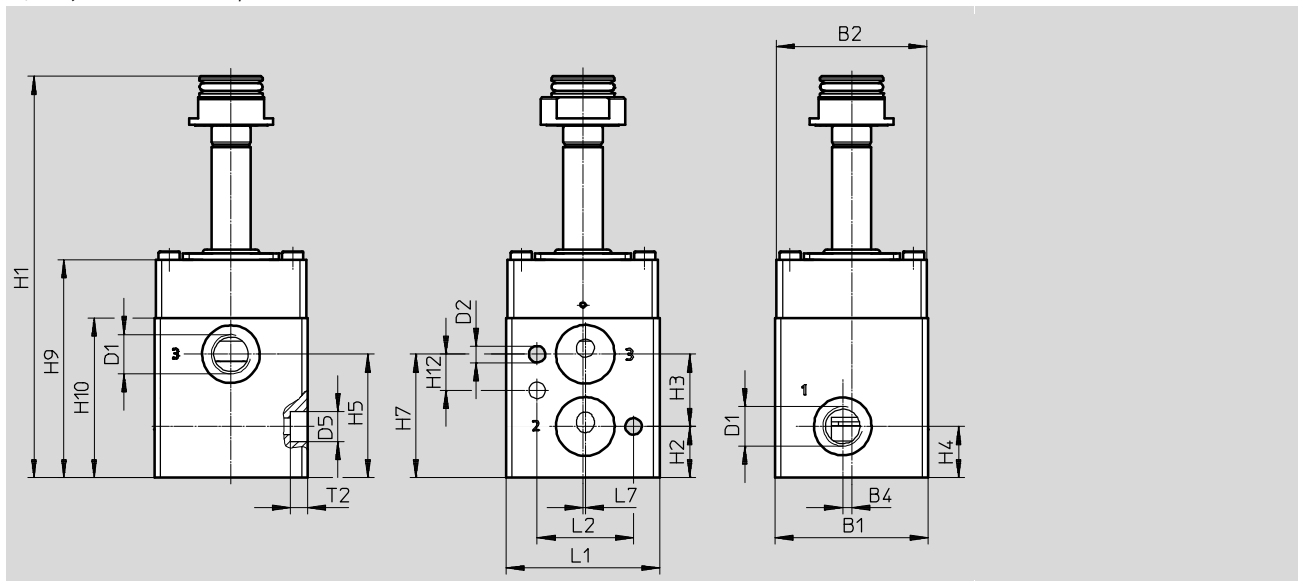
Solenoid valves VOFC-LT ... F19/F19A

Technical data – Modular system, poppet valves

Dimensions

Download CAD data → www.festo.com

3/2-way valves, basic valve, port -FG14



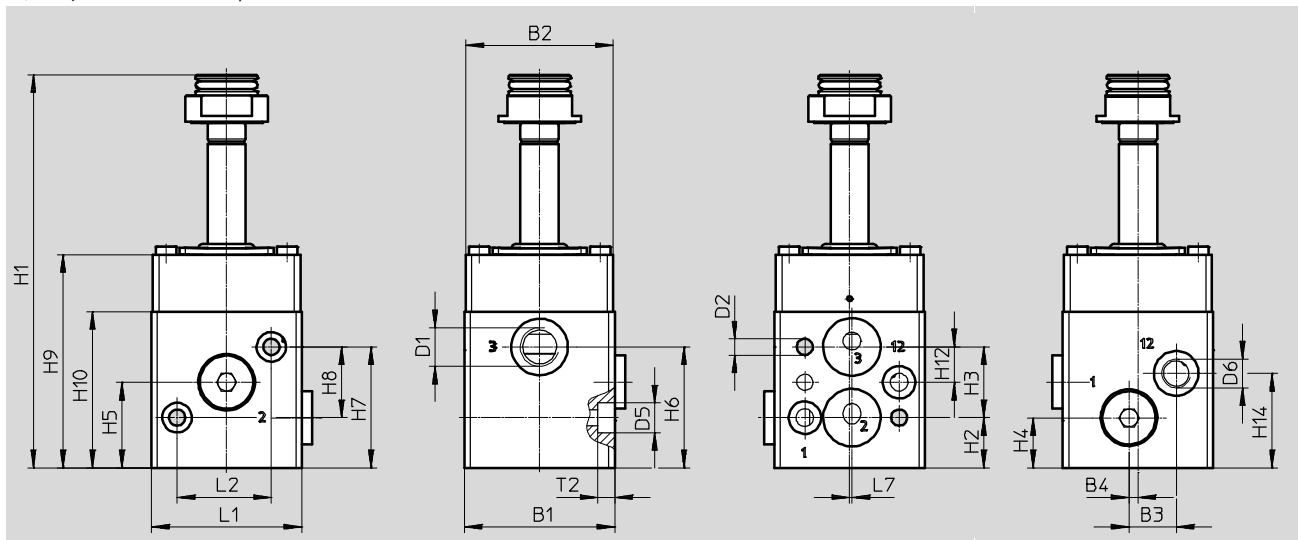
Type	B1	B2	B4	D1	D2 Ø	D5 Ø	H1	H2	H3	H4
VOFC-LT-M32C-M-FG14-...	51	50	3	G1/4	5.5	10	133	17	24	17

Type	H5	H7	H9	H10	H12	L1	L2	L7	T2
VOFC-LT-M32C-M-FG14-...	41	41	72	53	12	51	32	0.8	5.7

Dimensions

Download CAD data → www.festo.com

3/2-way valves, basic valve, port -FGP14



Type	B1	B2	B3	B4	D1	D2 Ø	D5 Ø	D6	H1	H2	H3	H4
VOFC-LT-M32C-M-FGP14-...	51	50	16	3	G1/4	5.5	10	G1/8	133	17	24	17

Type	H5	H6	H7	H8	H9	H10	H12	H14	L1	L2	L7	T2
VOFC-LT-M32C-M-FGP14-...	29	41	41	24	72	53	12	32	51	32	0.8	5.7

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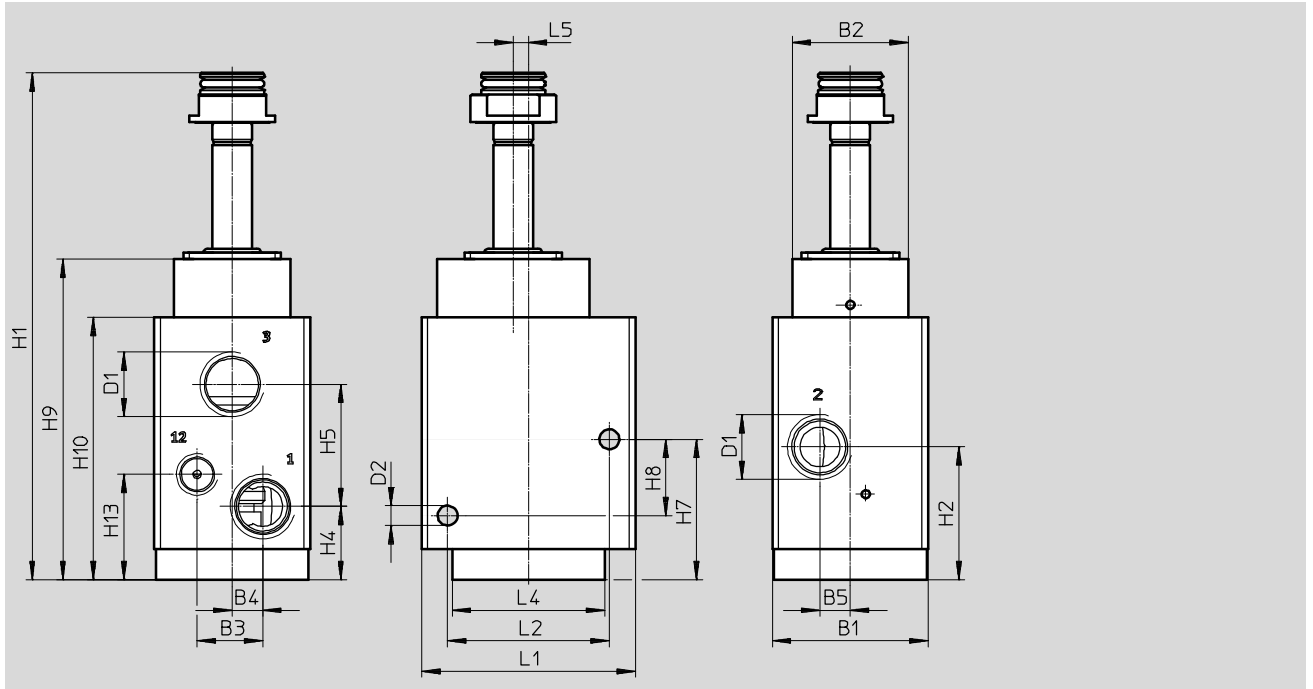
Pilot valves

Technical data – Modular system, poppet valves

Dimensions

Download CAD data → www.festo.com

3/2-way valves, basic valve, port -G12/-N12



Type	B1	B2	B3	B4	B5	D1	D2 Ø	H1	H2	H4
VOFC-LT-M32C-MC-G12-...	51	38	22	10	10	G1/2	5.5	166	43.5	24
VOFC-LT-M32C-MC-N12-...			21.5			1/2 NPT				

Type	H5	H7	H8	H9	H10	H13	L1	L2	L4	L5
VOFC-LT-M32C-MC-G12-...	40	46	25	89	105	34.5	70	53	50	5
VOFC-LT-M32C-MC-N12-...										

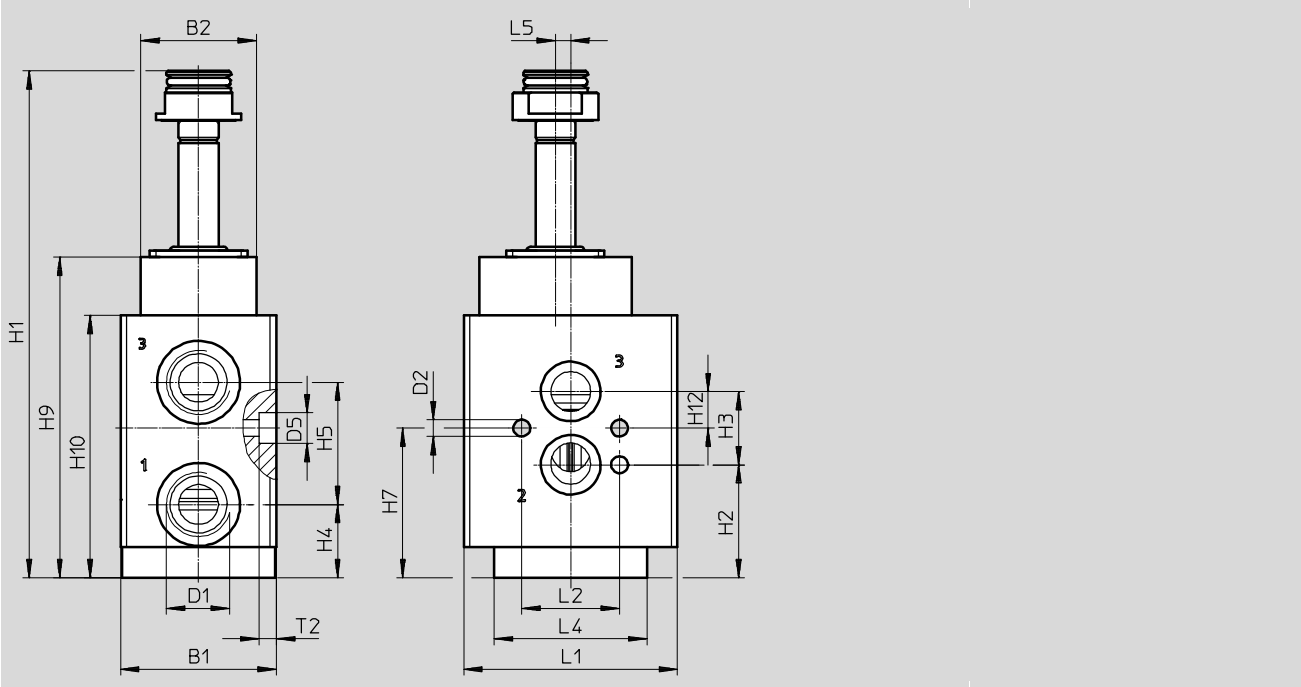
Solenoid valves VOFC-LT

Technical data – Modular system, poppet valves

Dimensions

3/2-way valves, basic valve, port -FG12

Download CAD data → www.festo.com



Type	B1	B2	D1	D2 Ø	D5 Ø	H1	H2	H3	H4	H5
VOFC-LT-M32C-MC-FG12-...	51	38	G1/2	5.5	10	166	37	24	24	40

Type	H7	H9	H10	H12	L1	L2	L4	L5	T2
VOFC-LT-M32C-MC-FG12-...	49	105	86	12	70	32	50	5	5.7

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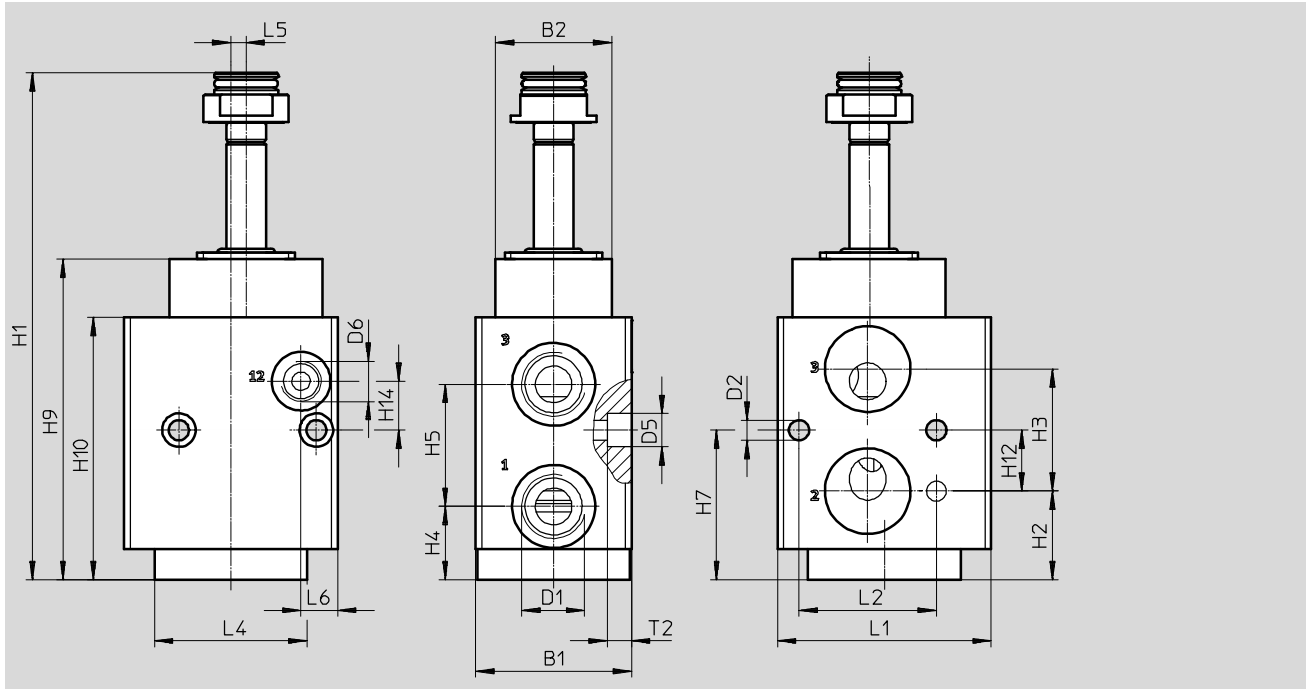
Pilot valves

Technical data – Modular system, poppet valves

Dimensions

Download CAD data → www.festo.com

3/2-way valves, basic valve, port -FG13



Type	B1	B2	D1	D2	D5	H1	H2	H3	H4	H5
VOFC-LT-M32C-M-FG13-...	51	38	G1/2	6.6	11	166	29	40	24	40

Type	H7	H9	H10	H12	H14	L1	L2	L4	L5	L6	T2
VOFC-LT-M32C-M-FG13-...	49	105	86	20	16	70	45	50	5	12	8

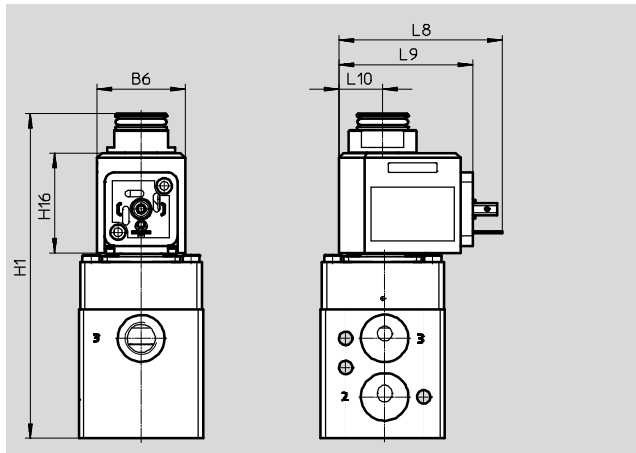
Solenoid valves VOFC-LT

Technical data – Modular system, poppet valves

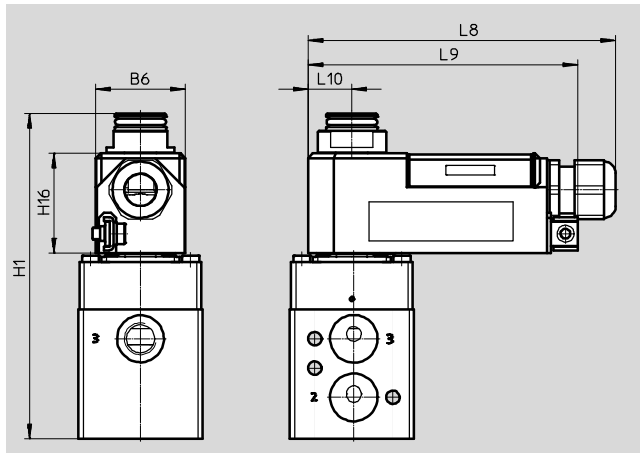
Dimensions

Valves with solenoid coil, pneumatic connection, size 1/4"
VOFC-LT-...-18-A1-...

Download CAD data → www.festo.com



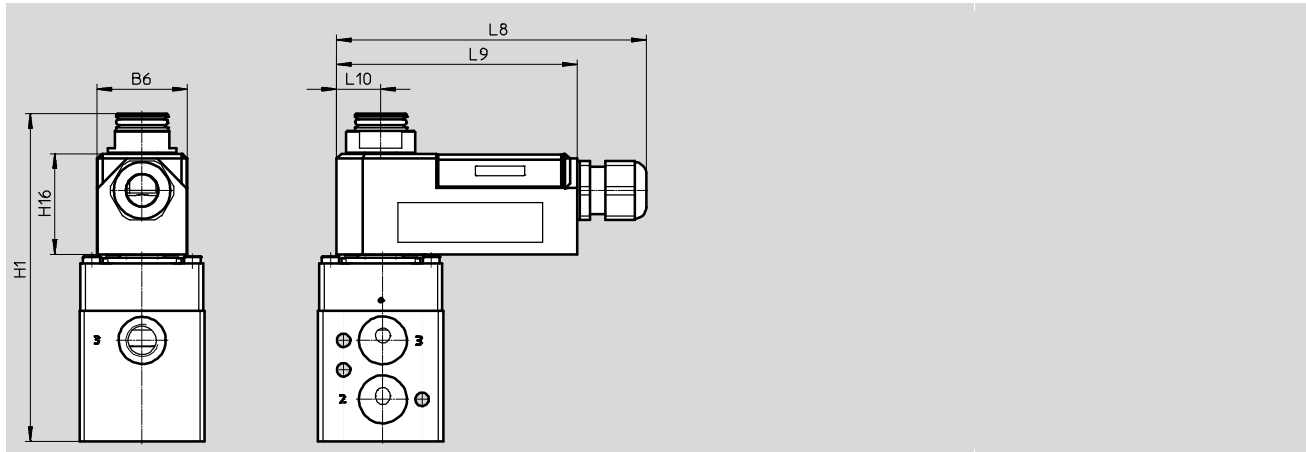
VOFC-LT-...-18-K4-...-EX4ME



Dimensions

Valves with solenoid coil, pneumatic connection, size 1/4"
VOFC-LT-...-11-K4-1-EX4A

Download CAD data → www.festo.com



Type	B6	H1	H16	L8	L9	L10
VOFC-LT-...-18-A1-...	36	133	41	67	55	18
VOFC-LT-...-18-K4-...-EX4ME	37	133	41	125	111	18
VOFC-LT-...-11-K4-1-EX4A	37	133	41	125	98	18

01

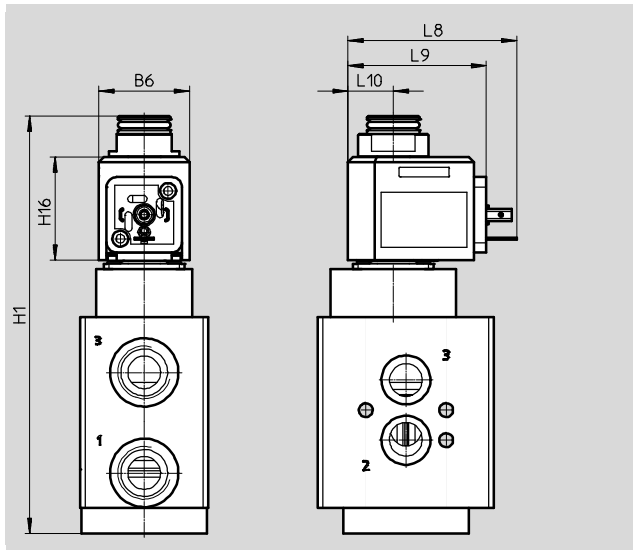
Pilot valves

Technical data – Modular system, poppet valves

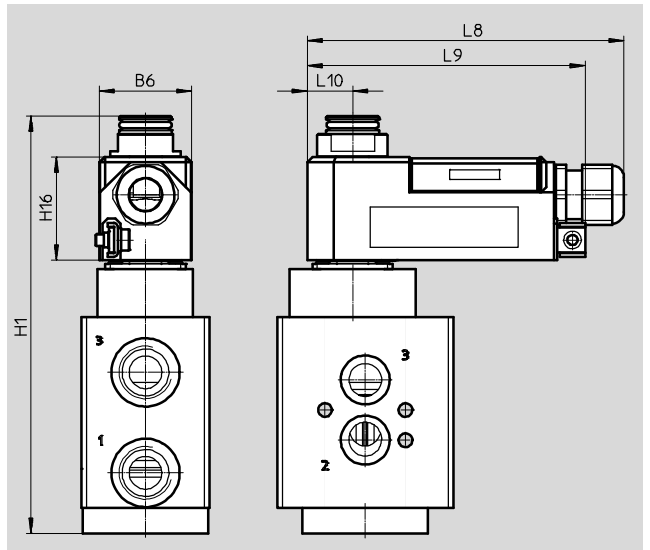
Dimensions

Valves with solenoid coil, pneumatic connection, size 1/2"
VOFC-LT-...-18-A1-...

Download CAD data → www.festo.com



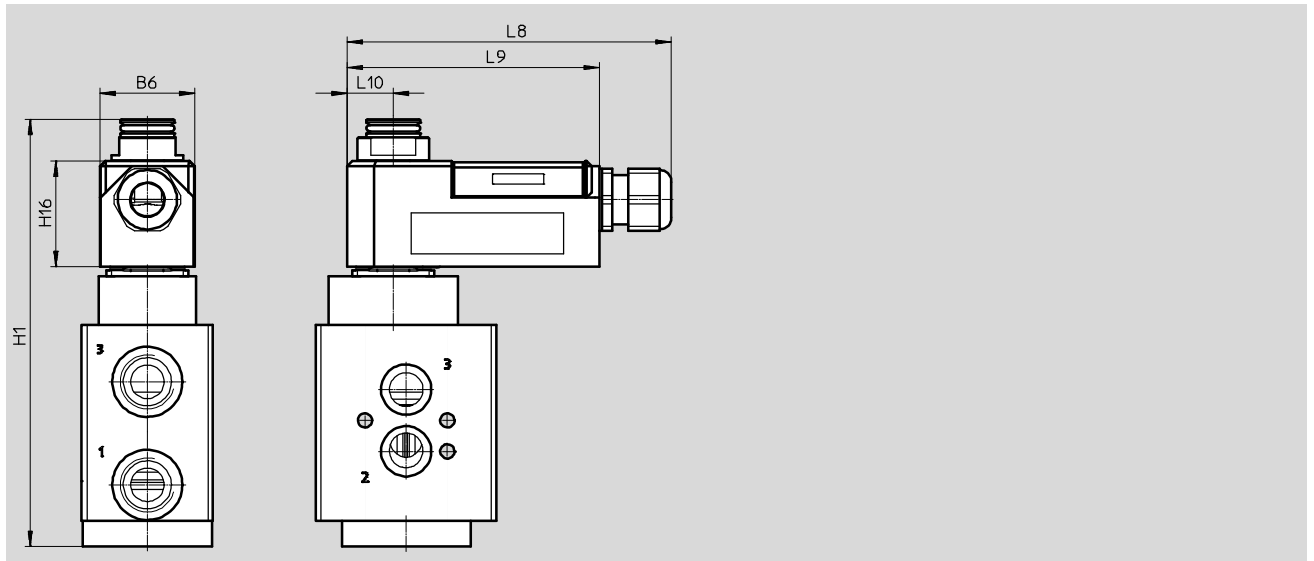
VOFC-LT-...-18-K4-...-EX4ME



Dimensions

Valves with solenoid coil, pneumatic connection, size 1/2"
VOFC-LT-...-11-K4-1-EX4A

Download CAD data → www.festo.com



Type	B6	H1	H16	L8	L9	L10
VOFC-LT-...-18-A1-...	36	166	41	67	55	18
VOFC-LT-...-18-K4-...-EX4ME	37	166	41	125	111	18
VOFC-LT-...-11-K4-1-EX4A	37	166	41	125	98	18

Solenoid valves VOFC-LT ... P3

Technical data – Modular system, poppet valves

Solenoid valve, nozzle/baffle plate
(VOFC-...-P3-...)



01

Pilot valves

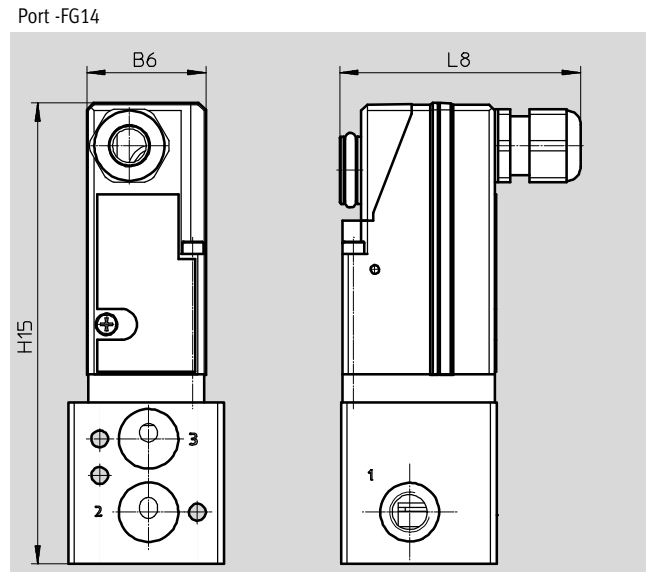
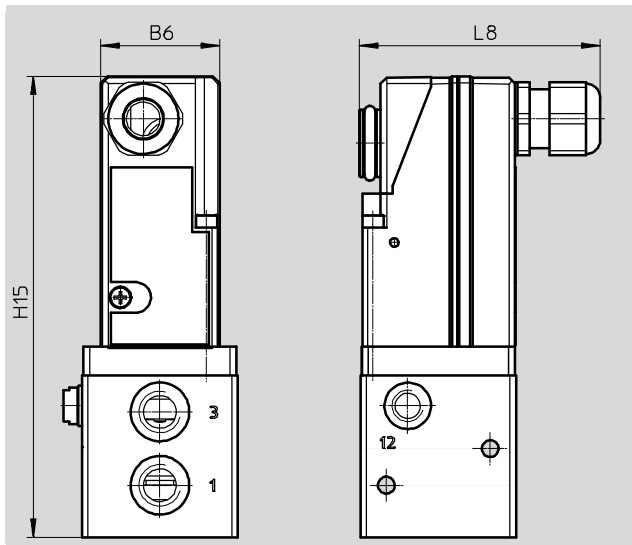
Technical data, solenoid valve, nozzle/baffle plate		VOFC-...-P3-...-0.09-...-EX4A	VOFC-...-P3-...-0.4-...-EX4A
Type		VOFC-...-P3-...-0.09-...-EX4A	VOFC-...-P3-...-0.4-...-EX4A
With pilot control unit		VACC-P3-0.09-K4-1-EX4A	VACC-P3-0.4-K4-1-EX4A
Design		Nozzle/baffle plate pilot control	
Operating voltage range	[V DC]	6.4 ... 40	16 ... 40
Degree of protection		IP 50	
Reverse polarity protection		Bipolar	
Duty cycle	[%]	100	
Max. input power P_i	[mW]	650	
Max. input voltage U_i	[V]	40	
Max. input current I_i	[mA]	200	
Effective internal capacitance C_i		Negligibly low	
Effective internal inductance L_i		Negligibly low	
ATEX category for gas		II 2G	
Type of ignition protection for gas		Ex ia IIC T6, T5 Gb	
ATEX category for dust		II 2D	
Type of ignition protection for dust		Ex ia IIIC T85°C, T125°C Db	
Explosion-proof ambient temperature	[°C]	T5, T125: $-40 \leq T_a \leq +70$ T6, T85: $-40 \leq T_a \leq +30$	
Certificate issuing authority		BVS14ATEXE098X IECEx BVS14.0063X KGS15-GA4BO-0565X	
Notified body for quality testing		0344	
Explosion protection certification outside the EU		EPL Gb (IEC-EX) EPL Db (IEC-EX) EPL Gb (KR) EPL Db (KR)	
CE marking (see declaration of conformity)		To EU Explosion Protection Directive (ATEX)	
Insulation class		H	
Electrical connection		Terminal box, cable entry, thread M20x1.5, conductor cross-section max. 1.5 mm ² , cable diameter 5-9 mm	
Information on materials for solenoid coil		PBT-reinforced, UP	

Technical data – Modular system, poppet valves

Dimensions

Solenoid valve with nozzle/baffle plate, pilot, pneumatic connection, size 1/4"
Port -G14/-N14

Download CAD data → www.festo.com

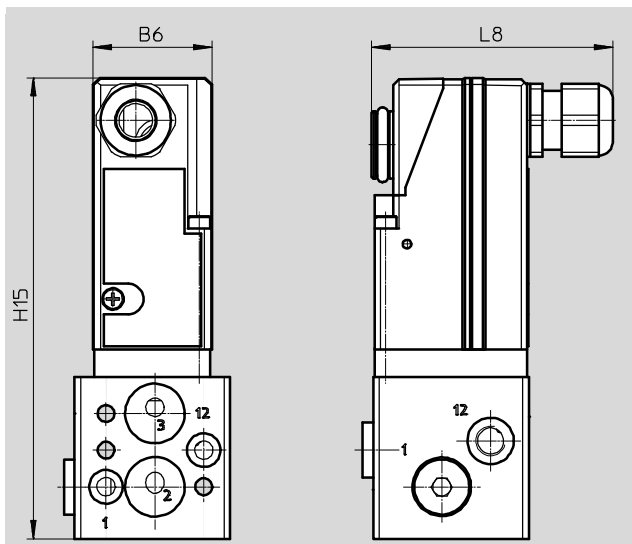


Type	B6	H15	L8
VOFC-LT-M32C-MC-G14-P3-0.4-1-K4-EX4A	39	151	77
VOFC-LT-M32C-MC-N14-P3-0.4-1-K4-EX4A			
VOFC-LT-M32C-MC-G14-P3-0.09-1-K4-EX4A			
VOFC-LT-M32C-MC-N14-P3-0.09-1-K4-EX4A			
VOFC-LT-M32C-M-FG14-P3-0.4-1-K4-EX4A			
VOFC-LT-M32C-M-FG14-P3-0.09-1-K4-EX4A			

Dimensions

Solenoid valve with nozzle/baffle plate, pilot, pneumatic connection, size 1/4"
Port -FGP14

Download CAD data → www.festo.com



Type	B6	H15	L8
VOFC-LT-M32C-M-FGP14-P3-0.4-1-K4-EX4A	39	151	77
VOFC-LT-M32C-M-FGP14-P3-0.09-1-K4-EX4A			

Solenoid valves VOFC-LT ... P3

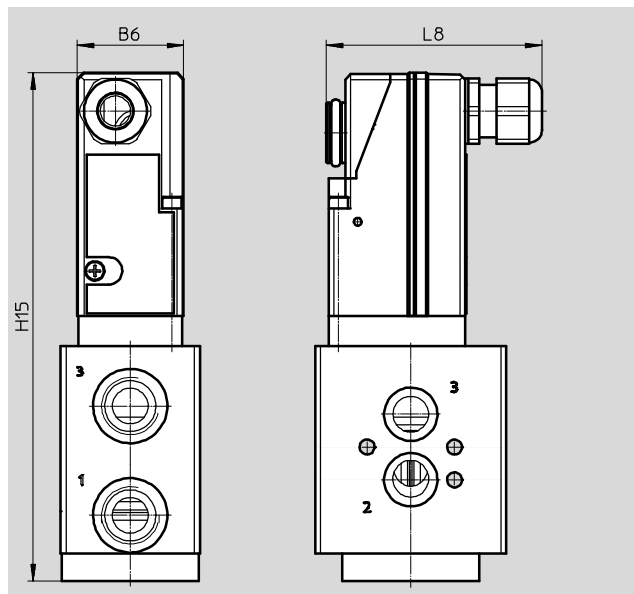
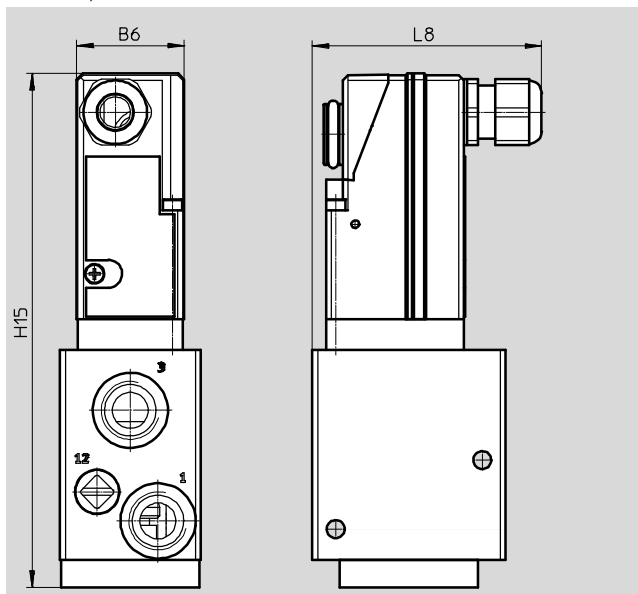
Technical data – Modular system, poppet valves

Dimensions

Download CAD data → www.festo.com

Solenoid valve with nozzle/baffle plate pilot, pneumatic connection, size 1/2"
Port -G12/-N12

Port -FG12

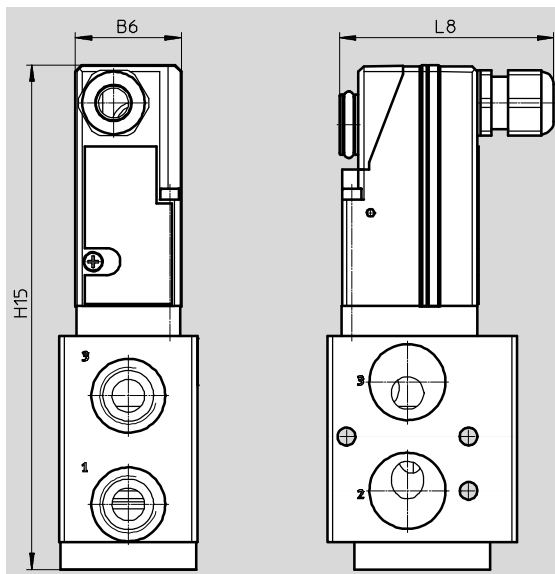


Type	B6	H15	L8
VOFC-LT-M32C-MC-G12-P3-0.4-1-K4-EX4A	39	185.9	79.9
VOFC-LT-M32C-MC-N12-P3-0.4-1-K4-EX4A			
VOFC-LT-M32C-MC-G12-P3-0.09-1-K4-EX4A			
VOFC-LT-M32C-MC-N12-P3-0.09-1-K4-EX4A			
VOFC-LT-M32C-M-FG12-P3-0.4-1-K4-EX4A			
VOFC-LT-M32C-M-FG12-P3-0.09-1-K4-EX4A			

Dimensions

Download CAD data → www.festo.com

Solenoid valve with nozzle/baffle plate pilot, pneumatic connection, size 1/2"
Port -FG13



Type	B6	H15	L8
VOFC-LT-M32C-M-FG13-P3-0.4-1-K4-EX4A	39	185.9	79.9
VOFC-LT-M32C-M-FG13-P3-0.09-1-K4-EX4A			

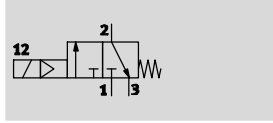
01


Pilot valves


Technical data – 3/2-way valves, poppet valve, single solenoid, G1/4 NAMUR

Function

3/2-way valve



-  - Temperature range
-25 ... +60 °C

-  - Flow rate
766 l/min



General technical data

		G1/4 basic valve, NAMUR	G1/4 basic valve, NAMUR, intrinsically safe	G1/4 basic valve, NAMUR, supply port	G1/4 basic valve, NAMUR, supply port, intrinsically safe
Valve function		3/2-way, single solenoid, closed			
Pneumatic connection	1	G1/4		M5 and port pattern to NAMUR	
	2	Flange 1/4 and port pattern to NAMUR			
	3	G1/4			
Design		Pilot-actuated piston poppet valve			
Width	[mm]	51			
Mounting position		Any			
Sealing principle		Hard			
Manual override		None			
Reset method		Mechanical spring			
Actuation type		Electrical			
Type of control		Pilot-actuated			
Pilot air supply		Internal		Internal, external	
Flow rate for piston valve pressurisation	[m ³ /h]	0.5		0.5	
Flow rate for piston valve exhaust	[m ³ /h]	0.8		0.65	
Flow direction		Non-reversible			
Product weight	[g]	600			
Switching time off	[ms]	18			
Switching time on	[ms]	24			
Nominal width	[mm]	6			
Standard nominal flow rate 1→2	[l/min.]	766			
Standard nominal flow rate 2→3	[l/min.]	1467			

Operating and environmental conditions

		G1/4 basic valve, NAMUR	G1/4 basic valve, NAMUR, intrinsically safe	G1/4 basic valve, NAMUR, supply port	G1/4 basic valve, NAMUR, supply port, intrinsically safe
Operating medium		Compressed air to ISO 8573-1:2010 [7:--:-]			
Degree of protection		IP65			
Operating pressure range	[bar]	1 ... 8			
Operating pressure range in case of external pilot air	[bar]	-		0 ... 8	
Temperature of medium	[°C]	-25 ... +60			
Ambient temperature	[°C]	-25 ... +60			
Safety Integrity Level	[SIL]	Up to SIL3 Low Demand mode			
		Up to SIL3 High Demand mode			
Corrosion resistance class CRC ¹⁾		4			

1) Corrosion resistance class CRC 4 to Festo standard FN 940070

Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

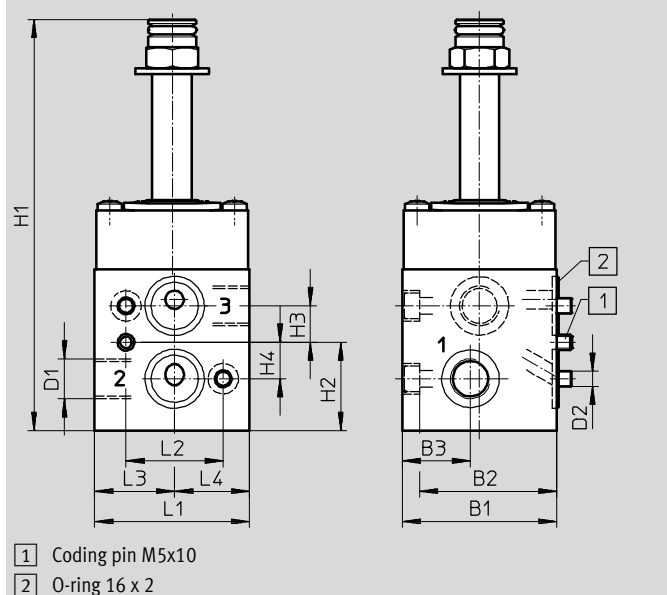
Basic valves VOFC-LT ... F19/F19A

Technical data – 3/2-way valves, poppet valve, single solenoid, G1/4 NAMUR

Materials	
Housing	Aluminium (Ematal coated)
Seals	NBR
Note on materials	Contains paint-wetting impairment substances, RoHS-compliant

Dimensions

Download CAD data → www.festo.com

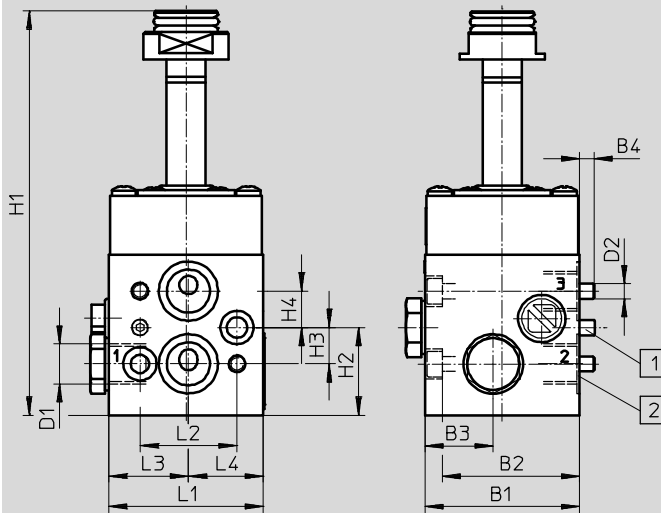


Type	B1	B2	B3	D1	D2	H1	H2	H3	H4	L1	L2	L3	L4
VOFC-LT-M32C-M-FG14-F19	51	45.3	22.5	G1/4	5.5	135.3	29	12	12	51	32	26.3	24.7
VOFC-LT-M32C-M-FG14-F19A													

Technical data – 3/2-way valves, poppet valve, single solenoid, G1/4 NAMUR

Dimensions

Download CAD data → www.festo.com



- 1 Coding pin M5x10
- 2 O-ring 16 x 2

Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	L1	L2	L3	L4
VOFC-LT-M32C-MC-FGP14-F19	51	45.3	22.5	4.7	NAMUR G1/4	M5	133.4	29	12	12	51	32	26.3	24.7
VOFC-LT-M32C-MC-FGP14-F19A														

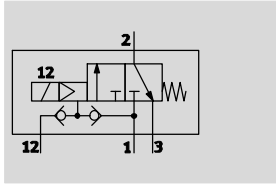
Ordering data

Circuit symbol	Function	Pneumatic connection	Type of ignition protection	Part No.	Type
In-line valve					
	3/2-way, single solenoid, closed	G1/4 and NAMUR	Without	4514738	VOFC-LT-M32C-M-FG14-F19
			Intrinsically safe	4514739	VOFC-LT-M32C-M-FG14-F19A
	3/2-way, single solenoid, closed	G1/4 and NAMUR, supply port	Without	4514744	VOFC-LT-M32C-MC-FGP14-F19
			Intrinsically safe	4514745	VOFC-LT-M32C-MC-FGP14-F19A

Basic valves VOFC-LT ... F19/F19A

Technical data – 3/2-way valves, poppet valve, single solenoid, G1/4 sleeve

Function
3/2-way valve



- - Temperature range
-25 ... +60 °C

- - Flow rate
766 l/min



General technical data

		G1/4 basic valve	G1/4 basic valve, intrinsically safe	NPT basic valve	NPT basic valve, intrinsically safe
Valve function		3/2-way, single solenoid, closed			
Pneumatic connection	1	G1/4	G1/4	1/4 NPT	1/4 NPT
	2	G1/4	G1/4	1/4 NPT	1/4 NPT
	3	G1/4	G1/4	1/4 NPT	1/4 NPT
Design		Pilot-actuated piston poppet valve			
Width	[mm]	51			
Mounting position		Any			
Sealing principle		Hard			
Manual override		None			
Reset method		Mechanical spring			
Actuation type		Electrical			
Type of control		Pilot-actuated			
Pilot air supply port		Internal, external			
Flow rate for piston valve pressurisation	[m ³ /h]	0.72			
Flow rate for piston valve exhaust	[m ³ /h]	1.4			
Flow direction		Non-reversible			
Product weight	[g]	550			
Switching time off	[ms]	18			
Switching time on	[ms]	24			
Nominal width	[mm]	6			
Standard nominal flow rate 1→2	[l/min.]	766			
Standard nominal flow rate 2→3	[l/min.]	1467			

Operating and environmental conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]				
Degree of protection	IP65				
Operating pressure range	[bar]	1 ... 8			
Operating pressure range in case of external pilot air	[bar]	0 ... 8			
Temperature of medium	[°C]	-25 ... +60			
Ambient temperature	[°C]	-25 ... +60			
Safety Integrity Level	[SIL]	Up to SIL3 Low Demand mode			
	[SIL]	Up to SIL3 High Demand mode			
Corrosion resistance class CRC ¹⁾		4			

1) Corrosion resistance class CRC 4 to Festo standard FN 940070

Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

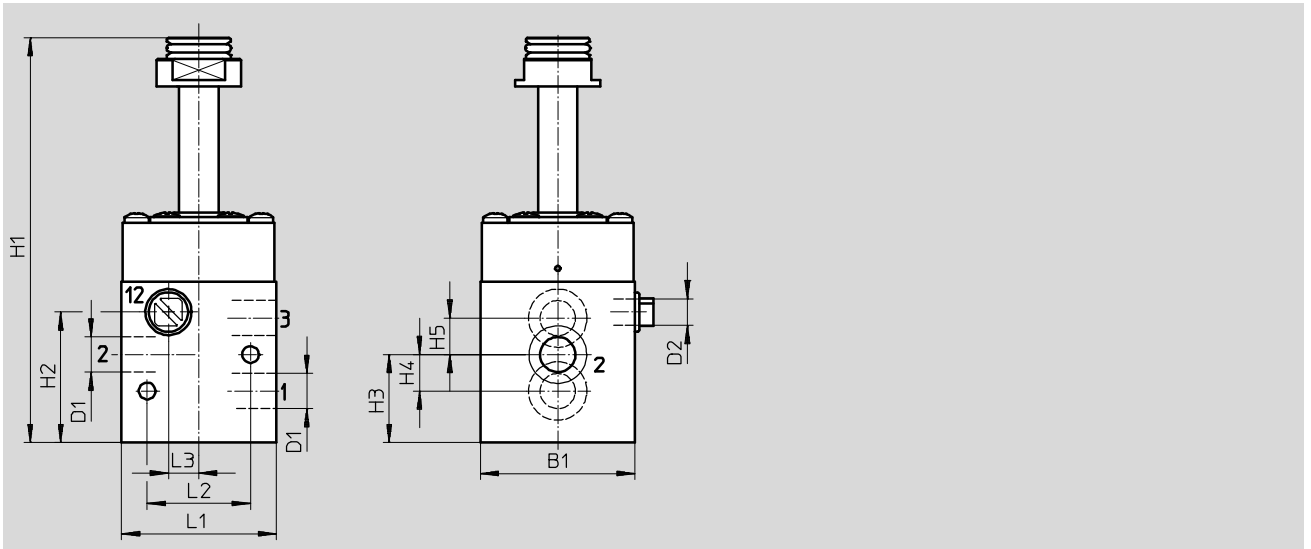
Materials

Housing	Aluminium (Ematal coated)
Seals	NBR
Note on materials	Contains paint-wetting impairment substances, RoHS-compliant

Technical data – 3/2-way valves, poppet valve, single solenoid, G1/4 sleeve

Dimensions

Download CAD data → www.festo.com



Type	B1	D1	D2	H1	H2	H3	H4	H5	L1	L2	L3
VOFC-LT-M32C-MC-G14-F19	51	G1/4	G1/8	133	43	29	12	12	51	34	10
VOFC-LT-M32C-MC-G14-F19A			1/8NPT								
VOFC-LT-M32C-MC-N14-F19		1/4NPT									
VOFC-LT-M32C-MC-N14-F19A											

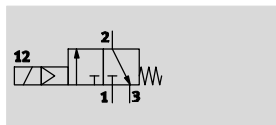
Ordering data

Circuit symbol	Function	Pneumatic connection	Type of ignition protection	Part No.	Type
	3/2-way, single solenoid, closed	G1/4	Without	4514740	VOFC-LT-M32C-MC-G14-F19
			Intrinsically safe	4514741	VOFC-LT-M32C-MC-G14-F19A
		1/4 NPT	Without	4514742	VOFC-LT-M32C-MC-N14-F19
			Intrinsically safe	4514743	VOFC-LT-M32C-MC-N14-F19A

Basic valves VOFC-LT ... F19/F19A

Technical data – 3/2-way valve, poppet valve, single solenoid, G1/2 NAMUR

Function
3/2-way valve



- - Temperature range
-25 ... +60 °C

- - Flow rate
2868 l/min



General technical data

		VOFC-...-FG12-F19 VOFC-...-FG12-F19A	VOFC-...-FG13-F19 VOFC-...-FG13-F19A
Valve function		3/2-way, single solenoid, closed	
Pneumatic connection	1	G1/2	
	2	Flange 1/4 and port pattern to NAMUR	Flange 1/2 and port pattern to NAMUR
	3	G1/2	
Design		Pilot-actuated piston poppet valve	
Width	[mm]	51	
Mounting position		Any	
Sealing principle		Hard	
Manual override		None	
Reset method		Mechanical spring	
Actuation type		Electrical	
Type of control		Pilot-actuated	
Pilot air supply		Internal	Internal, external
Flow rate for piston valve pressurisation	[m ³ /h]	2.4	
Flow rate for piston valve exhaust	[m ³ /h]	3.3	
Flow direction		Non-reversible	
Product weight	[g]	880	900
Switching time off	[ms]	14	
Switching time on	[ms]	25	
Nominal width	[mm]	12	
Standard nominal flow rate 1→2	[l/min.]	2686	
Standard nominal flow rate 2→3	[l/min.]	3462	

Operating and environmental conditions

		VOFC-...-FG12-F19 VOFC-...-FG12-F19A	VOFC-...-FG13-F19 VOFC-...-FG13-F19A
Operating medium		Compressed air to ISO 8573-1:2010 [7:-:-]	
Degree of protection		IP65	
Operating pressure range	[bar]	2 ... 8	
Operating pressure range in case of external pilot air	[bar]	-	0 ... 8
Temperature of medium	[°C]	-25 ... +60	
Ambient temperature	[°C]	-25 ... +60	
Safety Integrity Level	[SIL]	Up to SIL3 Low Demand mode	
		Up to SIL3 High Demand mode	
Corrosion resistance class CRC ¹⁾		4	

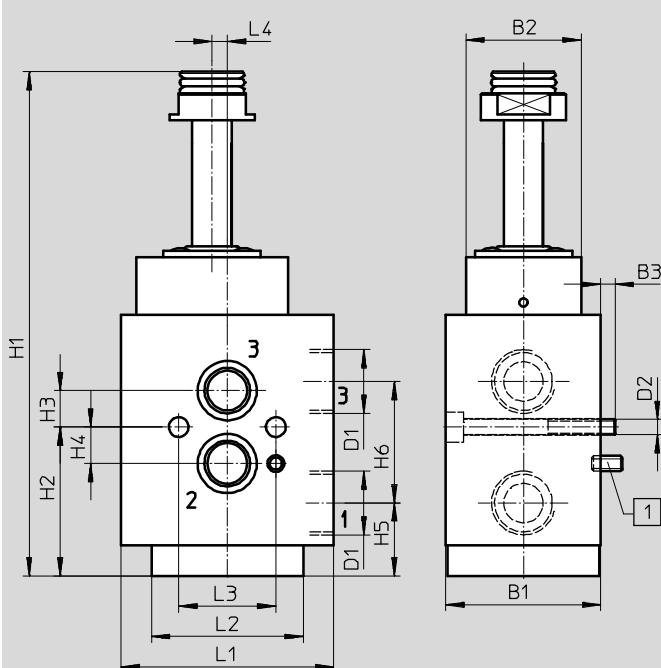
1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Technical data – 3/2-way valve, poppet valve, single solenoid, G1/2 NAMUR

Materials	
Housing	Aluminium (Ematal coated)
Seals	NBR
Note on materials	Contains paint-wetting impairment substances, RoHS-compliant

Dimensions

Download CAD data → www.festo.com



1 Coding pin M5x10

Type	B1	B2	B3	D1	D2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4
VOFC-LT-M32C-M-FG12-F19	51	38	4.7	G1/2	M5	166	49	12	12	24	40	70	50	32	5
VOFC-LT-M32C-M-FG12-F19A															
VOFC-LT-M32C-MC-FG13-F19															
VOFC-LT-M32C-MC-FG13-F19A															

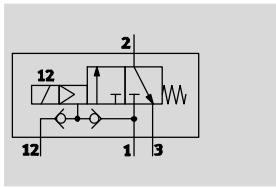
Ordering data

Circuit symbol	Function	Pneumatic connection	Type of ignition protection	Part No.	Type
In-line valve					
	3/2-way, single solenoid, closed	G1/2 and NAMUR	Without	4514746	VOFC-LT-M32C-M-FG12-F19
			Intrinsically safe	4514747	VOFC-LT-M32C-M-FG12-F19A
	3/2-way, single solenoid, closed	G1/2 Flange 1/2 (port pattern to NAMUR) G1/2	Without	4527268	VOFC-LT-M32C-MC-FG13-F19
			Intrinsically safe	4527269	VOFC-LT-M32C-MC-FG13-F19A

Basic valves VOFC-LT ... F19/F19A

Technical data – 3/2-way valve, poppet valve, single solenoid, G1/2 sleeve

Function
3/2-way valve



- - Temperature range
-25 ... +60 °C

- - Flow rate
2686 l/min



General technical data

Valve function	3/2-way, single solenoid, closed	
Pneumatic connection	1	G1/2
	2	G1/2
	3	G1/2
Design	Pilot-actuated piston poppet valve	
Width	[mm]	51
Mounting position	Any	
Sealing principle	Hard	
Manual override	None	
Reset method	Mechanical spring	
Actuation type	Electrical	
Type of control	Pilot-actuated	
Pilot air supply	Internal, external	
Flow rate for piston valve pressurisation	[m ³ /h]	2.4
Flow rate for piston valve exhaust	[m ³ /h]	3.3
Flow direction	Non-reversible	
Product weight	[g]	880
Switching time off	[ms]	14
Switching time on	[ms]	25
Nominal width	[mm]	12
Standard nominal flow rate 1→2	[l/min.]	2686
Standard nominal flow rate 2→3	[l/min.]	3462

Operating and environmental conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:--:--]	
Degree of protection	IP65	
Operating pressure range	[bar]	2 ... 8
Operating pressure range in case of external pilot air	[bar]	0 ... 8
Temperature of medium	[°C]	-25 ... +60
Ambient temperature	[°C]	-25 ... +60
Safety Integrity Level	[SIL]	Up to SIL3 Low Demand mode
	[SIL]	Up to SIL3 High Demand mode
Corrosion resistance class CRC ¹⁾	4	

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

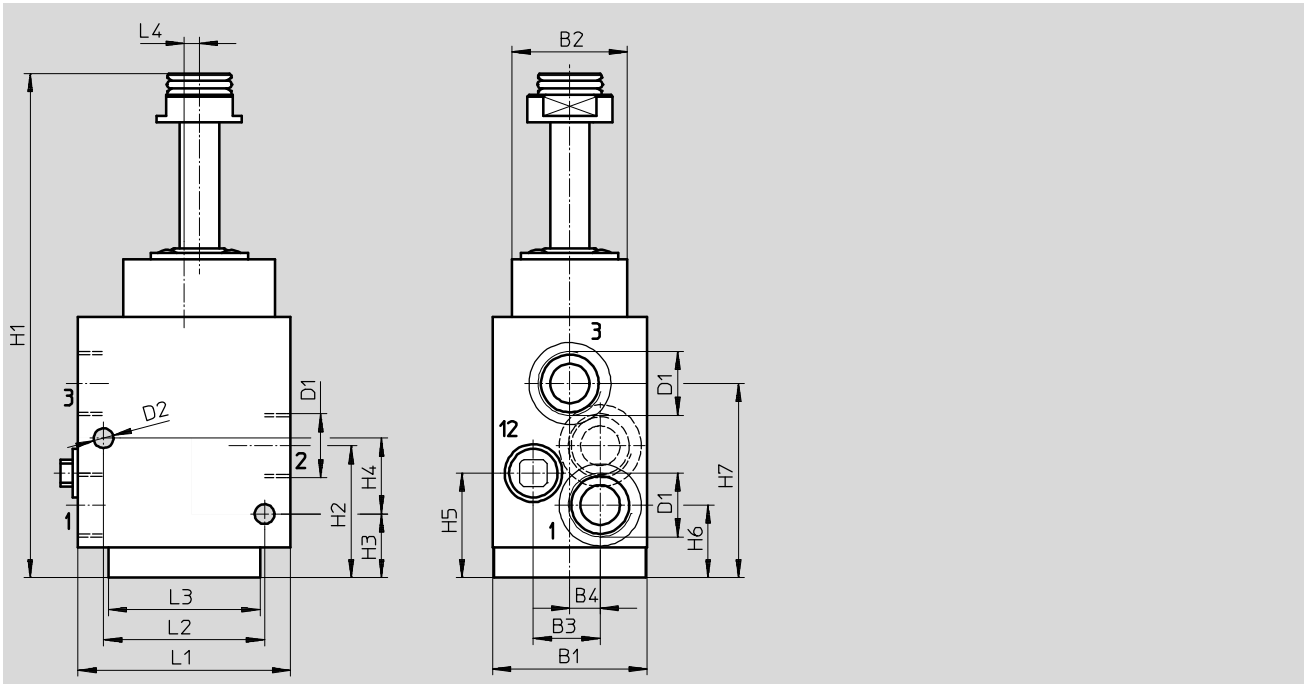
Materials

Housing	Aluminium (Ematal coated)
Seals	NBR
Note on materials	Contains paint-wetting impairment substances, RoHS-compliant

Technical data – 3/2-way valve, poppet valve, single solenoid, G1/2 sleeve

Dimensions

Download CAD data → www.festo.com



Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	L1	L2	L3	L4
VOFC-LT-M32C-MC-G12-F19	51	37	22	10	G1/2	6.5	166	43.5	21	25	34.5	70	53	50	5
VOFC-LT-M32C-MC-G12-F19A															

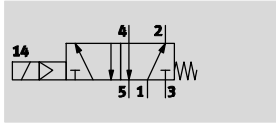
Ordering data

Circuit symbol	Function	Pneumatic connection	Type of ignition protection	Part No.	Type
In-line valve					
	3/2-way, single solenoid, closed	G1/2	Without	4514748	VOFC-LT-M32C-MC-G12-F19
			Intrinsically safe	4514749	VOFC-LT-M32C-MC-G12-F19A

Basic valves VOFC-L ... F19/F19A

Technical data – 5/2-way valve, piston spool, single solenoid, G1/4 NAMUR

Function
5/2-way valve



- - Temperature range
-25 ... +60 °C

- - Flow rate
1030 l/min



General technical data

Valve function		5/2-way, single solenoid
Pneumatic connection	1	G1/4
	2	G1/4 and port pattern to NAMUR
	3	G1/4
	4	G1/4 and port pattern to NAMUR
	5	G1/4
Design		Piston spool valve
Mounting position		Any
Width	[mm]	40
Sealing principle		Soft
Manual override		None
Reset method		Mechanical spring
Actuation type		Electrical
Type of control		Pilot-actuated
Pilot air supply		Internal
Flow rate for piston valve pressurisation	[m ³ /h]	1.08
Flow rate for piston valve exhaust	[m ³ /h]	1.08
Flow direction		Non-reversible
Product weight	[g]	520
Switching time off	[ms]	22
Switching time on	[ms]	26
Nominal width	[mm]	6
Standard nominal flow rate 1→2	[l/min.]	1030
Standard nominal flow rate 2→3	[l/min.]	978

Operating and environmental conditions

Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Degree of protection		IP65
Operating pressure range	[bar]	2.5 ... 8
Temperature of medium	[°C]	-25 ... +60
Ambient temperature	[°C]	-25 ... +60
Safety Integrity Level	[SIL]	Up to SIL2 Low Demand mode
		Up to SIL2 High Demand mode
Corrosion resistance class CRC ¹⁾		4

1) Corrosion resistance class CRC 4 to Festo standard FN 940070

Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

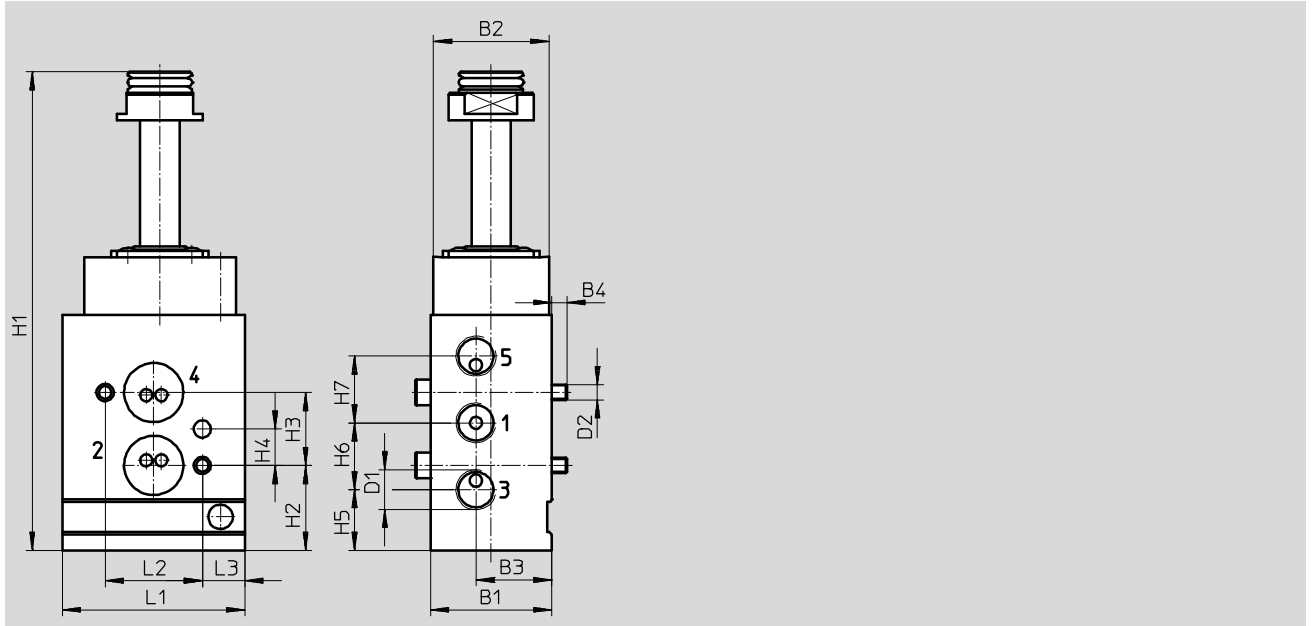
Materials

Housing		Aluminium (Ematal coated)
Seals		NBR
Note on materials		Contains paint-wetting impairment substances, RoHS-compliant

Technical data – 5/2-way valve, piston spool, single solenoid, G1/4 NAMUR

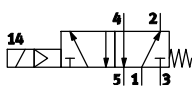
Dimensions

Download CAD data → www.festo.com



Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6	H7	L1	L2	L3
VOFC-L-M52-M-FG14-F19	40	38	25	5	G1/4	M5	158	28	24	12	20	22	22	60	32	14
VOFC-L-M52-M-FG14-F19A																

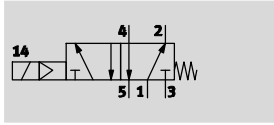
Ordering data

Circuit symbol	Function	Pneumatic connection	Type of ignition protection	Part No.	Type
In-line valve	5/2-way, single solenoid	G1/4 and NAMUR	Without	4514923	VOFC-L-M52-M-FG14-F19
			Intrinsically safe	4514924	VOFC-L-M52-M-FG14-F19A

Basic valves VOFC-L ... F19/F19A

Technical data – 5/2-way valve, piston spool, single solenoid, G1/4 sleeve

Function
5/2-way valve



- - Temperature range
-25 ... +60 °C

- - Flow rate
1030 l/min



General technical data

Valve function	5/2-way, single solenoid	
Pneumatic connection	1	G1/4
	2	G1/4
	3	G1/4
	4	G1/4
	5	G1/4
Design	Piston spool valve	
Mounting position	Any	
Width	[mm]	40
Sealing principle	Soft	
Manual override	None	
Reset method	Mechanical spring	
Actuation type	Electrical	
Type of control	Pilot-actuated	
Pilot air supply	Internal	
Flow rate for piston valve pressurisation	[m ³ /h]	1.08
Flow rate for piston valve exhaust	[m ³ /h]	1.08
Flow direction	Non-reversible	
Product weight	[g]	520
Switching time off	[ms]	22
Switching time on	[ms]	26
Nominal width	[mm]	6
Standard nominal flow rate 1→2	[l/min.]	1030
Standard nominal flow rate 2→3	[l/min.]	978

Operating and environmental conditions

Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]	
Degree of protection	IP65	
Operating pressure range	[bar]	2.5 ... 8
Temperature of medium	[°C]	-25 ... +60
Ambient temperature	[°C]	-25 ... +60
Safety Integrity Level	[SIL]	Up to SIL2 Low Demand mode
		Up to SIL2 High Demand mode
Corrosion resistance class CRC ¹⁾	4	

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

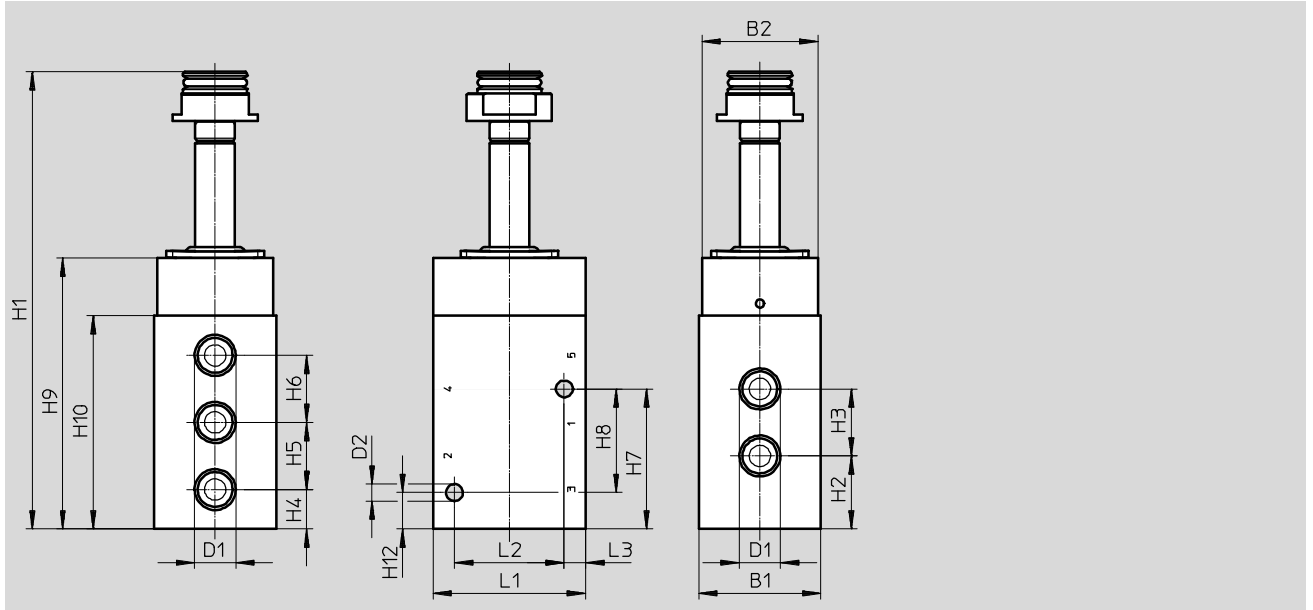
Materials

Housing	Aluminium (Ematal coated)
Seals	NBR
Note on materials	Contains paint-wetting impairment substances, RoHS-compliant

Technical data – 5/2-way valve, piston spool, single solenoid, G1/4 sleeve

Dimensions

Download CAD data → www.festo.com



Type	B1	B2	D1	D2	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H13	L1	L2	L3
VOFC-L-M52-M-G14-F19	40	38	G1/4	5.5	150	24	22	13	22	22	46	34	89	70	12	50	36	7
VOFC-L-M52-M-G14-F19A																		

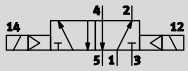
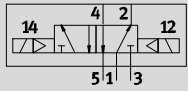
Ordering data

Circuit symbol	Function	Pneumatic connection	Type of ignition protection	Part No.	Type
	5/2-way, single solenoid	G1/4	Without	4514925	VOFC-L-M52-M-G14-F19
				4514926	VOFC-L-M52-M-G14-F19A

Basic valves VOFC-L ... F19/F19A

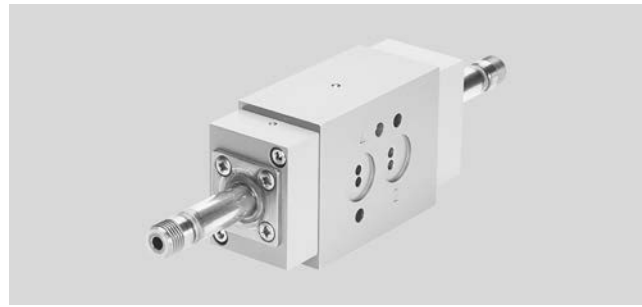
Technical data – 5/2-way valves, piston spool, double solenoid, G1/4, NAMUR

Function
5/2-way valve



– – Temperature range
–25 ... +60 °C

– – Flow rate
989 l/min



General technical data

		G1/4, NAMUR	G1/4
Valve function		5/2-way, double solenoid	
Pneumatic connection	1	G1/4	G1/4
	2	Flange 1/4 and port pattern to NAMUR	G1/4
	3	G1/4	G1/4
	4	Flange 1/4 and port pattern to NAMUR	G1/4
	5	G1/4	G1/4
Design		Piston spool valve	
Mounting position		Any	
Width	[mm]	40	
Sealing principle		Soft	
Manual override		None	
Actuation type		Electrical	
Type of control		Pilot-actuated	
Pilot air supply port		Internal	
Flow rate for piston valve pressurisation	[m ³ /h]	1.08	
Flow rate for piston valve exhaust	[m ³ /h]	1.08	
Flow direction		Non-reversible	
Product weight	[g]	680	790
Switching time off	[ms]	22	
Switching time on	[ms]	26	
Max. switching frequency	[Hz]	1	
Nominal width		6	
Standard nominal flow rate 1→2	[l/min.]	989	
Standard nominal flow rate 2→3	[l/min.]	978	

Operating and environmental conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]		
Degree of protection	IP65		
Operating pressure range	[bar]	2.5 ... 8	
Temperature of medium	[°C]	–25 ... +60	
Ambient temperature	[°C]	–25 ... +60	
Safety Integrity Level	[SIL]	Up to SIL 2 Low Demand mode	
		Up to SIL 2 High Demand mode	
Corrosion resistance class CRC ¹⁾	4		

1) Corrosion resistance class CRC 4 to Festo standard FN 940070

Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

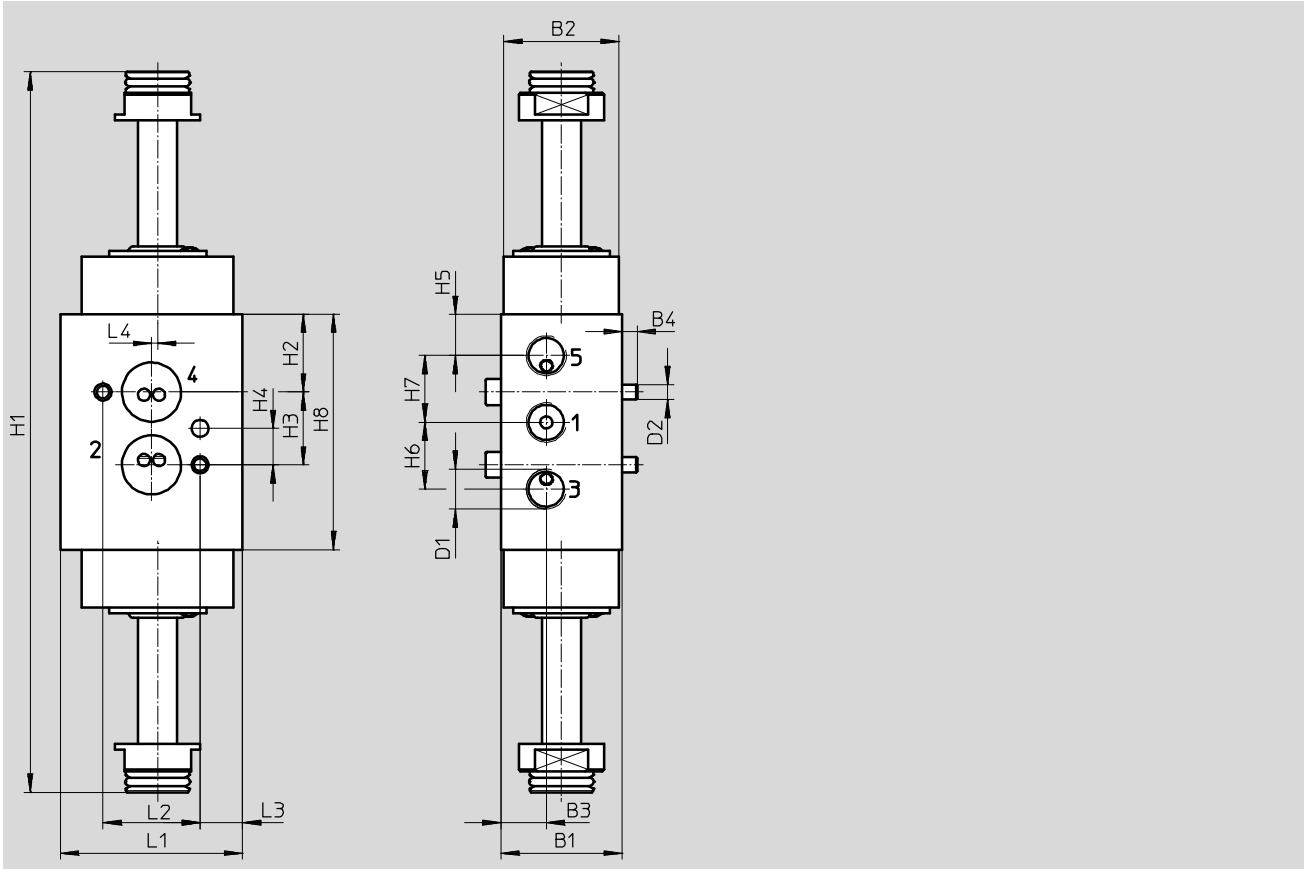
Materials

Housing	Aluminium (Ematal coated)
Seals	NBR
Note on materials	Contains paint-wetting impairment substances, RoHS-compliant

Technical data – 5/2-way valves, piston spool, double solenoid, G1/4, NAMUR

Dimensions

Download CAD data → www.festo.com



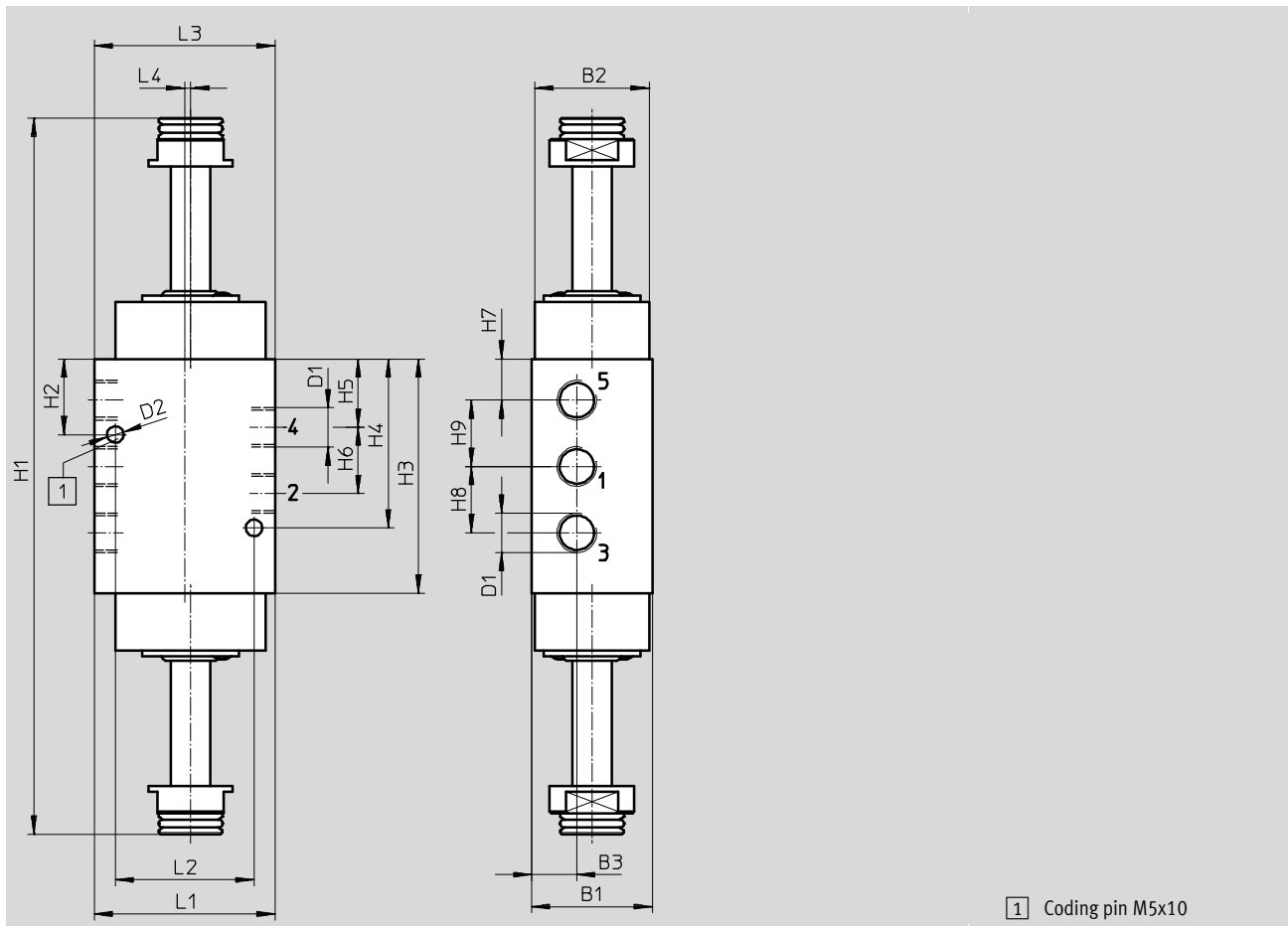
Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6	H7	H8	L1	L2	L3	L4	
VOFC-L-B52-FG14-F19	40	38	15	5	G1/4	M5	237.6	25.6	24	12	13.6	22	22	77.6	60	32	14	2	
VOFC-L-B52-FG14-F19A																			

Basic valves VOFC-L ... F19/F19A

Technical data – 5/2-way valves, piston spool, double solenoid, G1/4, NAMUR

Dimensions

Download CAD data → www.festo.com





Type	B1	B2	B3	D1	D2	H1	H2	H3	H4	H5	H6	H7	H8	H9	L1	L2	L3	L4
VOFC-L-B52-G14-F19	40	38	15	G1/4	5.5	240	25	77.6	56	22.6	22	13.6	22	22	60	46	60	2
VOFC-L-B52-G14-F19A																		

Ordering data

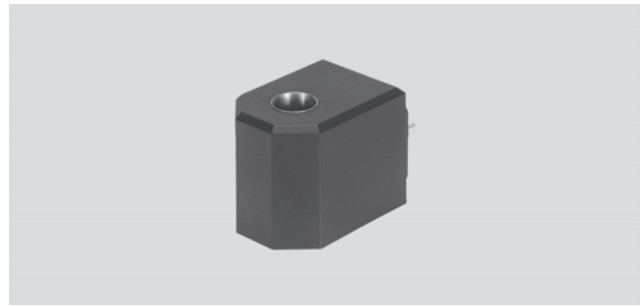
Circuit symbol	Function	Pneumatic connection	Type of ignition protection	Part No.	Type
In-line valve					
	5/2-way, double solenoid	G1/4 and NAMUR	Without	4514929	VOFC-L-B52-FG14-F19
			Intrinsically safe	4514930	VOFC-L-B52-FG14-F19A
	5/2-way, double solenoid	G1/4	Without	4514927	VOFC-L-B52-G14-F19
			Intrinsically safe	4514928	VOFC-L-B52-G14-F19A

Solenoid coils VACC-S13-18-A1

Technical data

-  Voltage
24 V DC
24 V AC/DC
110 V AC/DC
230 V AC/DC
-  Temperature range
-20 ... +60 °C

Nominal power
2 watt at 24 V DC



General technical data

Type of mounting	Via knurled nut
Type of actuation	Electrical
Mounting position	Any
Product weight	[g] 210

Materials

Housing	PA, UP
Note on materials	Contains paint-wetting impairment substances RoHS compliant

Electrical data

Electrical connection	Plug pins, 3-pin, with connection pattern to EN 175301-803, type A
Permissible voltage fluctuations	[%] -15 ... 10
Duty cycle	[%] 100
Degree of protection to EN 60529	IP65 with plug socket
Insulation class	H

Characteristic coil data

Nominal operating voltage	24 V DC	24 V AC/DC		110 V AC/DC		230 V AC/DC	
Frequency	[Hz] -	40/65	-	40/65	-	40/65	-
Power	[W]	1.8	-	1.8	-	1.8	-
	[VA]	-	1.8	-	1.8	-	1.8

Operating and environmental conditions

Nominal operating voltage	24 V DC	24 V AC/DC	110 V AC/DC	230 V AC/DC
Ambient temperature	[°C] -20 ... 60		-20 ... 60	
Corrosion resistance class CRC ¹⁾	4		4	
CE marking (see declaration of conformity) ²⁾	-		To EU Low Voltage Directive (only for alternating voltage AC)	

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

2) Additional information www.festo.com/sp → Certificates.

01

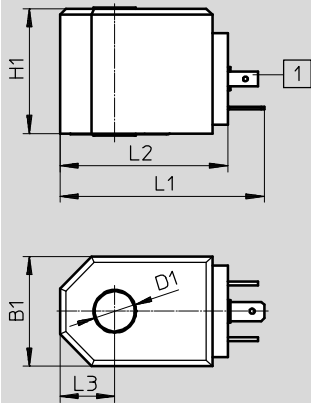
Pilot valves

Solenoid coils VACC-S13-18-A1

Technical data

Dimensions


Download CAD data → www.festo.com



1 Plug pattern type A, to EN 175301-803

Type	B1	D1	H1	L1	L2	L3
VACC-S13-18-A1-...	36	13.1	41	67	55	18

Ordering data

	Description	Part No.	Type
	Plug connector type A, to EN 175301-803	24 V DC	562889 VACC-S13-18-A1-1
		24 V AC/DC	562890 VACC-S13-18-A1-1U
		110 V AC/DC	562891 VACC-S13-18-A1-2U
		230 V AC/DC	562892 VACC-S13-18-A1-3U

Solenoid coils VACC-S13-11-...-EX4A

Technical data

 Voltage
24 V DC

Nominal power
1.1 watt at 24 V DC



General technical data

Type of mounting	Via knurled nut
Type of actuation	Electrical
Mounting position	Any
Product weight	[g] 330

Materials

Housing	PA, UP
Note on materials	Contains paint-wetting impairment substances RoHS compliant

Electrical data

Electrical connection	Terminal box, cable entry thread metric, M20x1.5
Permissible voltage fluctuations	[%] -15 ... 10
Duty cycle	[%] 100
Maximum input power, Pi	[W] 1.2
Maximum input voltage, Ui	[V] 32
Maximum input current, Ii	[A] 0.2
Required current consumption, Imin	[mA] 16
Degree of protection to EN 60529	IP64
Insulation class	H

Characteristic coil data

Nominal operating voltage	[V DC] 14 ... 32
Power	[W] 0.22 ... 1.1
Effective internal capacitance, Ci	Negligibly low
Effective internal inductance, Li	Negligibly low

Operating and environmental conditions

Corrosion resistance class CRC ¹⁾	4
CE mark (see declaration of conformity) ³⁾	To EU EMC Directive ²⁾ To EU Explosion Protection Directive (ATEX)

- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.
- 2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.
- 3) Additional information www.festo.com/sp → Certificates.

01

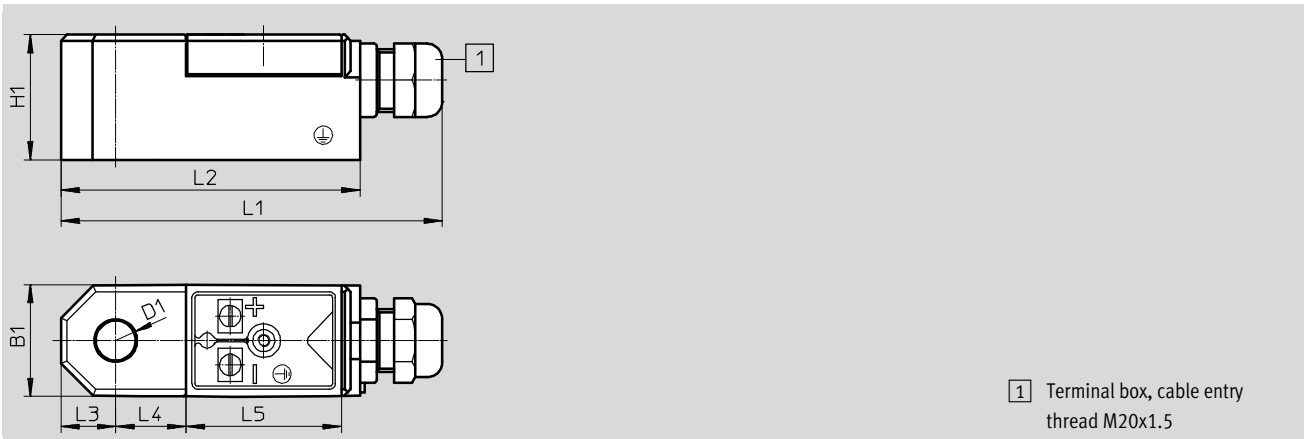
Pilot valves

Technical data

ATEX	
ATEX category for gas	II 2G
Type of ignition protection for gas	Ex ia IIC T6, T5 Gb
ATEX category for dust	II 2D
Type of ignition protection for dust	Ex ia IIIC T80°C, T95°C Db
Explosion ambient temperature	T5, T95°C: -30°C ≤ Ta ≤ +65°C
	T6, T80°C: -30°C ≤ Ta ≤ +50°C
Explosion protection certification outside the EU	EPL Gb (BR), EPL Gb (CN), EPL Db (BR)
Certificate issuing authority	BVS15 ATEXE030X
	DNV 17.0043X
	NEPSI GYJ111105
	TÜV 12.1949 X

Dimensions

Download CAD data → www.festo.com



1 Terminal box, cable entry thread M20x1.5

Type	B1	D1	H1	L1	L2	L3	L4	L5
VACC-S13-11-K4-1-EX4A	37	13.1	41	131	98	18	23	51

Ordering data

	Description	Part No.	Type
	Terminal box, cable entry thread metric, M20x1.5	562896	VACC-S13-11-K4-1-EX4A

Solenoid coils VACC-S13-18-...-EX4ME

Technical data

- L - Voltage
 24 V AC/DC
 60 V AC/DC
 110 V AC/DC
 230 V AC/DC

Nominal power
 2 watt at 24 V DC



01

Pilot valves

General technical data

Type of mounting	Via knurled nut
Type of actuation	Electrical
Mounting position	Any
Product weight	[g] 330

Materials

Housing	PA, UP
Note on materials	Contains paint-wetting impairment substances RoHS compliant

Electrical

Electrical connection	Terminal box, cable entry thread metric, M20x1.5
Permissible voltage fluctuations	[%] -15 ... 10
Duty cycle	[%] 100
Insulation class	H
Degree of protection to EN 60529	IP64 (IP65 with internal fuse protection)

Characteristic coil data

Nominal operating voltage		24 V AC/DC		24 V AC/DC With fuse		60 V AC/DC		110 V AC/DC		230 V AC/DC	
		[Hz]		[Hz]		[Hz]		[Hz]		[Hz]	
Frequency	[Hz]	40/65	-	40/65	-	40/65	-	40/65	-	40/65	-
Power	[W]	-	1.8	-	1.8	-	1.8	-	1.8	-	1.8
	[VA]	1.8	-	1.8	-	1.8	-	1.8	-	1.8	-

Operating and environmental conditions

Corrosion resistance class CRC ¹⁾	4
CE marking (see declaration of conformity) ²⁾	To EU Explosion Protection Directive (ATEX)

- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
 Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.
- 2) Additional information www.festo.com/sp → Certificates.

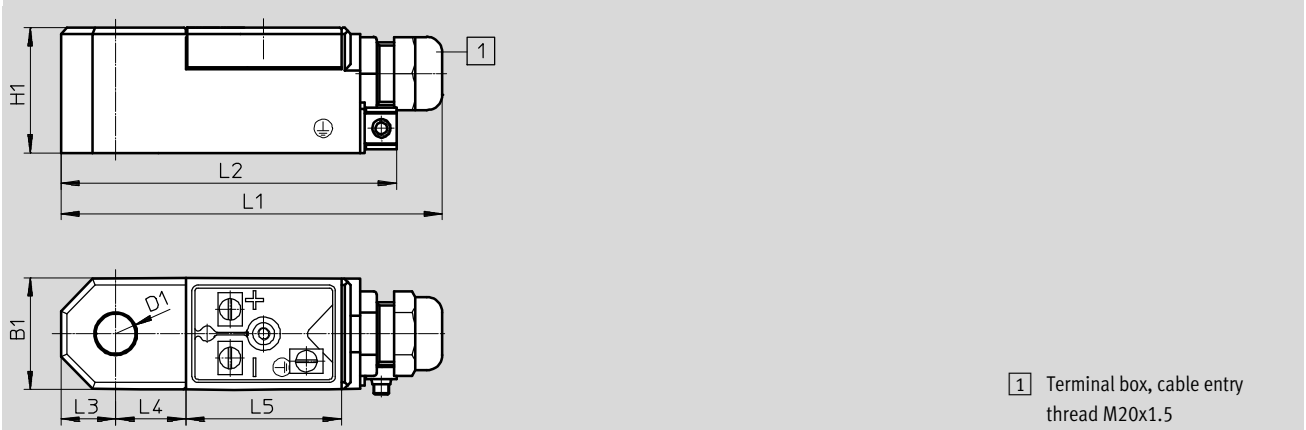
Solenoid coils VACC-S13-18-...-EX4ME

Technical data

ATEX	Solenoid coil without internal fuse	Solenoid coil with internal fuse
ATEX category for gas	II 2G	II 2G
Type of ignition protection for gas	Ex e mb IIC T6, T5, T4 Gb	Ex e mb IIC T6 Gb
ATEX category for dust	II 2D	II 2D
Type of ignition protection for dust	ExtbIIICT85°C,T95°C,T130°C Db	Ex tb IIIC T70°C Db
Explosion ambient temperature [°C]	T4, T130°C: -20°C ≤ Ta ≤ +60°C	-
	T5, T95°C: -20°C ≤ Ta ≤ +60°C	-
	T6, T80°C: -20°C ≤ Ta ≤ +50°C	T6, T70°C: -20°C ≤ Ta ≤ +40°C
Explosion protection certification outside the EU	EPL Db (BR)	-
	EPL Db (CN)	-
	EPL Db (IEC-EX)	EPL Db (IEC-EX)
	EPL Gb (BR)	-
	EPL Gb (CN)	-
Certificate issuing authority	BVS15 ATEXE029X	BVS15 ATEXE029X
	IECEX BVS15.0075 X	-
	NEPSI GYJ111104X	-
	TÜV 12.1947 X	-

Dimensions

Download CAD data → www.festo.com



Type	B1	D1	H1	L1	L2	L3	L4	L5
VACC-S13-18-K4-...-EX4ME	37	13.1	41	125	98	18	23	51
VACC-S13-18-K4-27U-EX4ME					111			

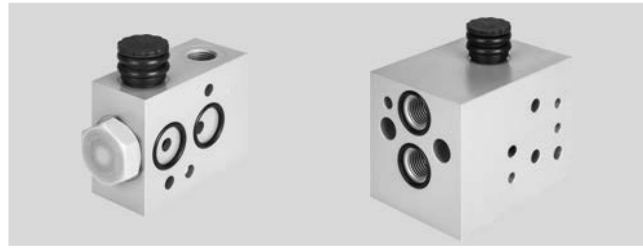
Ordering data

Description	Part No.	Type														
		Terminal box, cable entry thread metric, M20x1.5	<table border="1"> <tr> <td>24 V AC/DC</td> <td>562893</td> <td>VACC-S13-18-K4-1U-EX4ME</td> </tr> <tr> <td>24 V AC/DC With fuse</td> <td>570784</td> <td>VACC-S13-18-K4-1UF-EX4ME</td> </tr> <tr> <td>60 V AC/DC</td> <td>8040578</td> <td>VACC-S13-18-K4-27U-EX4ME</td> </tr> <tr> <td>110 V AC/DC</td> <td>562894</td> <td>VACC-S13-18-K4-2U-EX4ME</td> </tr> <tr> <td>230 V AC/DC</td> <td>562895</td> <td>VACC-S13-18-K4-3U-EX4ME</td> </tr> </table>	24 V AC/DC	562893	VACC-S13-18-K4-1U-EX4ME	24 V AC/DC With fuse	570784	VACC-S13-18-K4-1UF-EX4ME	60 V AC/DC	8040578	VACC-S13-18-K4-27U-EX4ME	110 V AC/DC	562894	VACC-S13-18-K4-2U-EX4ME	230 V AC/DC
24 V AC/DC	562893	VACC-S13-18-K4-1U-EX4ME														
24 V AC/DC With fuse	570784	VACC-S13-18-K4-1UF-EX4ME														
60 V AC/DC	8040578	VACC-S13-18-K4-27U-EX4ME														
110 V AC/DC	562894	VACC-S13-18-K4-2U-EX4ME														
230 V AC/DC	562895	VACC-S13-18-K4-3U-EX4ME														

Sub-bases

Accessories – Sub-base VABS-S7-RB/BE...

Port pattern: NAMUR



General technical data

Type	Pressurisation and exhaust block, with flange 1/4, port pattern to NAMUR, VABS-S7-BE...	Redundancy block VABS-S7-RB...
Type of mounting	With through-hole	
Mounting position	Any	
Flow rate for piston valve pressurisation [m³/h]	2.2	–
Flow rate for piston valve exhaust [m³/h]	8.6	–
Product weight [g]	250	
Pneumatic connection	1	G1/4, 1/4 NPT
	2	Flange 1/4, port pattern to NAMUR
	3	G1/4, 1/4 NPT
	12	–
		G1/4, 1/4 NPT

Operating and environmental conditions

	VABS-S7-BE	VABS-S7-RB
Operating medium	Compressed air to ISO 8573-1:2010 [–:–:–]	
Operating pressure [bar]	2 ... 8	0 ... 10
Pilot air supply	Internal	External/internal
Degree of protection	IP65 (when installed)	
Corrosion resistance class CRC ¹⁾	4	

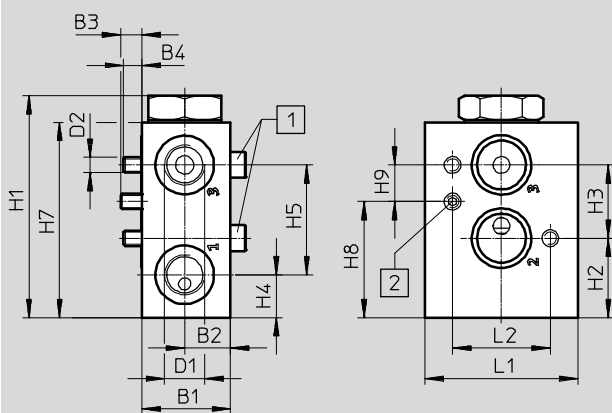
- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Materials

Sub-base	Aluminium, Ematal coated
Seals	NBR
Note on materials	Contains paint-wetting impairment substances, RoHS compliant

Dimensions

Download CAD data → www.festo.com



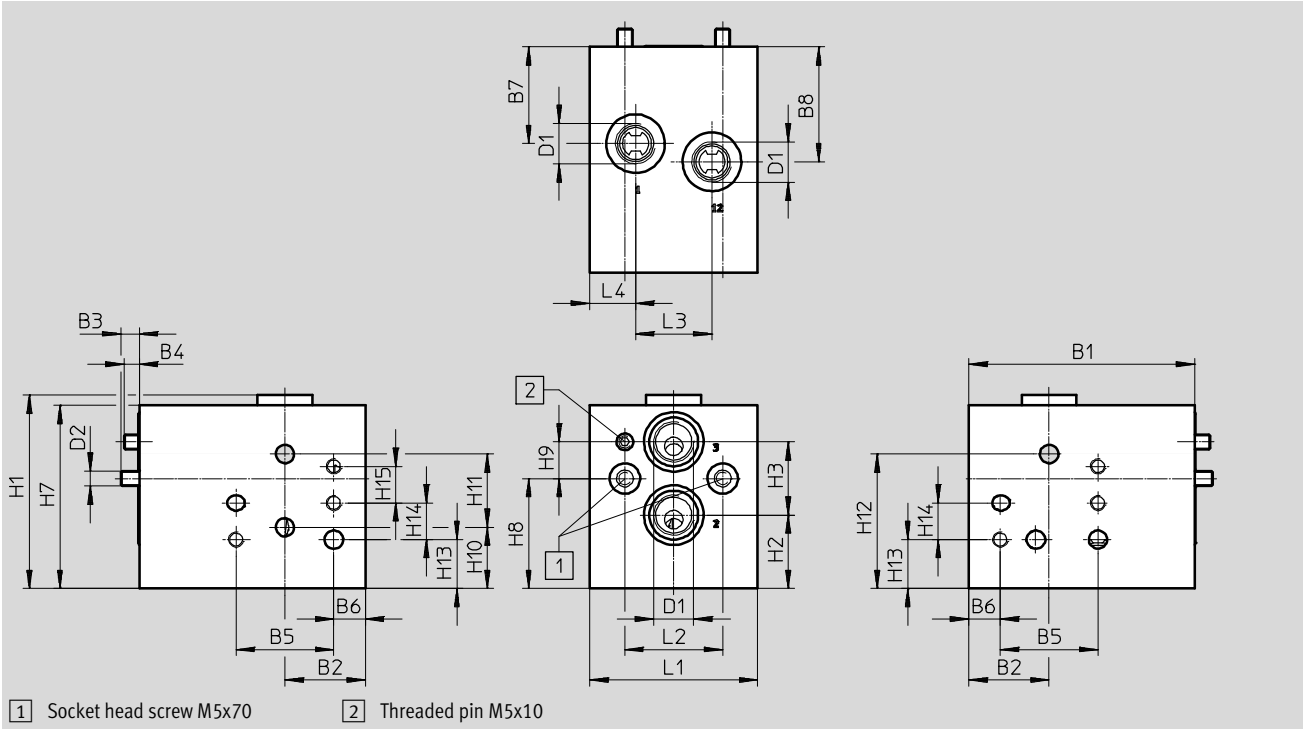
- 1) Socket head screw M5x35 2) Threaded pin M5x10

Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H7	H8	H9	L1	L2
VABS-S7-BE-B-G14-V14-A	29	15	7	6	G1/4	M5	72.7	26	24	14	36	64	38	12	50	32
VABS-S7-BE-B-N14-V14-A					1/4 NPT											

Accessories – Sub-base VABS-S7-RB/BE-...

Dimensions

Download CAD data → www.festo.com



Type	B1	B2	B3	B4	B5	B6	B7	B8	D1	D2	L1	L2	L3	L4
VABS-S7-RB-B-G14-V14-A	74	26.3	6	5	32	10.3	31.7	37.7	G1/4	M5	55	32	25	15
VABS-S7-RB-B-N14-V14-A									1/4 NPT					

Type	H1	H2	H3	H7	H8	H9	H10	H11	H12	H13	H14	H15
VABS-S7-RB-B-G14-V14-A	63.4	24	24	60	36	12	20	24	44	16	12	12
VABS-S7-RB-B-N14-V14-A												

Ordering data

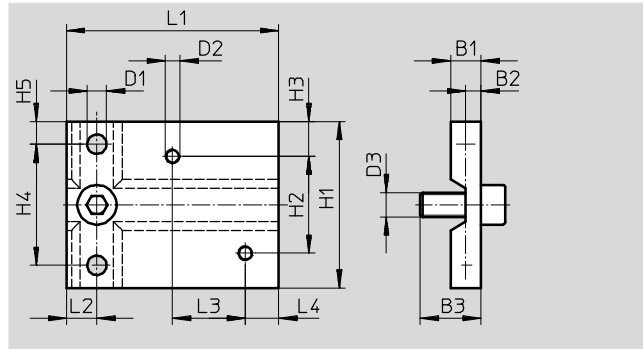
	Description	Part No.	Type
	Sub-base for mounting two solenoid valves with a G thread port for redundant circuitry, with flange 1/4, port pattern to NAMUR With the auxiliary air supply connection, the intermediate plate can be used for fail-safe functions, also in the case of piloted solenoid valves and actuators with positioners.	3580505	VABS-S7-RB-B-G14-V14-A
	Sub-base the mounting two solenoid valves with an NPT thread port for redundant circuitry, with flange 1/4, port pattern to NAMUR With the auxiliary air supply connection, the intermediate plate can be used for fail-safe functions, also in the case of piloted solenoid valves and actuators with positioners.	4727331	VABS-S7-RB-B-N14-V14-A
	Sub-base as pressurisation and exhaust block with G threaded port, with flange 1/4, port pattern to NAMUR	2999476	VABS-S7-BE-B-G14-V14-A
	Sub-base as pressurisation and exhaust block with NPT thread port, with flange 1/4, port pattern to NAMUR	4727328	VABS-S7-BE-B-N14-V14-A

Solenoid valves

Accessories

Mounting plate VAME-S7-P

Mounting plate material: aluminium, Ematal coated
 Contains paint-wetting impairment substances, RoHS-compliant
 Mounting: With through-hole



Dimensions [mm] and ordering data

B1	B2	B3	D1	D2	D3	H1	H2	H3	H4	H5	L1	L2	L3	L4	CRC ¹⁾	Part No.	Type
10	5	20	6.4	M5	M8	55	32	11.5	40	7.5	70	10	24	11	4	563399	VAME-S7-P

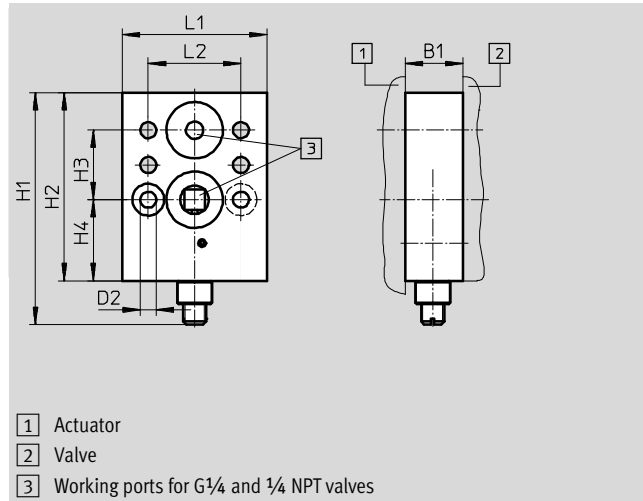
1) Corrosion resistance class CRC 4 to Festo standard FN 940070
 Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Flow control plate for single-acting actuators

Flow control plate material: Aluminium, Ematal coated
 Material of seals: NBR
 Contains paint-wetting impairment substances, RoHS-compliant
 Operating medium: Compressed air to ISO 8573-1:2010 [7:--:--]
 Operating pressure: 0 ... 12 bar
 Pilot air supply: Internal/external
 Mounting position: Any
 Mounting: With through-hole
 Degree of protection: IP65 (when installed)



Function:
 Supply air flow control and/or exhaust air flow control of an actuator with a NAMUR interface for VOFC/VOFD valves



Dimensions [mm] and ordering data

B1	D2	H1	H2	H3	H4	L1	L2	CRC ¹⁾	Part No.	Type
20	5.5	80	65	24	28	50	32	4	563401	VABF-S7-F1B5P1-F

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
 Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

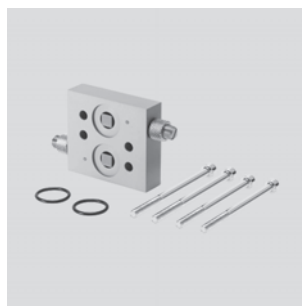
01

Pilot valves

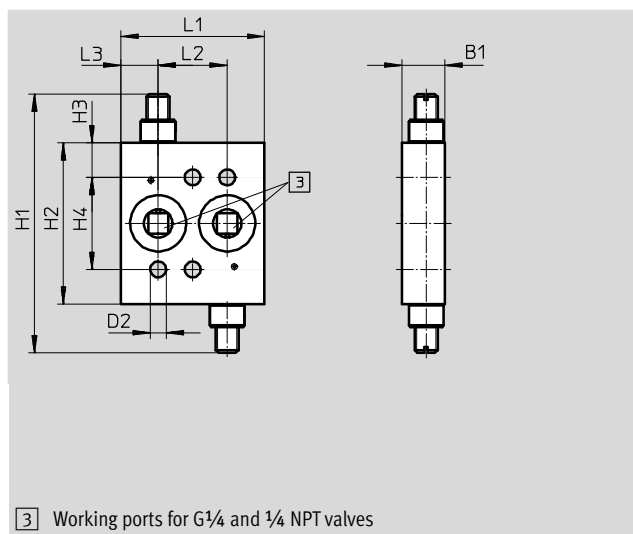
Accessories

Flow control plate for double-acting actuator

Flow control plate material: Aluminium, Ematal coated
 Material of seals: NBR
 Contains paint-wetting impairment substances, RoHS-compliant
 Operating medium: Compressed air to ISO 8573-1:2010 [7:-:-]
 Operating pressure: 0 ... 12 bar
 Pilot air supply: Internal/external
 Mounting position: Any
 Mounting: With through-hole
 Degree of protection: IP65 (when installed)



Function:
 2-duct exhaust air flow control of an actuator with NAMUR interface



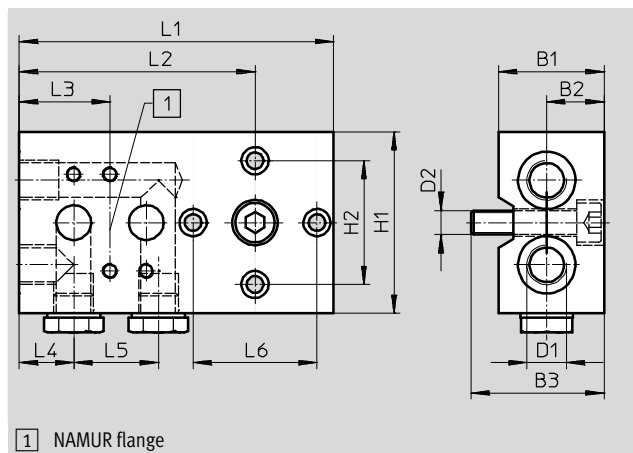
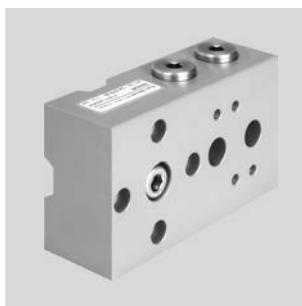
Dimensions [mm] and ordering data

B1	D2	H1	H2	H3	H4	L1	L2	L3	CRC ¹⁾	Part No.	Type
15	5.5	90	56	12	32	50	24	13	4	563395	VABF-S7-F1B1P2-F

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
 Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Sub-base

Sub-base material: Aluminium, Ematal coated
 Material of seals: NBR
 Contains paint-wetting impairment substances, RoHS-compliant
 Operating medium: Compressed air to ISO 8573-1:2010 [7:-:-]
 Operating pressure: 0 ... 10 bar
 Mounting position: Any
 Mounting: With through-hole
 Degree of protection: IP65 (when installed)



Dimensions [mm] and ordering data

B1	B2	B3	D1	D2	H1	H2	L1	L2	L3	L4	L5	L6	CRC ¹⁾	Part No.	Type
35	19	44	G1/4	M8	60	41	104	78	30	18	28	41	4	563396	VABS-S7-S-G14

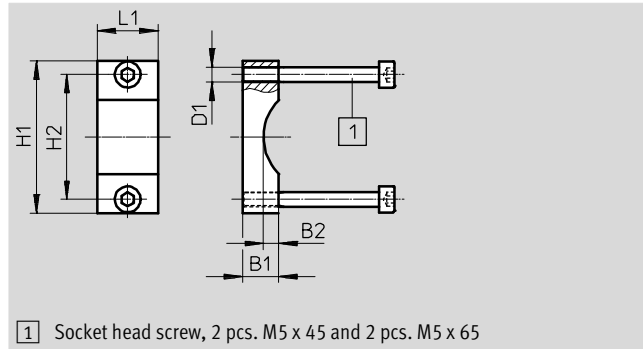
1) Corrosion resistance class CRC 4 to Festo standard FN 940070
 Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Solenoid valves

Accessories

Mounting bracket

Mounting bracket material:
Aluminium, Ematal coated
Contains paint-wetting impairment substances, RoHS-compliant



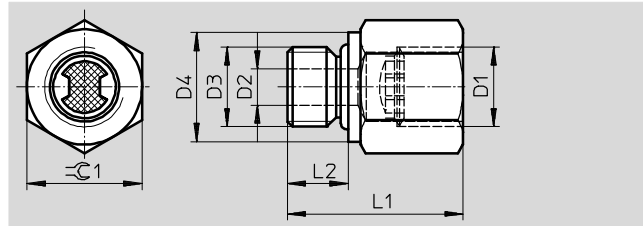
Dimensions [mm] and ordering data

B1	B2	D1	H1	H2	L1	CRC ¹⁾	Part No.	Type
12	5	M5	50	41	20	4	563403	VAME-S7-Y

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Adapter with filter

Adapter material: High-alloy stainless steel
Material of seals: NBR
Note on materials:
Contains paint-wetting impairment substances, RoHS-compliant
Operating pressure 2 ... 8 bar



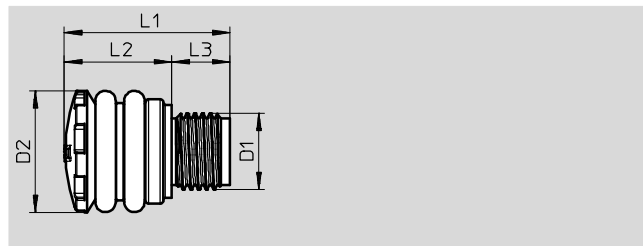
Dimensions [mm] and ordering data

D1	D2	D3	D4	L1	L2	≈C1	CRC ¹⁾	Part No.	Type
1/4 NPT	6	G1/4	18	29	10	19	1	563397	NPFV-AF-G14-N14-MF
G1/4	6	G1/4	18	29	10	19	1	563398	NPFV-AF-G14-G14-MF
1/4 NPT	6	1/4 NPT	18	29	10	19	1	4727333	NPFV-AF-N14-N14-MF

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Exhaust protection G1/4

Housing material: PA
Material of seals: EPDM
Contains paint-wetting impairment substances, RoHS-compliant
Operating medium: Compressed air to ISO 8573-1:2010 [7:-:-]
Operating pressure: 0 ... 10 bar
Ambient temperature: -50 ... +60 °C
Type of mounting: can be screwed in, with male thread



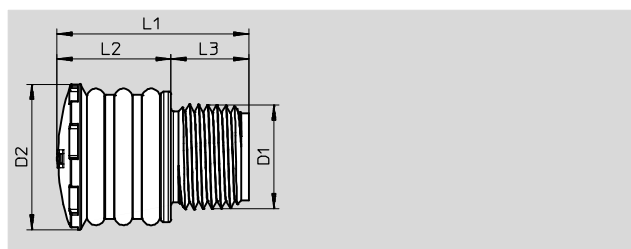
Dimensions [mm] and ordering data

D1	D2	L1	L2	L3	Part No.	Type
G1/4, 1/4 NPT	21	28.5	18.5	10	563400	VABD-D3-SN-G14

Accessories

Exhaust protection 1/2 NPT

Housing material: PA
 Material of seals: EPDM
 Contains paint-wetting impairment substances, RoHS compliant
 Operating medium: Compressed air to ISO 8573-1:2010 [7:-:-]
 Operating pressure: 0 ... 12 bar
 Ambient temperature: -50 ... +60 °C
 Type of mounting: Can be screwed in, with male thread

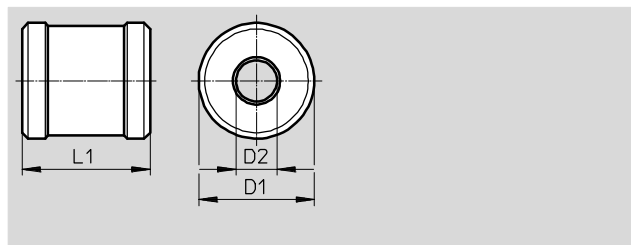


Dimensions [mm] and ordering data						
D1	D2	L1	L2	L3	Part No.	Type
G1/2, 1/2 NPT	29	38	23	15	3535104	VABD-D3-SN-N12

Manual override

Material: Aluminium, anodised,
 Contains paint-wetting impairment substances, RoHS compliant

Function:
 Manual override of basic valves instead of a solenoid coil



Dimensions [mm] and ordering data						
D1	D2	L1	Weight [g]	CRC ¹⁾	Part No.	Type
38	13.5	42	120	2	3580654	VAOH-MB-S7-S13

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
 Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Ordering data		Part No.	Type
Connecting cable		Technical data → Internet: kmc	
	Operating voltage 24 V DC, switching status indication with LED	Cable length 2.5 m	30931 KMC-1-24 DC-2,5-LED
		Cable length 5 m	30933 KMC-1-24 DC-5-LED
		Cable length 10 m	193459 KMC-1-24-10-LED
	Operating voltage up to 240 V AC	Cable length 2.5 m	30932 KMC-1-230 AC-2,5
Cable length 5 m		30934 KMC-1-230 AC-5	
Plug socket		Technical data → Internet: mssd	
	Cable connection using clamping screws	34583	MSSD-C

Solenoid valves

VOFD



Overview, configuration and ordering
→ www.festo.com/catalogue/vofd



Additional information, support and user documentation
→ www.festo.com/sp/vofd



Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/ex



- + Connection G1/4, G1/2, NPT1/4, NPT1/2 and NAMUR
- + Voltage 24, 110, 230 V DC, AC, UC
- + Explosion protection EX me and EX d, ATEX

- + Sturdy and corrosion-resistant thanks to hard Ematal surface
- + SIL certificate

Solenoid valves VOFD

Key features

General

- The valves from the series VOFD are special 3/2-way valves for process automation, for use in chemical and petrochemical plants. Here they are frequently used as pilot valves for butterfly valves and actuators. Their

sturdy design and high resistance to corrosion make these valves suitable for outdoor use under harsh ambient conditions.

- The NAMUR flange pattern makes the solenoid valves especially

suitable for quarter-turn actuators. The integrated spring chamber re-breather function protects quarter-turn actuators with spring return (single-acting cylinders and actuat-

ors) against contaminated ambient air and weather influences such as rain.

- With German Technical Control Board (TÜV) approval up to SIL 3.

Function, design

- 3/2-way directly actuated poppet valves

Safety

- Can be used in emergency shutdown (ESD) applications
- Suitable for use in safety-related systems up to and including SIL 3 to IEC 61508

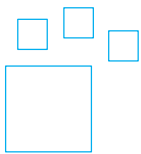
Robust

- The surface of the valve housing is Ematal coated. This treatment involves converting the aluminium surface into a very hard aluminium oxide layer with titanium oxide intercalations, which makes the valves extremely resistant to wear and abrasion and gives them first-class sliding qualities. This provides optimum protection against atmospheric and chemical influences.
- You can find information on the media resistance of the product at → www.festo.com.

Economical

- One valve, two connection options
- Port patterns to NAMUR for direct installation on the actuator as well as G and NPT threaded connections
- Manual override can be ordered optionally
- Manual override can be retrofitted and removed again – no additional valve version required

Ordering data – Product options



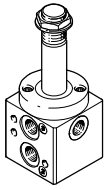
Configurable product
This product and all its product options can be ordered using the configurator.

The configurator can be found at
→ www.festo.com/catalogue/...

Part No.	Type
2956784	VOFD-L35T
3212962	VOFD-L50T
2964753	VOFD-L100T

Key features

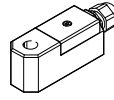
VOFD – Basic valves



- 3/2-way valves
- Ports G1/4, 1/4 NPT, G1/2, 1/2 NPT
- Port pattern to NAMUR, port pattern to NAMUR with P duct

→ Page 168

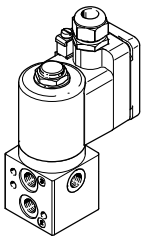
VACC – S18 coils, VACC – S13 coils



- AC and DC voltage 24 V, 48 V, 60 V, 110 V, 120 V, 230 V
- Type of ignition protection EX EMB II, EX tD

→ Page 179, 196

VOFD – Solenoid valves



- Combination of VOFD basic valve and VACC-S18 coil (in the case of basic valve VOFD-L12T-..., VACC-S13 coil)
- 3/2-way valves
- Type of ignition protection EX EMB II, EX tD

Configurable product

→ Page 152

VOFD – Accessories



- Flow control plate
- Sub-base
- Mounting plate
- Connection kit
- Adapter with filter
- Exhaust protection
- Mounting bracket
- Manual override

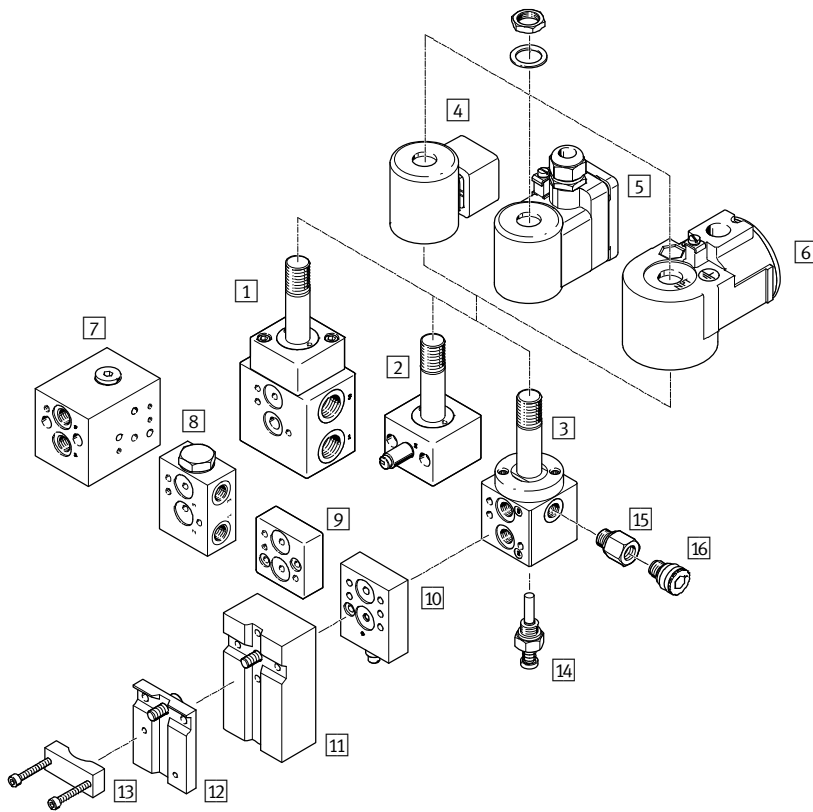
→ Page 203

Solenoid valves VOFD-L35/50/100T...-F10

Peripherals overview

01

Pilot valves

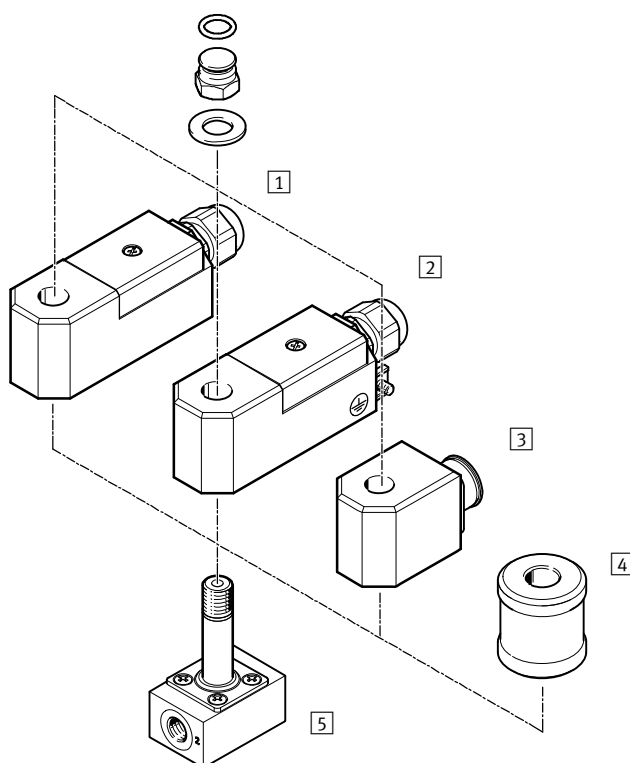


Mounting components and accessories

		Brief description	→ Page/Internet
1	Basic valve VOFD-L100T-...	3/2-way valve, port G1/2, poppet valve → modular product system – can be configured using the online configurator	152
2	Basic valve VOFD-L35T-...	3/2-way valve, port G1/4, poppet valve → modular product system – can be configured using the online configurator	152
3	Basic valve VOFD-L50T-...	3/2-way valve, port G1/4, poppet valve → modular product system – can be configured using the online configurator	152
4	Solenoid coil VACC-S18-...-A1-...	A1 standard solenoid	180, 182
5	Solenoid coil VACC-S18-...-ME	Ex-ME solenoid	190, 192
6	Solenoid coil VACC-S18-...-D	Ex-D solenoid	184, 186, 188
7	Sub-base VABS-S7-RB-...	Sub-base for mounting two solenoid valves for redundant circuitry	203
8	Connecting plate VABS-S7-BE-...	Sub-base as a pressurisation and exhaust block	203
9	Mounting plate VAME-S7-P-N-V14-A	Mounting plate as a spacer plate for solenoid valves when combined with ATEX solenoid coils	209
10	Flow control plate VABF-S7-F1B5P1-F	Exhaust air flow control plate for NAMUR interface for installation between the solenoid valve and single-acting actuators	206
11	Connection kit VABF-S7-S-G14	Mounting plate for attaching the valve to a NAMUR rib	207
12	Mounting plate VAME-S7-P	Mounting plate for attaching the valve to a NAMUR rib	206

Peripherals overview

Mounting components and accessories			
	Brief description	→ Page/Internet	
13	Mounting bracket VAME-S7-Y	Alternative option (instead of screw) for attaching the valve to a NAMUR rib with the help of a mounting bracket	207
14	Manual override VAOH-S8	Manual override	209
15	Adapter NPFV-AF-...-MF	Adapter with filter	208
16	Exhaust protection VABD-D3-SN-G14	Exhaust protection to IP65. The spring chamber of the solenoid valve is protected against the ingress of aggressive ambient air and water by the one-way flow control system	208



Accessories: Valve pilot control interface for solenoid coil 13 mm			
	Brief description	→ Page/Internet	
1	Solenoid coil VACC-S13-...-4A	EX-4A solenoid	199
2	Solenoid coil VACC-S13-...-ME	Ex-ME solenoid	201
3	Solenoid coil VACC-S13-...-A1-...	A1 standard solenoid	197
4	Manual override VAOH-MB-S7-S13	Manual override (MO)	209
5	Basic valve VOFD-L12T-...	3/2-way valve, port G1/4, poppet valve, valve pilot control interface for solenoid coil 13 mm	159

Solenoid valves VOFD

Type codes VOFD

VOFD - L - T - M N - - - -

01

Pilot valves

Type	
VOFD	Solenoid valves, series D
Valve type	
L	In-line valve
Nominal width	
12	1.2 mm
35	3.5 mm
40	4 mm
50	5 mm
100	10 mm
Design principle	
T	Poppet valve
Valve function	
M32	3/2-way valve, normally closed or open
M32A	3/2-way valve, normally closed, semi-automatic
Reset method for single solenoid valves	
M	Mechanical spring
Pilot air	
N	None
Manual override	
-	None
H	Non-detenting
Y	Detenting without accessories
Pneumatic connection	
G12	G1/2
G14	G1/4
N12	1/2 NPT
N14	1/4 NPT
FG12	Flange G1/4, ports G1/2
FG14	Flange G1/4, ports G1/4
FGP14	Flange G1/4, ports G1/4 and additional pn port (NAMUR)
FNP14	Flange 1/4 NPT and additional pn port (NAMUR)
Supply port version	
-	Standard
PF	With particle filter
NPF	With particle filter and connecting thread NPT
Exhaust	
-	No fitting
U6	With exhaust protection

Type codes VOFD

Pressure range							
8	0 ... 8 bar						
10	0 ... 10 bar						
12	0 ... 12 bar						
Temperature range							
-	Standard						
T6	-50 ... +60 °C						
Corrosion protection							
-	Standard						
R1	Stainless steel						
Valve pilot control interface							
F10	Electric with armature tube for solenoid coil 18 mm						
F19	Electric with armature tube for solenoid coil 13 mm						
F19A	Electric with armature tube for solenoid coil 13 mm, intrinsically safe						
Power consumption							
-	None						
18	1.8 W						
25	2.5 W						
35	3.5 W						
70	7 W						
120	12 W						
Nominal operating voltage							
-	None						
1A	24 V AC/50-60 Hz						
1U	24 V AC and DC						
2A	110 V AC/50-60 Hz						
2U	110 V AC and DC						
3A	220 V AC/50-60 Hz						
3U	220 V AC and DC						
7U	48 V AC and DC						
16U	120 V AC and DC						
1	24 V DC						
3	230 V DC						
7	48 V DC						
16	120 V DC						
27	60 V DC						
Electrical connection							
-	None						
A1	Plug pattern type A, to EN 175301						
K4	Cable connector, metric						
K5	Cable connector NPT						

Solenoid valves VOFD

Type codes VOFD

01

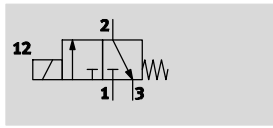
Pilot valves


Circuitry							
-	None						
F	Fuse						
EU certification							
-	Without certification						
EX4	II 2GD						
Certification outside the EU							
-	Without certification						
U2	cULus, hazardous environment, USA and Canada (NEC 500)						
Type of ignition protection							
-	None						
A	Intrinsically safe						
D	Pressure-resistant encapsulation						
ME	Moulded encapsulation, enhanced safety						

Technical data – Basic valve VOFD-L12T-...

Function

3/2-way valve



-  - Flow rate
Up to 52 l/min



General technical data

Basic valve G1/4	VOFD- ... -F19	VOFD- ... -F19-A
Valve function	3/2-way, single solenoid, closed	
Pneumatic connection	1	G1/4
	2	G1/4
	3	G1/4
Design	Directly actuated poppet valve	
Width [mm]	50	
Mounting position	Any	
Sealing principle	Soft	
Manual override	None	
Reset method	Mechanical spring	
Type of actuation	Electrical	
Suitability for vacuum	Yes	
Type of control	Direct	
Flow rate for piston valve pressurisation [m ³ /h]	0.04	
Flow rate for piston valve exhausting [m ³ /h]	0.04	
b value	0.2	0.53
C value [l/s bar]	0.44	0.21
Direction of flow	Non-reversible	
Product weight [g]	170	
Switching time off [ms]	60	
Switching time on [ms]	40	
Nominal width [mm]	1.2	
Standard nominal flow rate [l/min]	52	
Standard nominal flow rate 2→3 [l/min]	49	

Operating and environmental conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]
Operating pressure range [bar]	0 ... 8
Temperature of medium [°C]	-25 ... +60
Ambient temperature [°C]	-25 ... +60
Corrosion resistance class CRC ¹⁾	4

- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Materials

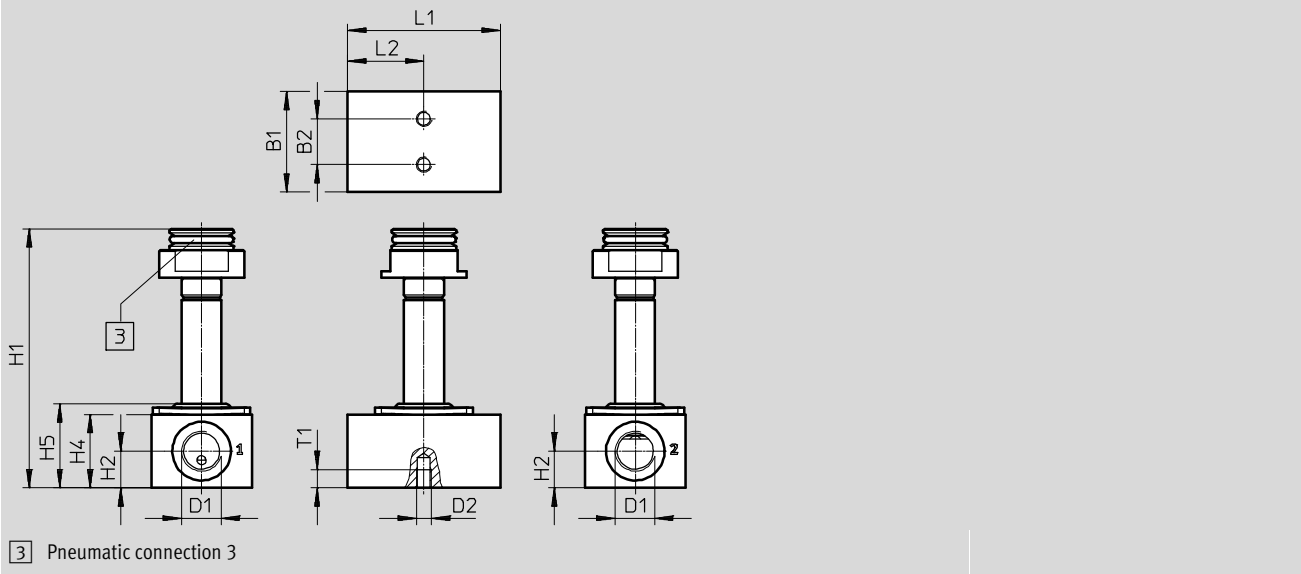
Housing	Aluminium (Ematal coated)
Seals	NBR
Note on materials	Contains paint-wetting impairment substances, RoHS-compliant

Basic valves VOFD-L12T-...-F19/F19A

Technical data – Basic valve VOFD-L12T-...

Dimensions

Download CAD data → www.festo.com



3 Pneumatic connection 3

Type	B1	B2	D1	D2	H1	H2	H4	H5	L1	L2	T1
VOFD-L12T-M32-MN-G14-F19	33	15	G1/4	M5	85	12	24	27.5	50	25	6
VOFD-L12T-M32-MN-G14-F19-A											

Ordering data

Circuit symbol	Function	Pneumatic connection	Type of ignition protection	Part No.	Type
Directly actuated poppet valve					
	3/2-way, single solenoid, closed	G1/4	None	3013904	VOFD-L12T-M32-MN-G14-F19
			Intrinsically safe	3014556	VOFD-L12T-M32-MN-G14-F19A

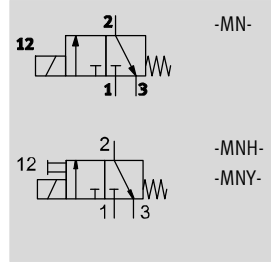
01


Pilot valves

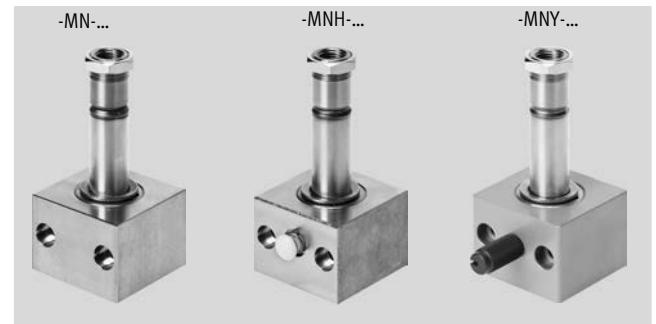
Technical data – Modular system NW 3.5 mm

Function

3/2-way valve



-  - Flow rate
Up to 406 l/min



General technical data

Basic valve G1/4		VOFD-L35T-...-MN-...	VOFD-L35T-...-MNH-...	VOFD-L35T-...-MNY-...
Valve function		3/2-way, single solenoid, closed (M32)		
		3/2-way, single solenoid, closed, semi-automatic (M32A)		
Pneumatic connection	1	G1/4		
VOFD-...-G14	2	G1/4		
	3	G1/4		
Pneumatic connection	1	1/4 NPT		
VOFD-...-N14	2	1/4 NPT		
	3	1/4 NPT		
Design		Directly actuated poppet valve		
Width	[mm]	51 (50 stainless steel design)		
Mounting position		Any		
Sealing principle		Soft		
Manual override		None	Non-detenting	Detenting
Type of reset		Mechanical spring		
Type of actuation		Electrical		
Suitability for vacuum		No		
Type of control		Direct		
Flow rate for piston valve pressurisation	[m ³ /h]	0.32		
Flow rate for piston valve exhausting	[m ³ /h]	0.32		
b value		0.15		
C value	[l/s bar]	1.8		
Direction of flow		Non-reversible		
Product weight	[g]	390		
Switching time off	[ms]	60		
Switching time on	[ms]	40		
Nominal width	[mm]	3.5		
Standard nominal flow rate 1 → 2	[l/min]	406		
Standard nominal flow rate 2 → 3	[l/min]	440		

Selection of solenoid coils

Suitable solenoid coils for the basic valves are available in the section on accessories.

The following solenoid coils can be selected:

- S18-18, nominal power 3 watt at 230 V AC (Ex-D)
- S18-70, nominal power 7 watt at 24 V DC (Ex-D)
- S18-120, nominal power 12 watt at 24 V DC (Ex-ME)

-  - Note

Additional information and solenoid coils to fit basic valves can be found in the Festo online configurator.

- Internet: VACC
- www.festo.com/sp

Basic valves VOFD-L35T-...-F10

Technical data – Modular system NW 3.5 mm

Operating and environmental conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:-:-]
Operating pressure range	[bar]	0 ... 8
Temperature of medium	[°C]	-25 ... +60
Temperature of medium, low temperature	[°C]	-50 ... +60
Ambient temperature	[°C]	-25 ... +60
Ambient temperature, low temperature	[°C]	-50 ... +60
Corrosion resistance class CRC ¹⁾		4

- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
 Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Materials	
Housing	Aluminium (Ematal coated)
Stainless steel housing	High-alloy stainless steel
Seals	NBR
Low temperature seals, stainless steel	VMQ
Note on materials	Contains paint-wetting impairment substances, RoHS-compliant

01

Pilot valves

Technical data – Modular system NW 3.5 mm

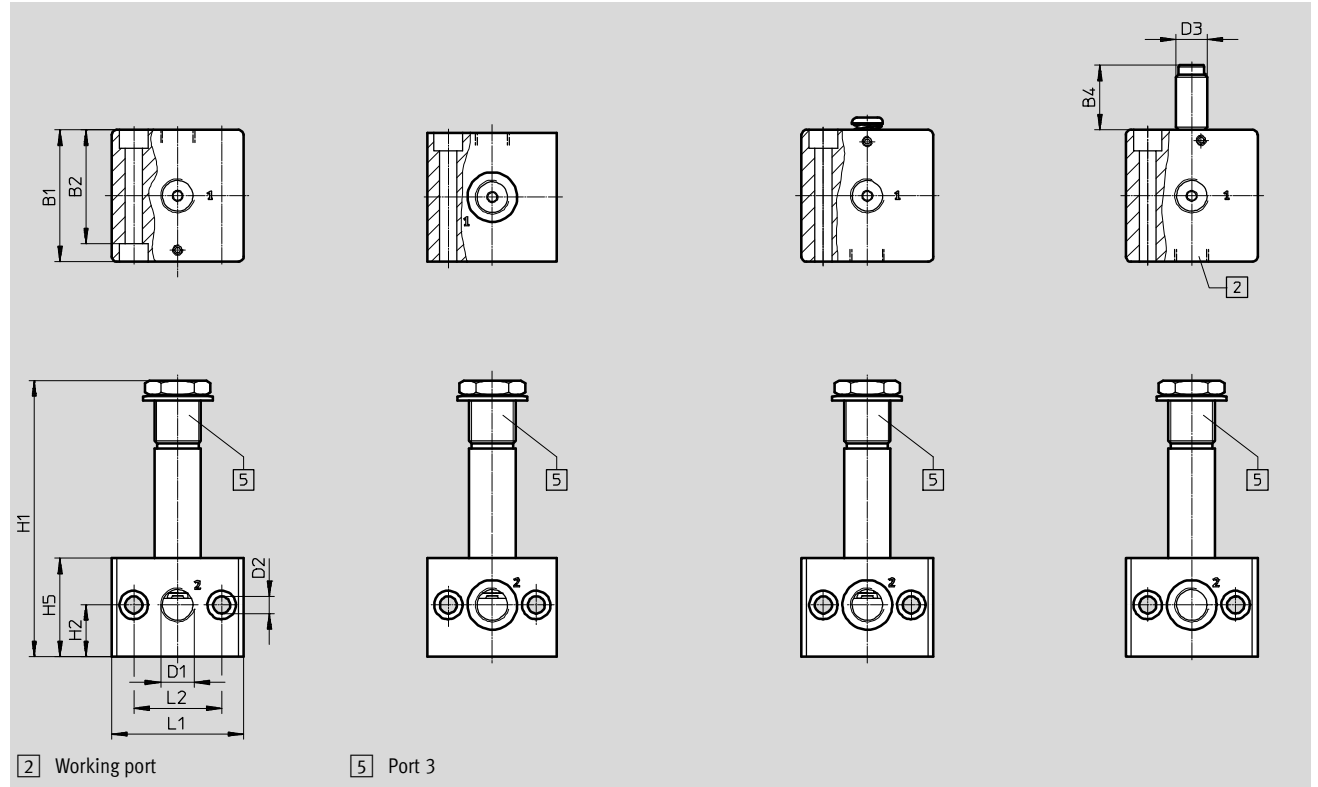
Dimensions

VOFD-L35T-M32-MN-...-R1

VOFD-L35T-M32-MNH-...

Download CAD data → www.festo.com

VOFD-L35T-M32-MNY-...




Type of G thread	B1	B2	B4	D1	D2 ∅	D3 ∅	H1	H2	H5	L1	L2
VOFD-L35T-M32-MN-G14-...-F10	51	44	-	G1/4	6.6	-	106.5	20	38	51	34
VOFD-L35T-M32-MN-G14-...-R1-F10	50	43	-			-					
VOFD-L35T-M32-MNH-G14-...-F10	51	44	-			-					
VOFD-L35T-M32-MNY-G14-...-F10	51	44	25			12					

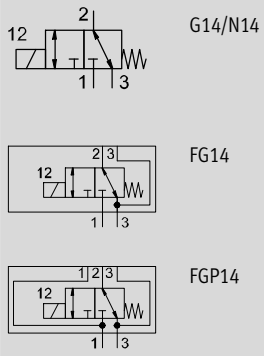
Type of NPT thread	B1	B2	B4	D1	D2 ∅	D3 ∅	H1	H2	H5	L1	L2
VOFD-L35T-M32-MN-N14-...-F10	51	44	-	1/4 NPT	6.6	-	106.5	20	38	51	34
VOFD-L35T-M32-MN-N14-...-R1-F10	50	43								50	
VOFD-L35T-M32-MNH-N14-...-F10	51	44								51	
VOFD-L35T-M32A-MNH-N14-...-F10	51	44								51	
VOFD-L35T-M32A-MNH-N14-...-R1-F10	50	43								50	

Basic valves VOFD-L50T-...-F10

Technical data – Modular system NW 5 mm

Function
3/2-way valve

 Flow rate
Up to 493 l/min



General technical data

Basic valve G1/4		VOFD-L50T-...G14-... VOFD-L50T-...N14-...	VOFD-L50T-...-FG14-... VOFD-L50T-...-FGP14-...	VOFD-L50T-...G14-R1-... VOFD-L50T-...N14-R1-...
Valve function		3/2-way, single solenoid, closed		
Pneumatic connection	1	G1/4		
VOFD-...-G14	2	G1/4		
	3	G1/4		
Pneumatic connection	1	1/4 NPT		
VOFD-...-N14	2	1/4 NPT		
	3	1/4 NPT		
Pneumatic connection	1	G1/4		
VOFD-...-FG14	2	Port pattern to NAMUR, flange 1/4		
	3	G1/4		
Pneumatic connection	1	M5 port pattern to NAMUR		
VOFD-...-FGP14	2	Port pattern to NAMUR, flange 1/4		
	3	G1/4		
Design		Directly actuated poppet valve		
Width	[mm]	51	50.5 (flange thread)	28 (stainless steel design)
Mounting position		Any		
Sealing principle		Soft		
Manual override		None		
Reset method		Mechanical spring		
Type of actuation		Electrical		
Suitability for vacuum		Yes		
Type of control		Direct		
Flow rate for piston valve pressurisation	[m ³ /h]	0.36		
Flow rate for piston valve exhausting	[m ³ /h]	0.36		
b value		0.25		
C value	[l/s bar]	2		
Direction of flow		Reversible		
Product weight	[g]	560		
Switching time off	[ms]	60		
Switching time on	[ms]	40		
Nominal width	[mm]	5		
Standard nominal flow rate	[l/min]	493		
Standard nominal flow rate 2→3	[l/min]	429		

01

Pilot valves

Technical data – Modular system NW 5 mm

Selection of solenoid coils

Suitable solenoid coils for the basic valves are available in the section on accessories.

The following solenoid coils can be selected:

- S18-25, nominal power 2.5 watt at 24 V DC (Ex-D)
- S18-35, nominal power 3.5 watt at 24 V DC (Ex-ME)

 Note

Additional information and solenoid coils to fit basic valves can be found in the Festo online configurator.

→ Internet: VACC
→ www.festo.com/sp

Operating and environmental conditions

Operating medium		Compressed air to ISO 8573-1:2010 [7:2:2]
Operating pressure range	[bar]	0 ... 10
Temperature of medium	[°C]	-25 ... +60
Ambient temperature	[°C]	-25 ... +60
Extended ambient temperature, Low Demand mode	[°C]	-25 ... +60
Safety integrity level	[SIL]	Up to SIL 3 Low Demand mode
Corrosion resistance class CRC ¹⁾		4

- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Materials

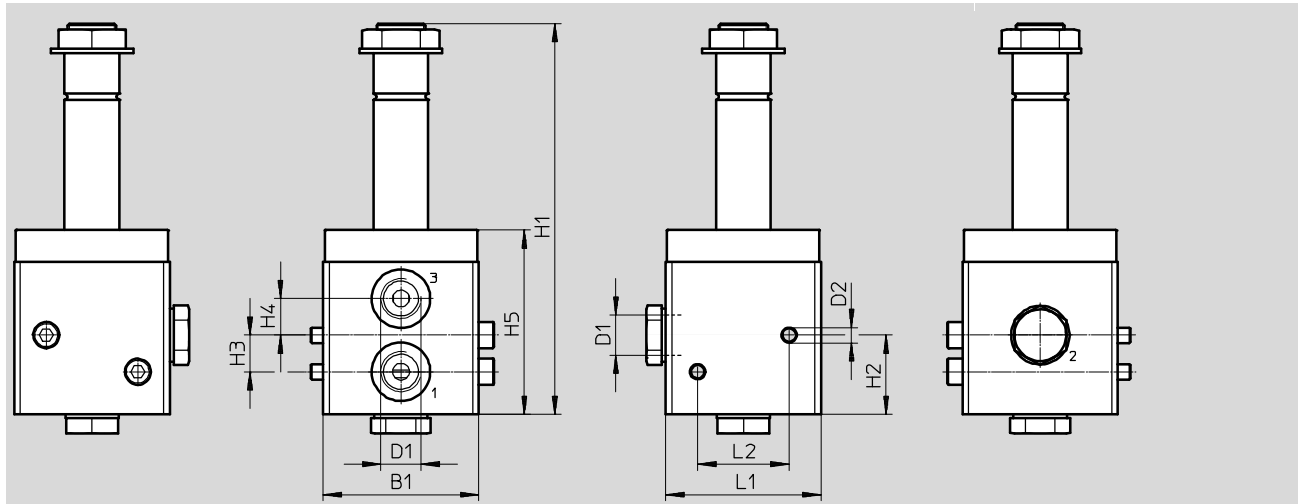
Housing	Aluminium (Ematal coated)
Stainless steel housing	High-alloy stainless steel
Seals	NBR
Note on materials	Contains paint-wetting impairment substances, RoHS-compliant

Basic valves VOFD-L50T-...-F10

Technical data – Modular system NW 5 mm

Dimensions

Download CAD data → www.festo.com

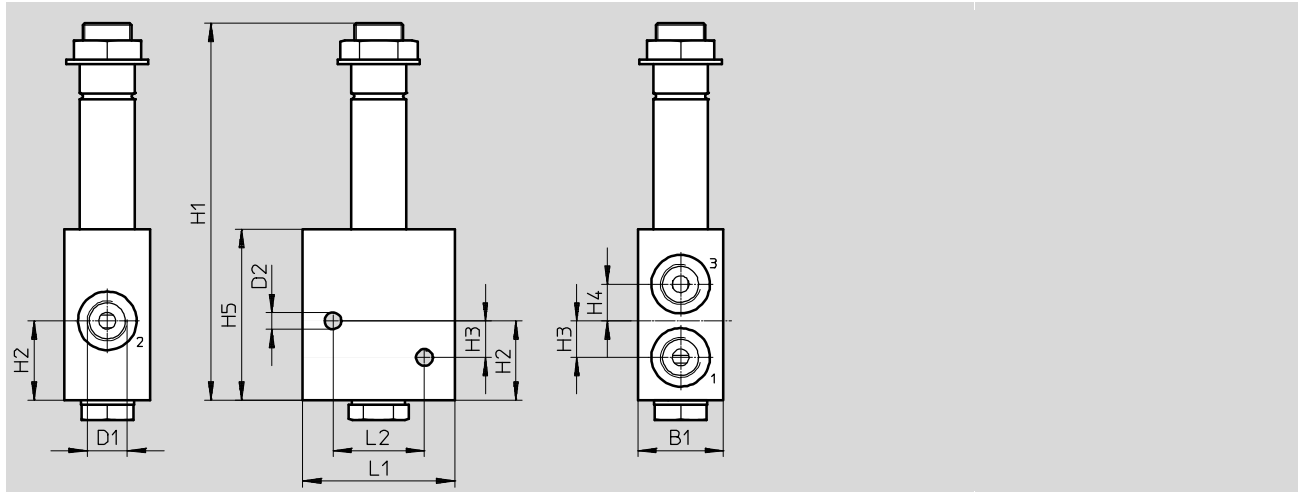


Type of G thread	B1	D1	D2 Ø	H1	H2	H3	H4	H5	L1	L2
VOFD-L50T-M32-MN-G14-...-F10	51	G1/4	5.5	128	26	12	12	60.5	51	30

Type of NPT thread	B1	D1	D2 Ø	H1	H2	H3	H4	H5	L1	L2
VOFD-L50T-M32-MN-N14-...-F10	51	1/4 NPT	5.5	128	26	12	12	60.5	51	30

Dimensions

Download CAD data → www.festo.com



Type of G thread	B1	D1	D2 Ø	H1	H2	H3	H4	H5	L1	L2
VOFD-L50T-M32-MN-G14-...-R1-F10	28	G1/4	5.5	124	26	12	12	56	50	30

Type of NPT thread	B1	D1	D2 Ø	H1	H2	H3	H4	H5	L1	L2
VOFD-L50T-M32-MN-N14-...-R1-F10	28	1/4 NPT	5.5	124	26	12	12	56	50	30

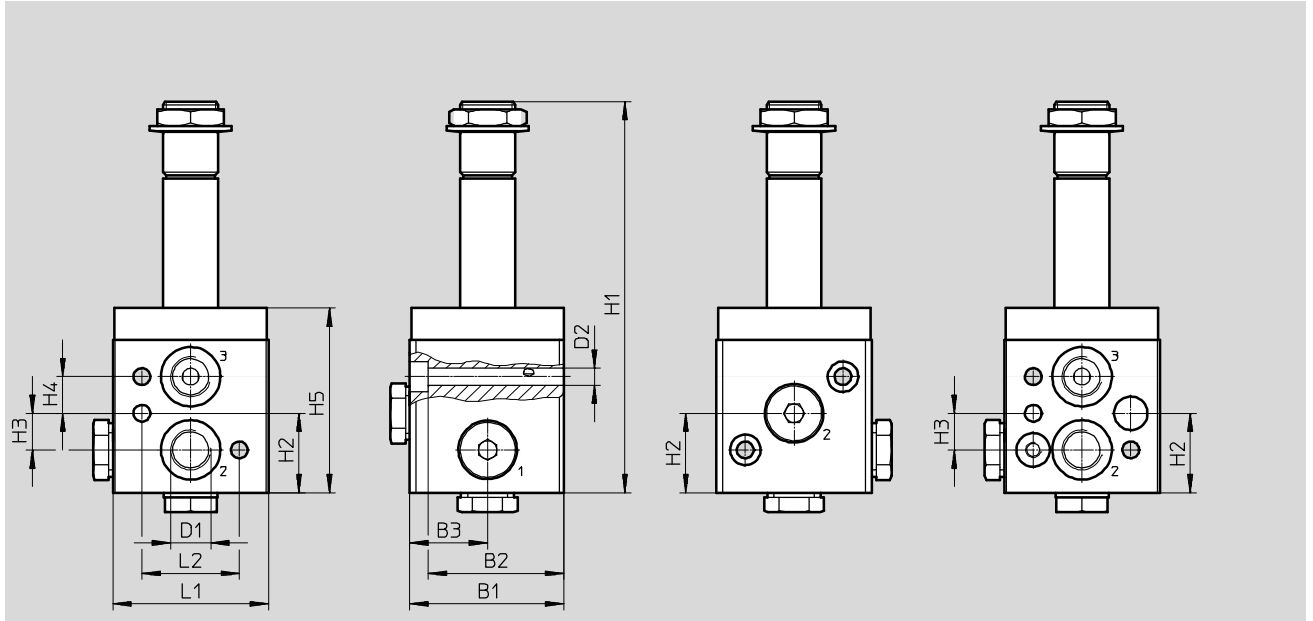
01

Pilot valves

Technical data – Modular system NW 5 mm

Dimensions

Download CAD data → www.festo.com




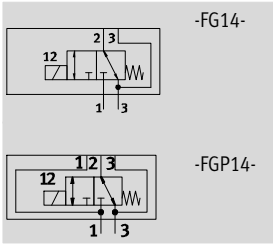
Type of flange thread	B1	B2	B3	D1	D2 Ø	H1	H2	H3	H4	H5	L1	L2
VOFD-L50T-M32-MN-FG14-F10	50.5	44.5	25.5	G1/4	5.5	128	26	12	12	60.5	51	32
VOFD-L50T-M32-MN-FGP14-F10												

Basic valves VOFD-L50T-...-F10

Technical data – Basic valve NW 5 mm, G1/4 NAMUR

Function
3/2-way valve

-  - Flow rate
450 l/min (-LT-M32-)
493 l/min (-L50T-M32-)



01

Pilot valves

General technical data

Type VOFD-LT-M32-...	G1/4 basic valve and NAMUR	G1/4 basic valve and NAMUR, supply port
Valve function	3/2-way, single solenoid, closed	
Pneumatic connection	1	G1/4
	2	G1/4 and port pattern to NAMUR
	3	G1/4
	4	G1/4 and port pattern to NAMUR
Design	Directly actuated poppet valve	
Width [mm]	51	
Mounting position	Any	
Duty cycle	100%	
Sealing principle	Soft	
Manual override	None	
Reset method	Mechanical spring	
Type of actuation	Electrical	
Suitability for vacuum	Yes	
Type of control	Direct	
Flow rate for piston valve pressurisation [m ³ /h]	0.36	
Flow rate for piston valve exhausting [m ³ /h]	0.36	
Direction of flow	Non-reversible	
Product weight [g]	560	
Switching time off [ms]	9	
Switching time on [ms]	45	
Nominal width [mm]	5	
Standard nominal flow rate [l/min]	450	

Operating and environmental conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:2:2]	
Degree of protection	IP65	
Operating pressure range [bar]	0 ... 10	
Temperature of medium [°C]	-25 ... +60	
Ambient temperature [°C]	-25 ... +60	
Extended ambient temperature, Low Demand mode [°C]	-25 ... +60	
Safety integrity level [SIL]	Up to SIL 3 Low Demand mode	
	Up to SIL 3 High Demand mode	
Corrosion resistance class CRC ¹⁾	4	

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Materials

Housing	Aluminium (hard Ematal-coated)
Seals	NBR
Note on materials	Contains paint-wetting impairment substances, RoHS-compliant

Technical data – Basic valve NW 5 mm, G1/4 NAMUR

General technical data		G1/4 basic valve and NAMUR	G1/4 basic valve and NAMUR, supply port
Type VOFD-L50T-M32-...			
Valve function		3/2-way, single solenoid, closed	
Pneumatic connection	1	G1/4	M5 and port pattern to NAMUR
	2	Flange 1/4 and port pattern to NAMUR	Flange 1/4 and port pattern to NAMUR
	3	G1/4	G1/4
Design		Directly actuated poppet valve	
Width	[mm]	50.5	
Mounting position		Any	
Sealing principle		Soft	
Manual override		None	
Reset method		Mechanical spring	
Type of actuation		Electrical	
Suitability for vacuum		Yes	
Type of control		Direct	
Flow rate for piston valve pressurisation	[m ³ /h]	0.36	
Flow rate for piston valve exhausting	[m ³ /h]	0.36	
b value		0.25	
C value		[l/s bar] 2	
Direction of flow		Reversible	
Product weight	[g]	560	
Switching time off	[ms]	60	
Switching time on	[ms]	40	
Nominal width	[mm]	5	
Standard nominal flow rate	[l/min]	493	
Standard nominal flow rate 2→3	[l/min]	429	

Operating and environmental conditions

Operating medium		Compressed air to ISO 8573-1:2010 [7:2:2]	
Degree of protection		IP65	
Operating pressure range	[bar]	0 ... 10	
Temperature of medium	[°C]	-25 ... +60	
Ambient temperature	[°C]	-25 ... +60	
Extended ambient temperature, Low Demand mode	[°C]	-25 ... +60	
Safety integrity level	[SIL]	Up to SIL 3 Low Demand mode	
		Up to SIL 3 High Demand mode	
Corrosion resistance class CRC ¹⁾		4	

- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Materials

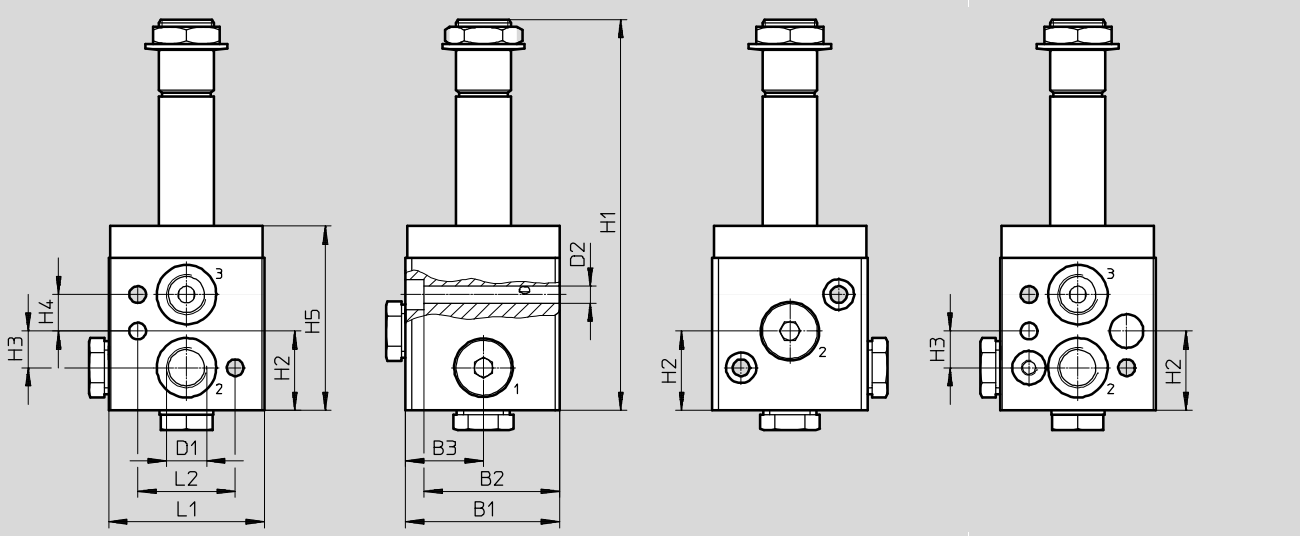
Housing	Aluminium (Ematal coated)
Seals	NBR
Note on materials	Contains paint-wetting impairment substances, RoHS-compliant

Basic valves VOFD-L50T-...-F10

Technical data – Basic valve NW 5 mm, G1/4 NAMUR

Dimensions G1/4 basic valve and NAMUR

Download CAD data → www.festo.com



Type of flange thread	B1	B2	B3	D1	D2 ∅	H1	H2	H3	H4	H5	L1	L2
VOFD-L50T-M32-MN-FG14-F10	50.5	44.5	25.5	G1/4, NAMUR	5.5	128	26	12	12	60.5	51	32
VOFD-L50T-M32-MN-FGP14-F10												

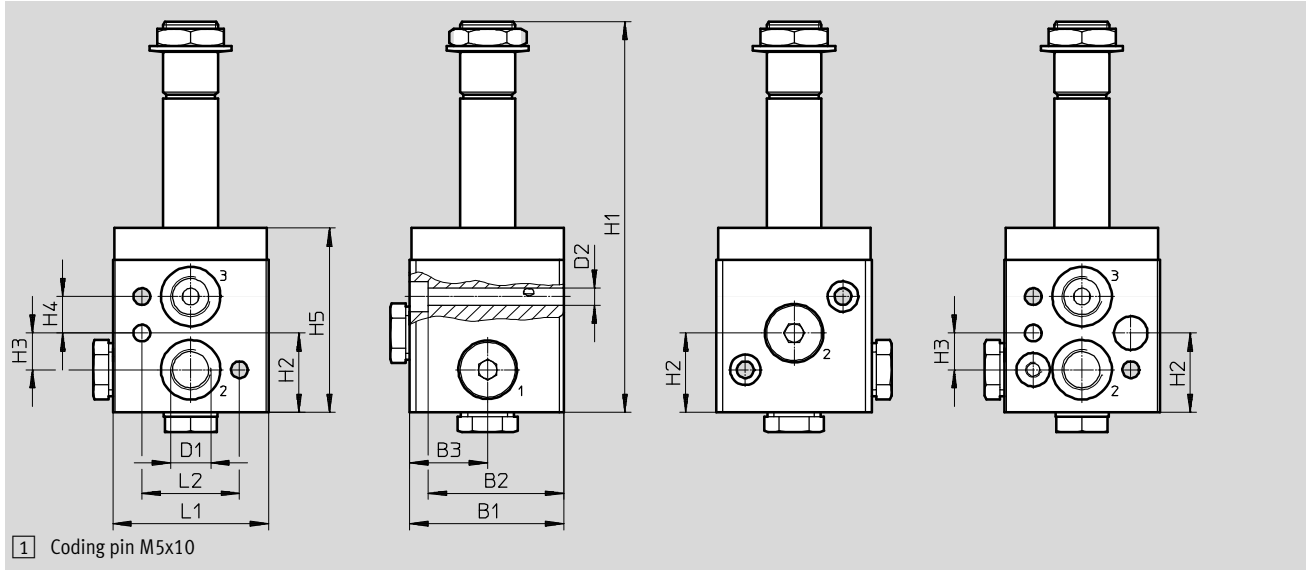
01

Pilot valves

Technical data – Basic valve NW 5 mm, G1/4 NAMUR

Dimensions – G1/4 basic valve and NAMUR, supply port

Download CAD data → www.festo.com



Type of flange thread	B1	B2	B3	D1	D2 ∅	H1	H2	H3	H4	H5	L1	L2
VOFD-LT-M32-MN-FGP14-F10	51	44.5	25.5	G1/4, NAMUR	5.5	128	26	12	12	60.5	51	32
VOFD-L50T-M32-MN-FGP14-10-F10												

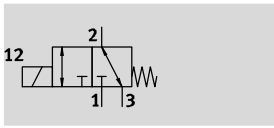
Ordering data

Circuit symbol	Function	Pneumatic connection	Part No.	Type
Directly actuated poppet valve				
	3/2-way, single solenoid, closed	G1/4 and NAMUR	4514999	VOFD-L50T-M32-MN-FG14-10-F10
	3/2-way, single solenoid, closed	NAMUR with supply port	4515000	VOFD-L50T-M32-MN-FGP14-10-F10

Basic valves VOFD-L50T-...-F10

Technical data – Basic valve NW 5 mm, G/NPT 1/4, in-line

Function
3/2-way valve



- - Flow rate
450 l/min (-LT-M32-)
493 l/min (-L50T-M32-)



01

Pilot valves

General technical data

Type VOFD-LT-M32-...	G1/4 basic valve	1/4 NPT basic valve
Valve function	3/2-way, single solenoid, closed	
Pneumatic connection	1	G1/4
	2	G1/4
	3	G1/4
Design	Directly actuated poppet valve	
Width [mm]	51	
Mounting position	Any	
Duty cycle	100%	
Sealing principle	Soft	
Manual override	None	
Reset method	Mechanical spring	
Type of actuation	Electrical	
Suitability for vacuum	Yes	
Type of control	Direct	
Flow rate for piston valve pressurisation [m ³ /h]	0.36	
Flow rate for piston valve exhausting [m ³ /h]	0.36	
Direction of flow	Reversible	
Product weight [g]	560	
Switching time off [ms]	9	
Switching time on [ms]	45	
Nominal width [mm]	5	
Standard nominal flow rate [l/min]	450	

Operating and environmental conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:2:2]
Degree of protection	IP65
Operating pressure range [bar]	0 ... 10
Temperature of medium [°C]	-25 ... +60
Ambient temperature [°C]	-25 ... +60
Extended ambient temperature, Low Demand mode [°C]	-25 ... +60
Safety integrity level [SIL]	Up to SIL 3 Low Demand mode
	Up to SIL 3 High Demand mode
Corrosion resistance class CRC ¹⁾	4

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Materials

Housing	Aluminium (hard Ematal-coated)
Seals	NBR
Note on materials	Contains paint-wetting impairment substances, RoHS-compliant

Technical data – Basic valve NW 5 mm, G/NPT 1/4, in-line

General technical data			
Type VOFD-L50T-M32-...		G1/4 basic valve	1/4 NPT basic valve
Valve function		3/2-way, single solenoid, closed	
Pneumatic connection	1	G1/4	1/4 NPT
	2	G1/4	1/4 NPT
	3	G1/4	1/4 NPT
Design		Directly actuated poppet valve	
Width	[mm]	51, 28 (stainless steel design)	
Mounting position		Any	
Sealing principle		Soft	
Manual override		None	
Reset method		Mechanical spring	
Type of actuation		Electrical	
Suitability for vacuum		Yes	
Type of control		Direct	
Flow rate for piston valve pressurisation	[m ³ /h]	0.36	
Flow rate for piston valve exhausting	[m ³ /h]	0.36	
b value		0.25	
C value		[l/s bar]	2
Direction of flow		Reversible	
Product weight	[g]	560	
Switching time off	[ms]	60	
Switching time on	[ms]	40	
Nominal width	[mm]	5	
Standard nominal flow rate	[l/min]	493	
Standard nominal flow rate 2→3	[l/min]	429	

Operating and environmental conditions

Operating medium		Compressed air to ISO 8573-1:2010 [7:2:2]	
Degree of protection		IP65	
Operating pressure range	[bar]	0 ... 10	
Temperature of medium	[°C]	-25 ... +60	
Ambient temperature	[°C]	-25 ... +60	
Extended ambient temperature, Low Demand mode	[°C]	-25 ... +60	
Safety integrity level	[SIL]	Up to SIL 3 Low Demand mode	
		Up to SIL 3 High Demand mode	
Corrosion resistance class CRC ¹⁾		4	

- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Materials

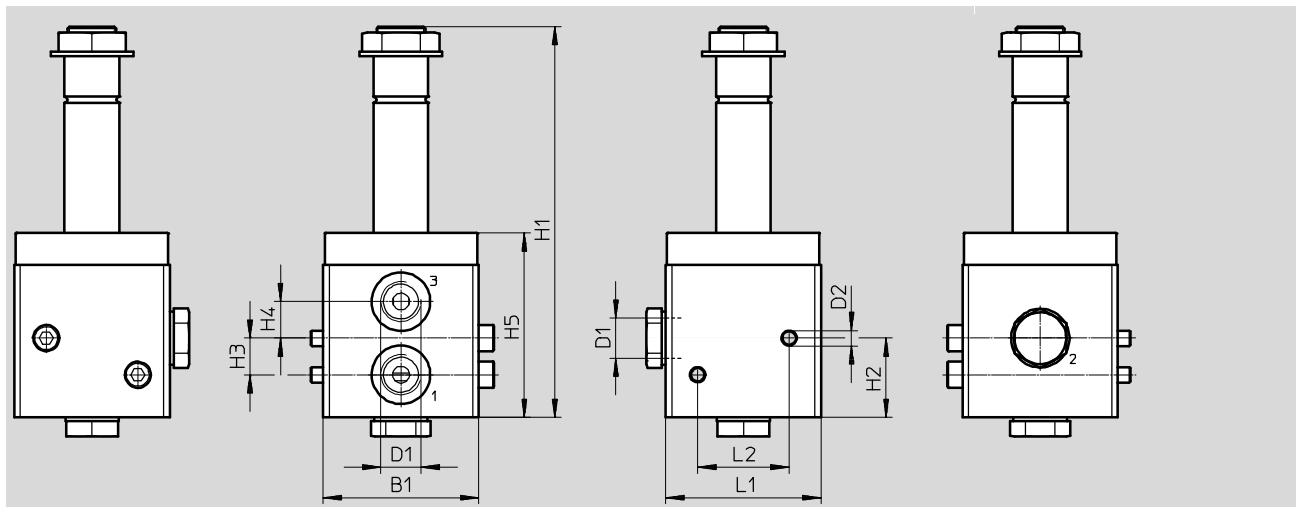
Housing	Aluminium (Ematal coated)
Stainless steel housing	High-alloy stainless steel
Seals	NBR
Note on materials	Contains paint-wetting impairment substances, RoHS-compliant

Basic valves VOFD-L50T-...-F10

Technical data – Basic valve NW 5 mm, G/NPT 1/4, in-line

Dimensions

Download CAD data → www.festo.com



Type of G thread	B1	D1	D2 ∅	H1	H2	H3	H4	H5	L1	L2
VOFD-LT-M32-MN-G14-F10	51	G1/4	5.5	128	26	12	12	60.5	51	30
VOFD-L50T-M32-MN-G14-...-F10										

Type of NPT thread	B1	D1	D2 ∅	H1	H2	H3	H4	H5	L1	L2
VOFD-LT-M32-MN-N14-F10	51	1/4 NPT	5.5	128	26	12	12	60.5	51	30
VOFD-L50T-M32-MN-N14-...-F10										

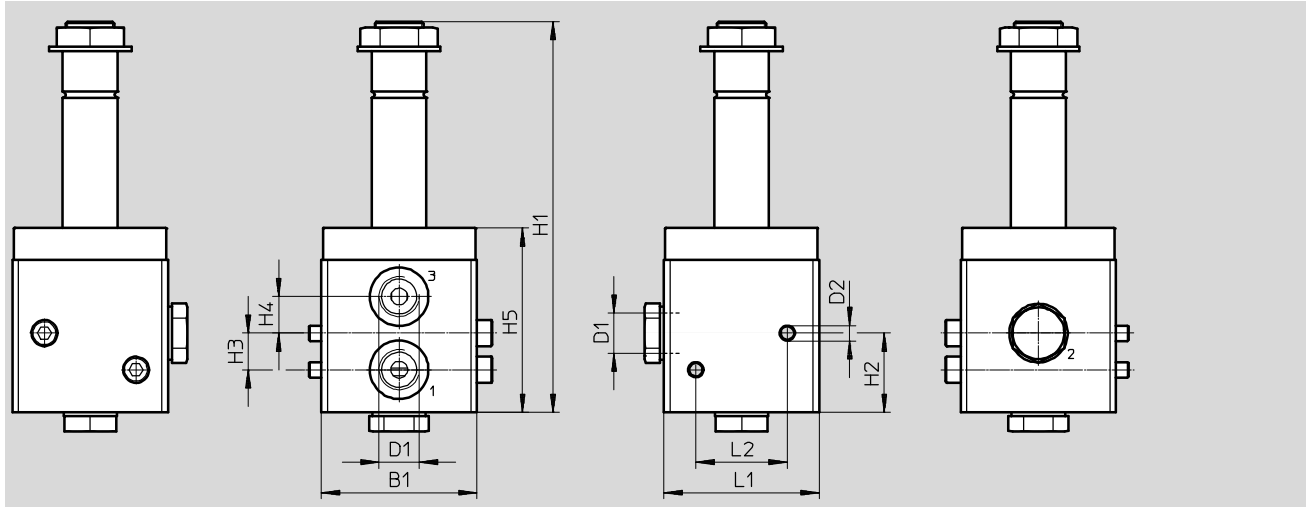
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Pilot valves

Technical data – Basic valve NW 5 mm, G/NPT 1/4, in-line

Dimensions

Download CAD data → www.festo.com



Type of G thread	B1	D1	D2 ∅	H1	H2	H3	H4	H5	L1	L2
VOFD-L50T-M32-MN-G14-...-R1-F10	28	G1/4	5.5	124	26	12	12	56	50	30

Type of NPT thread	B1	D1	D2 ∅	H1	H2	H3	H4	H5	L1	L2
VOFD-L50T-M32-MN-N14-...-R1-F10	28	1/4 NPT	5.5	124	26	12	12	56	50	30

Ordering data


Circuit symbol	Function	Pneumatic connection	Part No.	Type
	3/2-way, single solenoid, closed	G1/4	4514997	VOFD-L50T-M32-MN-G14-10-F10
			4515019	VOFD-L50T-M32-MN-G14-10-R1-F10
		1/4 NPT	4514998	VOFD-L50T-M32-MN-N14-10-F10
			4515018	VOFD-L50T-M32-MN-N14-10-R1-F10

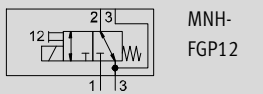
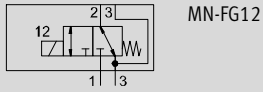
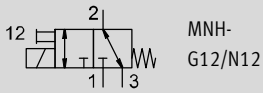
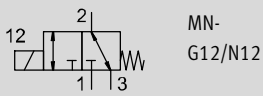
Basic valves VOFD-L100T-...-F10

Technical data – Modular system NW 10 mm, G/NPT 1/2, NAMUR, and in-line

Function

3/2-way valve

 Flow rate
Up to 1900 l/min



General technical data

Basic valve G1/2		VOFD-L100T-M32-MN-...	VOFD-L100T-M32-MNH-...
Valve function		3/2-way, single solenoid, closed	
Pneumatic connection	1	G1/2	
VOFD-...-G12	2	G1/2	
	3	G1/2	
Pneumatic connection	1	1/2 NPT	
VOFD-...-N12	2	1/2 NPT	
	3	1/2 NPT	
Pneumatic connection	1	G1/2	
VOFD-...-FG12	2	Port pattern to NAMUR, flange 1/2	
	3	G1/2	
Design		Directly actuated poppet valve	
Width	[mm]	51	
Mounting position		Any	
Sealing principle		Soft	
Manual override		None	Non-detenting
Type of reset		Mechanical spring	
Type of actuation		Electrical	
Suitability for vacuum		Yes	
Type of control		Direct	
Flow rate for piston valve pressurisation	[m ³ /h]	1.68	
Flow rate for piston valve exhausting	[m ³ /h]	1.68	
b value		0.22	
C value	[l/s bar]	7.6	
Direction of flow		Reversible	
Product weight	[g]	950	
Switching time off	[ms]	60	
Switching time on	[ms]	40	
Nominal width	[mm]	10	
Standard nominal flow rate 1 → 2	[l/min.]	1900	
Standard nominal flow rate 2 → 3	[l/min.]	1888	

Selection of solenoid coils

Suitable solenoid coils for the basic valves are available in the section on accessories.

The following solenoid coils can be selected:

- S18-70, nominal power 7 watt at 24 V DC (Ex-D)
- S18-120, nominal power 12 watt at 24 V DC (Ex-ME)

 Note

Additional information and solenoid coils to fit basic valves can be found in the Festo online configurator.

- ➔ Internet: VACC
- ➔ www.festo.com/sp

Technical data – Modular system NW 10 mm, G/NPT 1/2, NAMUR, and in-line

Operating and environmental conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:-:-]
Operating pressure range	[bar]	0 ... 12
Temperature of medium	[°C]	-25 ... +60
Ambient temperature	[°C]	-25 ... +60
Corrosion resistance class CRC ¹⁾		4

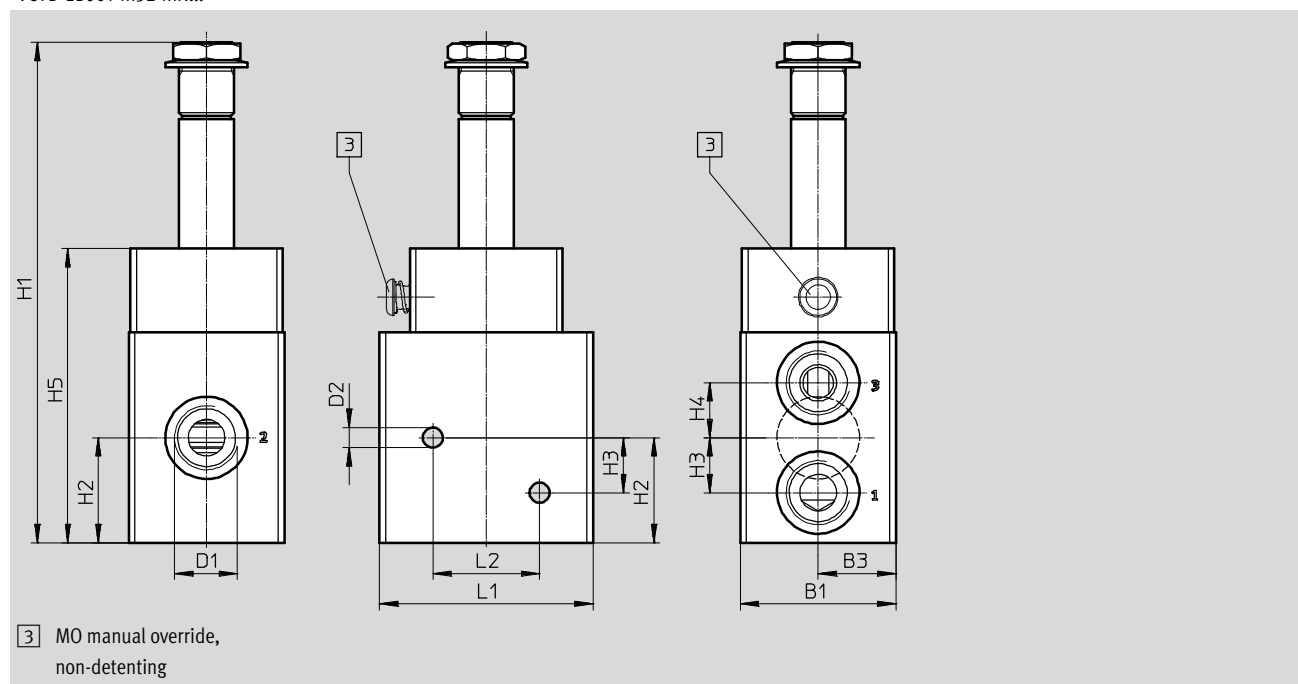
1) Corrosion resistance class CRC 4 to Festo standard FN 940070
 Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Materials	
Housing	Aluminium (Ematal coated)
Seals	NBR
Note on materials	Contains paint-wetting impairment substances, RoHS-compliant

Dimensions

Download CAD data → www.festo.com

VOFD-L100T-M32-MN...



Type of G thread	B1	B3	D1	D2 Ø	H1	H2	H3	H4	H5	L1	L2
VOFD-L100T-M32-MN-G12-...-F10	51	25	G1/2	6.6	164	34.5	18	18	96.5	70	35
VOFD-L100T-M32-MNH-G12-...-F10											

Type of NPT thread	B1	B3	D1	D2 Ø	H1	H2	H3	H4	H5	L1	L2
VOFD-L100T-M32-MN-N12-...-F10	51	25	1/2 NPT	6.6	164	34.5	18	18	96.5	70	35
VOFD-L100T-M32-MNH-N12-...-F10											

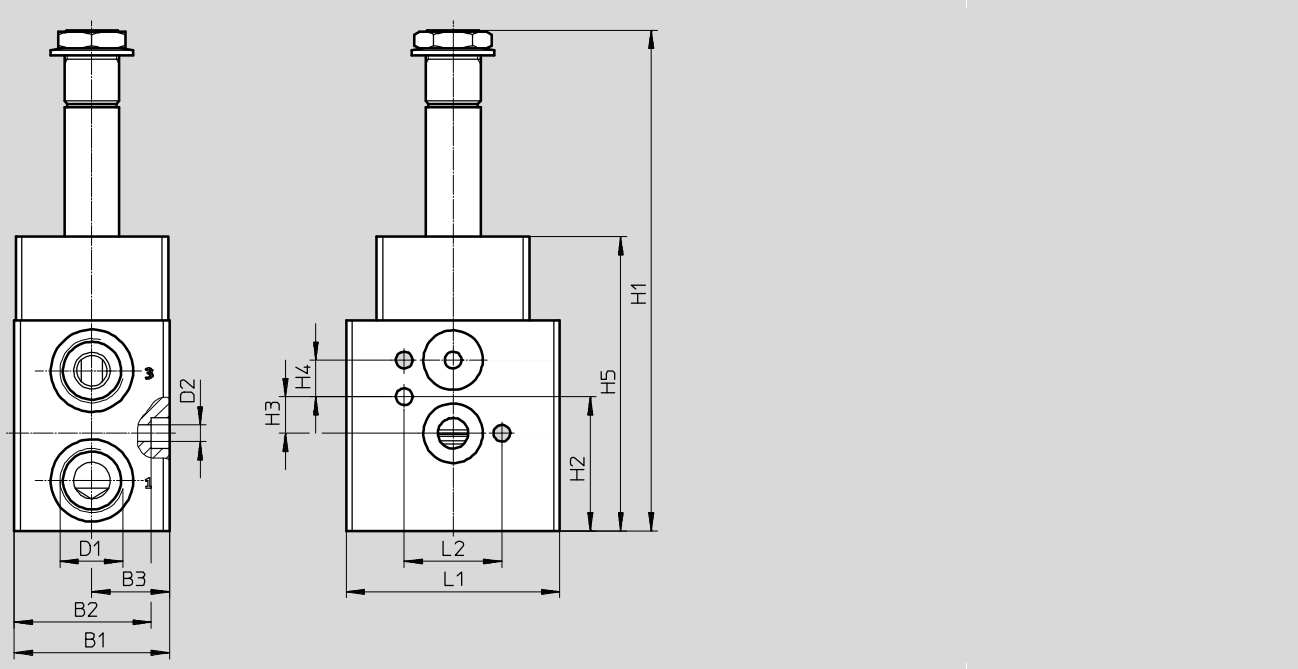
Basic valves VOFD-L100T-...-F10

Technical data – Modular system NW 10 mm, G/NPT 1/2, NAMUR, and in-line

Dimensions

Download CAD data → www.festo.com

VOFD-L100T-...-FG12-...-F10



Type of flange thread	B1	B2	B3	D1	D2	H1	H2	H3	H4	H5	L1	L2
VOFD-L100T-...-FG12-...-F10	51	45	25.5	G1/2	∅ 5.5	164	44	12	12	96.5	70	32

01



Pilot valves

Type codes

		VACC	-		-		-		-		-		-		-		-		-		
Type		VACC	Solenoid coil, C series																		
Solenoid coil type		S18	Solenoid coil, for 18 mm armature tube																		
Power consumption		18	1.8 W																		
		25	2.5 W																		
		35	3.5 W																		
		70	7 W																		
		120	12 W																		
Electrical connection		A1	Connection pattern type A, to EN 175301																		
		K4	Cable fitting, metric																		
		K5	Cable fitting NPT																		
Operating voltage		1A	24 V AC, 50/60 Hz																		
		1U	24 V DC and AC																		
		2A	110 V AC/50-60 Hz																		
		2U	110 V DC and AC																		
		3A	230 V AC/50-60 Hz																		
		3U	230 V DC and AC																		
		7U	48 V DC and AC																		
		16U	120 V DC and AC																		
		1	24 V DC																		
		3	230 V DC																		
		7	48 V DC																		
		16	120 V DC																		
		27	60 V DC																		
Circuitry		-	None																		
		F	With fuse																		
Certification		-	Without certification																		
		EX4	ATEX category II 2GD																		
		U2	Hazardous environment for USA and Canada (to NEC 500) cULus																		
Type of ignition protection		-	None																		
		D	Flameproof enclosure																		
		ME	Moulded encapsulation, enhanced safety																		

Solenoid coils VACC-S18-35-A1

Technical data

-  Voltage
24 V DC
24 V AC
110 V AC
230 V AC
-  Temperature range
-20 ... +60 °C

Nominal power
3.6 watt at 24 V DC



General technical data

Nominal operating voltage	[V]	24 V DC	24 V AC	110 V AC	230 V AC
Type of mounting		Via knurled nut			
Type of actuation		Electrical			
Mounting position		Any			
Product weight	[g]	530		580	

Materials

Solenoid coil	Steel, PA
Note on materials	Contains paint-wetting impairment substances RoHS compliant

Electrical data

Electrical connection	Plug pins, 3-pin, with connection pattern type A, to EN 175301-803
Permissible voltage fluctuations	[%] -15 ... 10
Duty cycle	[%] 100
Degree of protection to EN 60529	IP65 with plug socket
Insulation class	H

Characteristic coil data

Nominal operating voltage		24 V DC	24 V AC	110 V AC	230 V AC
Frequency	[Hz]	-	50/60	50/60	50/60
Power	[W]	3.5	-	-	-
	[VA]	-	3.5	3.5	3.5

Operating and environmental conditions

Nominal operating voltage		24 V DC	24 V AC	110 V AC	230 V AC
Ambient temperature	[°C]	-20 ... 60		-20 ... 60	
Corrosion resistance class CRC ¹⁾		4		4	
CE marking (see declaration of conformity) ²⁾		-		To EU Low Voltage Directive	

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

2) Additional information www.festo.com/sp → Certificates.

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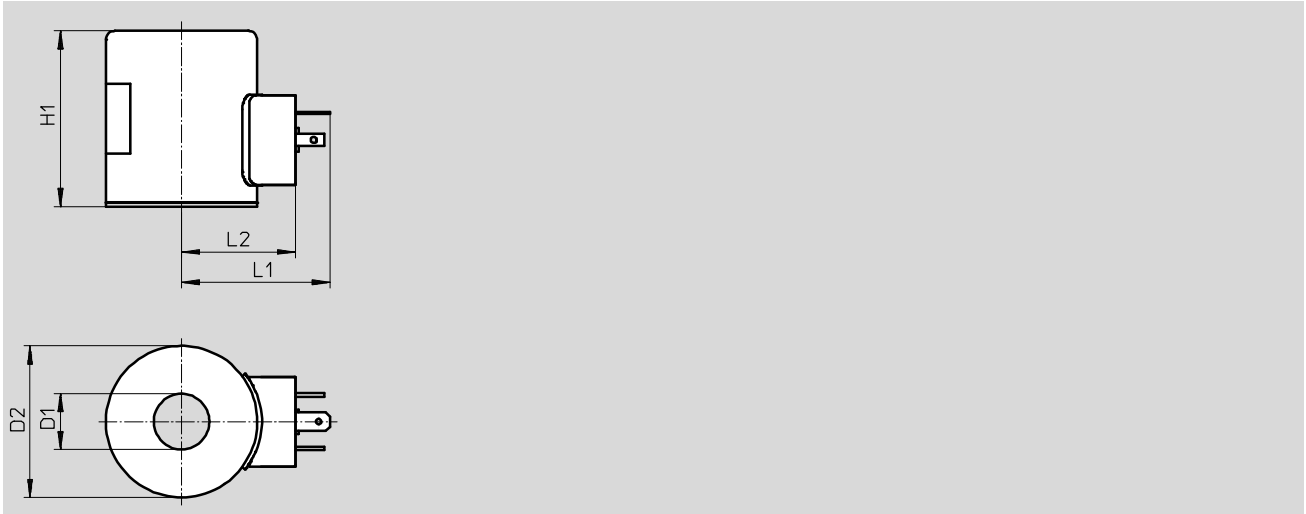
Pilot valves

Solenoid coils VACC-S18-35-A1

Technical data

Dimensions

Download CAD data → www.festo.com





Type	D1 ∅	D2 ∅	H1	L1	L2
VACC-S18-35-A1-1	18.2	50	58	50	38
VACC-S18-35-A1-1A					
VACC-S18-35-A1-2A					
VACC-S18-35-A1-3A					

Ordering data

	Description	Part No.	Type
	Plug connector type A, to EN 175301-803	24 V DC	562906 VACC-S18-35-A1-1
		24 V AC	562907 VACC-S18-35-A1-1A
		110 V AC	562908 VACC-S18-35-A1-2A
		230 V AC	562909 VACC-S18-35-A1-3A

Solenoid coils VACC-S18-120-A1

Technical data

-  Voltage
24 V DC
24 V AC
110 V AC
230 V AC
-  Temperature range
-20 ... +60 °C

Nominal power
12 watt at 24 V DC



General technical data

Type of mounting	Via knurled nut
Type of actuation	Electrical
Mounting position	Any
Product weight	[g] 530

Materials

Housing	PA, steel
Note on materials	Contains paint-wetting impairment substances RoHS compliant

Electrical data

Electrical connection	Plug pins, 3-pin, with connection pattern to EN 175301-803, type A
Permissible voltage fluctuations	[%] -15 ... 10
Duty cycle	[%] 100
Degree of protection to EN 60529	IP65 with plug socket
Insulation class	H

Characteristic coil data

Nominal operating voltage		24 V DC	24 V AC	110 V AC	230 V AC
Frequency	[Hz]	-	50/60	50/60	50/60
Power	[W]	12.0	-	-	-
	[VA]	-	12.0	12.0	12.0

Operating and environmental conditions

Nominal operating voltage		24 V DC	24 V AC	110 V AC	230 V AC
Ambient temperature	[°C]	-20 ... 60		-20 ... 60	
Corrosion resistance class CRC ¹⁾		4		4	
CE marking (see declaration of conformity) ²⁾		-		To EU Low Voltage Directive	

- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.
- 2) Additional information www.festo.com/sp → Certificates.

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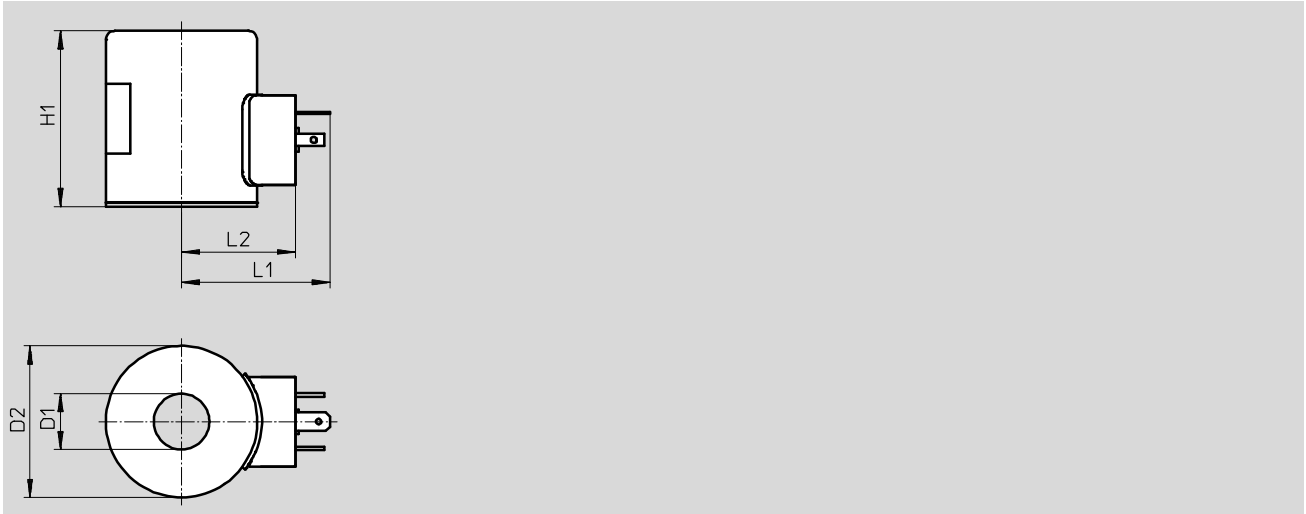
Pilot valves

Solenoid coils VACC-S18-120-A1

Technical data


Dimensions

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

Type	D1 ∅	D2 ∅	H1	L1	L2
VACC-S18-120-A1-1	18.2	50	58	50	38
VACC-S18-120-A1-1A					
VACC-S18-120-A1-2A					
VACC-S18-120-A1-3A					

Ordering data

	Description	Part No.	Type
	Plug connector type A, to EN 175301-803	24 V DC	8040580 VACC-S18-120-A1-1
		24 V AC	8040890 VACC-S18-120-A1-1A
		110 V AC	8040582 VACC-S18-120-A1-2A
		230 V AC	8040584 VACC-S18-120-A1-3A

Solenoid coils VACC-S18-18-...-EX4D

Technical data

-  Voltage
230 V AC
 -  Temperature range
-20 ... +90 °C
- Nominal power
3 watt at 230 V AC



General technical data

Type of mounting	Via knurled nut
Type of actuation	Electrical
Mounting position	Any
Product weight	[g] 1700

Materials

Housing	Wrought aluminium alloy, grey cast iron
Note on materials	Contains paint-wetting impairment substances RoHS compliant

Electrical data

Electrical connection	K4	Terminal box, cable entry thread metric, M20x1.5
	K5	Terminal box, cable entry thread NPT, 1/2 NPT
Permissible voltage fluctuations	[%]	-15 ... 10
Duty cycle	[%]	100
Degree of protection to EN 60529		IP65 with plug socket
Insulation class		H

Characteristic coil data

Nominal operating voltage	[V AC]	230
Frequency	[Hz]	50/60
Power	[VA]	1.8

ATEX

ATEX category for gas	II 2G	
Type of ignition protection for gas	Ex d IIC T ₆ , T ₅ , T ₄ Gb	
ATEX category for dust	II 2D	
Type of ignition protection for dust	Ex tb IIIC T _{80°C} , T _{95°C} , T _{130°C} Db	
Explosion ambient temperature	[°C]	T ₄ , T _{130°C} : -50°C ≤ Ta ≤ +90°C
		T ₅ , T _{95°C} : -50°C ≤ Ta ≤ +55°C
		T ₆ , T _{80°C} : -50°C ≤ Ta ≤ +40°C
Explosion protection certification outside the EU	EPL Db (BR), EPL Db (CN), EPL Db (IEC-EX), EPL Gb (BR), EPL Gb (CN), EPL Gb (IEC-EX)	
Certificate issuing authority		NEPSI GYJ111107
		BVS15ATEXE135
		IECEXBVS.15.0116
		TÜV 12.1948

Operating and environmental conditions

Corrosion resistance class CRC ¹⁾	4
CE marking (see declaration of conformity ²⁾)	To EU Explosion Protection Directive (ATEX)

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

2) Additional information www.festo.com/sp → Certificates.

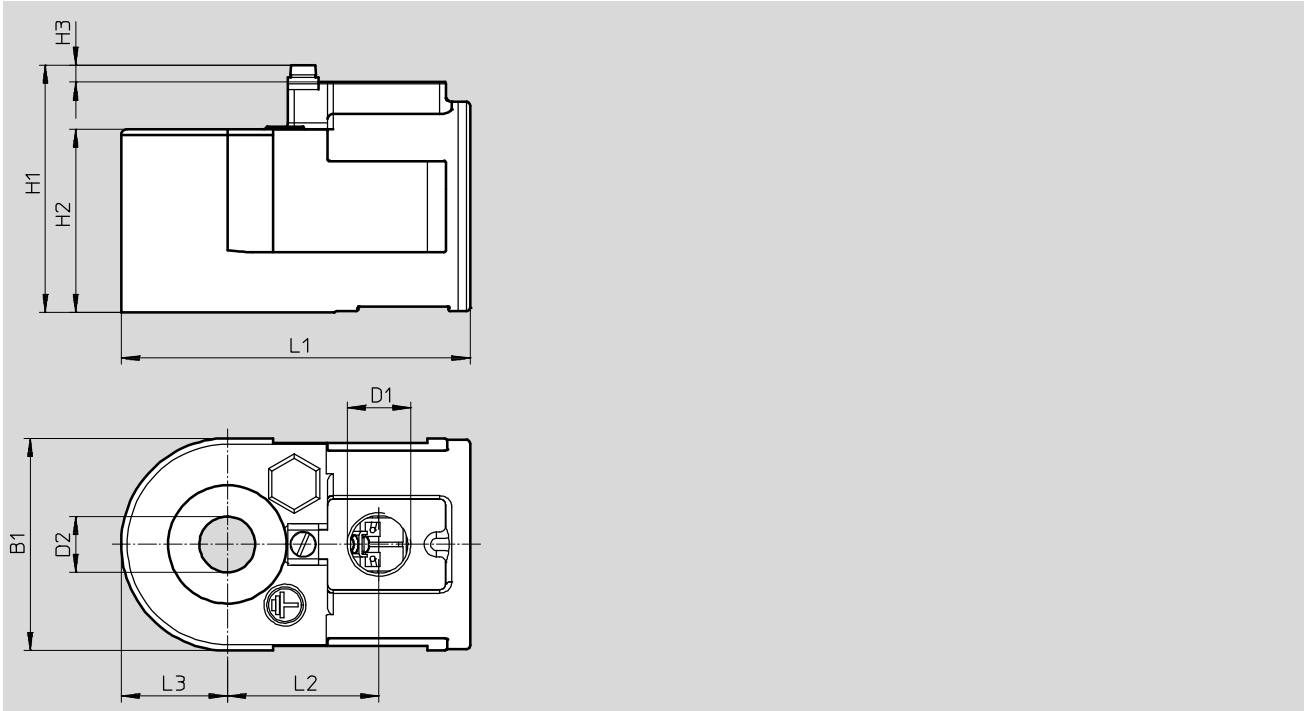
Pilot valves

01

Technical data

Dimensions

Download CAD data → www.festo.com





Type	B1	D1	D2 ∅	H1	H2	H3	L1	L2	L3
VACC-S18-18-K4-3A-EX4D	70	M20x1.5	18.2	82	60.5	6	115	50	35
VACC-S18-18-K5-3A-EX4D		1/2 NPT							

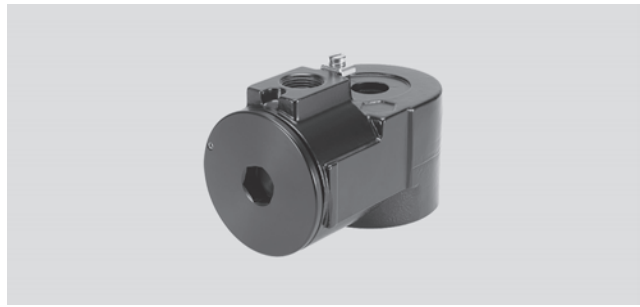
Ordering data

	Description	Part No.	Type
	Terminal box, cable fitting metric, M20x1.5	3504741	VACC-S18-18-K4-3A-EX4D
	Terminal box, cable fitting NPT, 1/2 NPT	3546734	VACC-S18-18-K5-3A-EX4D

Solenoid coils VACC-S18-25-...-EX4D

Technical data

-  Voltage
24 V AC/DC
110 V AC/DC
230 V AC/DC
 -  Temperature range
-20 ... +60 °C
- Nominal power
2.5 watt at 24 V DC



General technical data

Type of mounting	Via knurled nut
Type of actuation	Electrical
Mounting position	Any
Product weight	[g] 1700

Materials

Housing	Wrought aluminium alloy, grey cast iron
Note on materials	Contains paint-wetting impairment substances RoHS compliant

Electrical data

Electrical connection	K4	Terminal box, cable entry thread metric, M20x1.5
	K5	Terminal box, cable entry thread NPT, 1/2 NPT
Permissible voltage fluctuations	[%]	-15 ... 10
Duty cycle	[%]	100
Degree of protection to EN 60529		IP65
Insulation class		H

Characteristic coil data

Nominal operating voltage		24 V AC/DC	110 V AC/DC	230 V AC/DC
Frequency	[Hz]	40/65	40/65	40/65
Power	[W]	2.5	2.5	2.5
	[VA]	2.5	2.5	2.5

ATEX

ATEX category for gas	II 2G	
Type of ignition protection for gas	Ex d IIC T6, T5, T4 Gb	
ATEX category for dust	II 2D	
Type of ignition protection for dust	Ex tb IIIC T80°C, T95°C, T130°C Db	
Explosion ambient temperature	[°C]	T4, T130°C: -50°C ≤ Ta ≤ +90°C
		T5, T95°C: -50°C ≤ Ta ≤ +55°C
		T6, T80°C: -50°C ≤ Ta ≤ +40°C
Explosion protection certification outside the EU	EPL Gb (BR), EPL Gb (CN)	
Certificate issuing authority		NEPSI GYJ111107
		PTB 08 ATEX 1086
		TÜV 12.1948

Operating and environmental conditions

Corrosion resistance class CRC ¹⁾	4
CE marking (see declaration of conformity) ²⁾	To EU Explosion Protection Directive (ATEX)

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

2) Additional information www.festo.com/sp → Certificates.

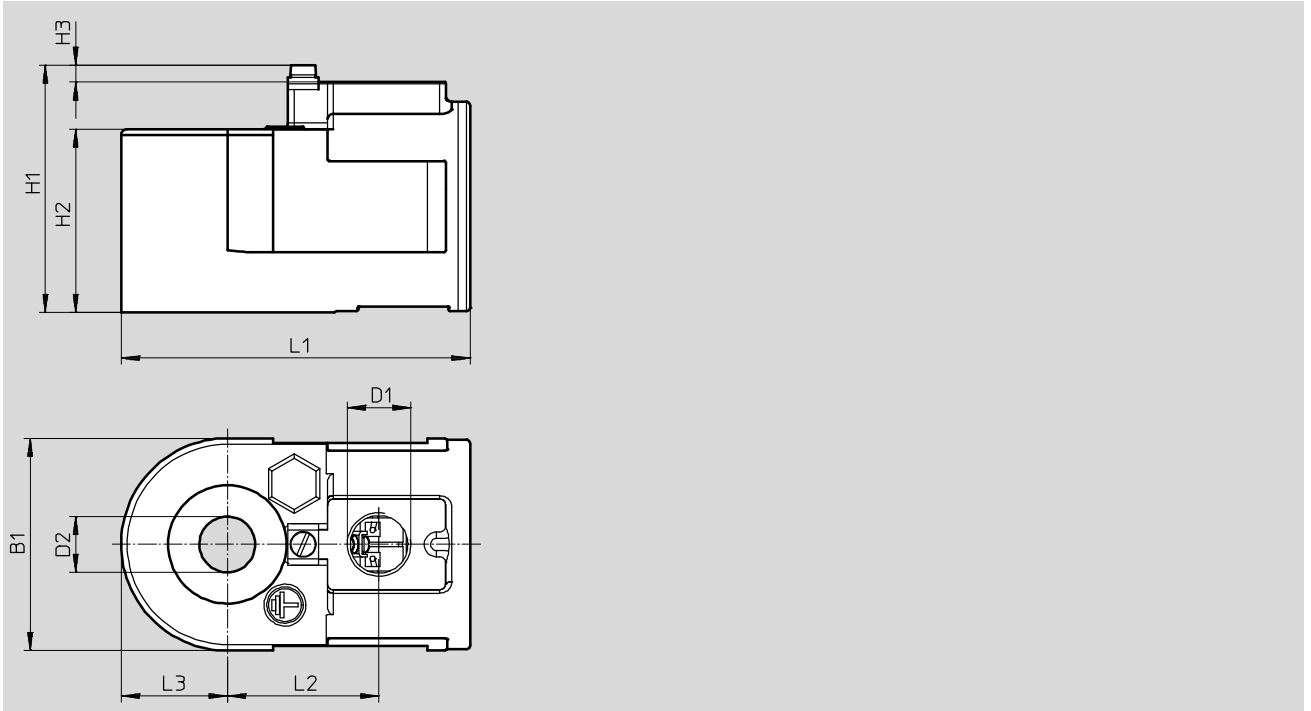
01

Pilot valves

Technical data

Dimensions

Download CAD data → www.festo.com





Type	B1	D1	D2 Ø	H1	H2	H3	L1	L2	L3
VACC-S18-25-K4-...U-EX4D	70	M20x1.5	18.2	82	60.5	6	115	50	35
VACC-S18-25-K5-...U-EX4D		1/2 NPT							

Ordering data

	Description		Part No.	Type
	Terminal box, cable entry thread metric, M20x1.5	24 V AC/DC	562903	VACC-S18-25-K4-1U-EX4D
		110 V AC/DC	562904	VACC-S18-25-K4-2U-EX4D
		230 V AC/DC	562905	VACC-S18-25-K4-3U-EX4D
	Terminal box, cable entry thread NPT, 1/2 NPT	24 V AC/DC	562900	VACC-S18-25-K5-1U-EX4D
		110 V AC/DC	562901	VACC-S18-25-K5-2U-EX4D
		230 V AC/DC	562902	VACC-S18-25-K5-3U-EX4D

Solenoid coils VACC-S18-70-...-EX4D

Technical data

-  Voltage
 24 V AC/DC
 48 V AC/DC
 110 V AC/DC
 120 V AC/DC
 230 V AC/DC
 -  Temperature range
 -20 ... +90 °C
- Nominal power
7 watt at 24 V DC



General technical data

Type of mounting	Via knurled nut
Type of actuation	Electrical
Mounting position	Any
Product weight	[g] 1700

Materials

Housing	Wrought aluminium alloy, grey cast iron
Note on materials	Contains paint-wetting impairment substances RoHS compliant

Electrical data

Electrical connection	K4	Terminal box, cable entry thread metric, M20x1.5
	K5	Terminal box, cable entry thread NPT, 1/2 NPT
Permissible voltage fluctuations	[%]	-15 ... 10
Duty cycle	[%]	100
Degree of protection to EN 60529		IP65
Insulation class		H

Characteristic coil data

Nominal operating voltage		24 V AC/DC	48 V AC/DC	110 V AC/DC	120 V AC/DC	230 V AC/DC
Frequency	[Hz]	40/65	40/65	40/65	40/65	40/65
Power	[W]	7	7	7	7	7
	[VA]	7	7	7	7	7

ATEX

ATEX category for gas	II 2G	
Type of ignition protection for gas	Ex d IIC T ₆ , T ₅ , T ₄ Gb	
ATEX category for dust	II 2D	
Type of ignition protection for dust	Ex tb IIIC T ₈₀ °C, T ₉₅ °C, T ₁₃₀ °C Db	
Explosion ambient temperature	[°C]	T ₄ , T ₁₃₀ °C: -50°C ≤ Ta ≤ +90°C
		T ₅ , T ₉₅ °C: -50°C ≤ Ta ≤ +55°C
		T ₆ , T ₈₀ °C: -50°C ≤ Ta ≤ +40°C
Explosion protection certification outside the EU	EPL Db (BR), EPL Db (CN), EPL Db (IEC-EX), EPL Gb (BR), EPL Gb (CN), EPL Gb (IEC-EX)	
Certificate issuing authority		NEPSI GYJ111107
		BVS15ATEXE135
		IECEXBVS.15.0116
		TÜV 12.1948

Operating and environmental conditions

Corrosion resistance class CRC ¹⁾	4
CE marking (see declaration of conformity) ²⁾	To EU Explosion Protection Directive (ATEX)

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
 Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

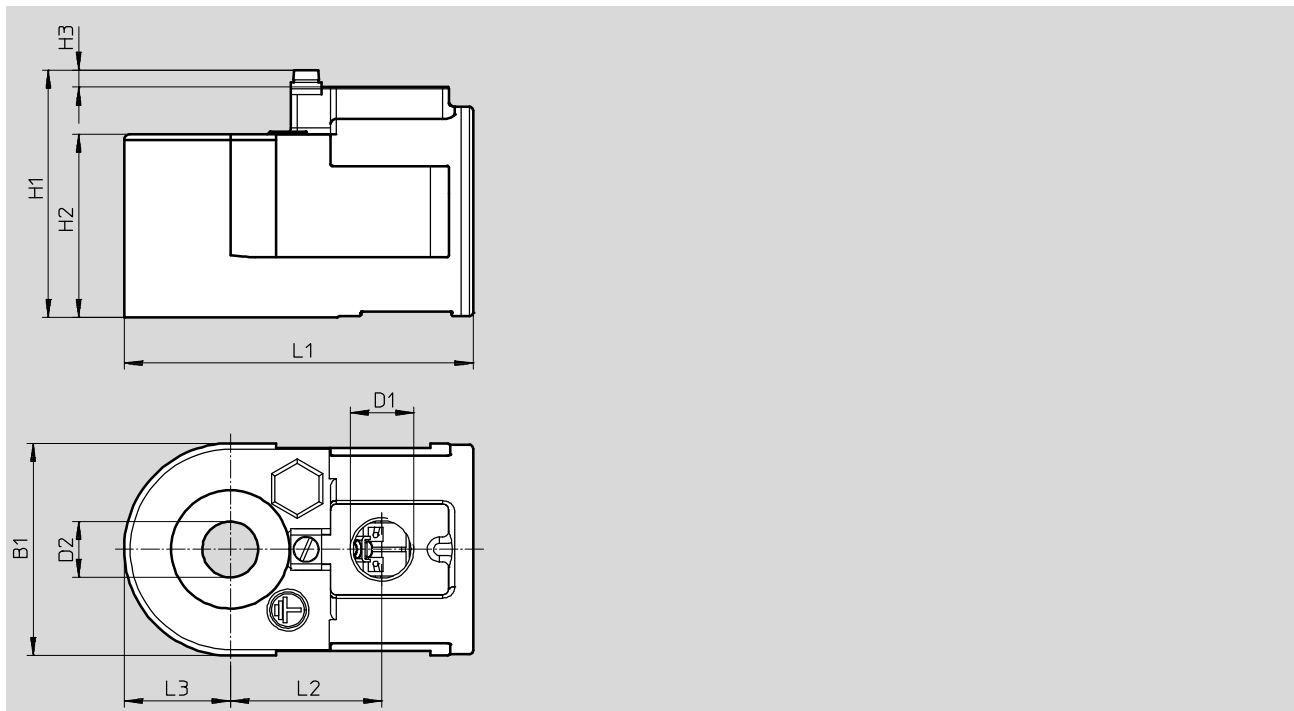
2) Additional information www.festo.com/sp → Certificates.

Solenoid coils VACC-S18-70-...-EX4D

Technical data


Dimensions

Download CAD data → www.festo.com




Type	B1	D1	D2 ∅	H1	H2	H3	L1	L2	L3
VACC-S18-70-K4-...-EX4D	70	M20x1.5	18.2	82	60.5	6	115	50	35
VACC-S18-70-K5-...-EX4D	70	1/2 NPT	18.2	82	60.5	6	115	50	35

Ordering data

	Description	Part No.	Type
	Terminal box, cable fitting metric, M20x1.5	24 V AC/DC	3504563 VACC-S18-70-K4-1U-EX4D
		48 V AC/DC	3504574 VACC-S18-70-K4-7U-EX4D
		120 V AC/DC	3504609 VACC-S18-70-K4-16U-EX4D
		230 V AC/DC	3504639 VACC-S18-70-K4-3U-EX4D
	Terminal box, cable fitting NPT, 1/2 NPT	24 V AC/DC	3546549 VACC-S18-70-K5-1U-EX4D
		48 V AC/DC	3546588 VACC-S18-70-K5-7U-EX4D
		110 V AC/DC	3546625 VACC-S18-70-K5-2U-EX4D
		230 V AC/DC	3546662 VACC-S18-70-K5-3U-EX4D

Solenoid coils VACC-S18-35-...-EX4ME

Technical data

-  Voltage
24 V AC/DC
110 V AC/DC
230 V AC/DC

Nominal power
3.4 watt at 24 V DC



01

Pilot valves

General technical data

Type of mounting	Via knurled nut
Type of actuation	Electrical
Mounting position	Any
Product weight	[g] 580

Materials

Housing	PA, steel
Note on materials	Contains paint-wetting impairment substances RoHS compliant

Electrical data

Electrical connection	Terminal box, cable entry thread metric, M20x1.5
Permissible voltage fluctuations	[%] -15 ... 10
Duty cycle	[%] 100
Degree of protection to EN 60529	IP65 with plug socket
Insulation class	H

Characteristic coil data

Nominal operating voltage		24 V AC/DC	24 V AC/DC With fuse	110 V AC/DC	230 V AC/DC
Frequency	[Hz]	50/60	50/60	50/60	50/60
Power	[W]	3.5	3.5	3.5	3.5
	[VA]	3.5	3.5	3.5	3.5

ATEX

ATEX category for gas	II 2G	
Type of ignition protection for gas	Ex e mb II T ₆ , T ₅	
ATEX category for dust	II 2D	
Type of ignition protection for dust	Ex tD A21 IP65 T80°C, T95°C	
Explosion ambient temperature	[°C]	T ₅ , T ₉₅ °C: -20°C ≤ Ta ≤ +60°C
		T ₆ , T ₈₀ °C: -20°C ≤ Ta ≤ +50°C
Explosion protection certification outside the EU	EPL Db (BR), EPL Db (CN), EPL Gb (BR), EPL Gb (CN)	
Certificate issuing authority		NEPSI GY111106X
		PTB 08 ATEX 2033 X
		TÜV 12.1946 X

Operating and environmental conditions

Corrosion resistance class CRC ¹⁾	4
CE marking (see declaration of conformity) ²⁾	To EU Explosion Protection Directive (ATEX)

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

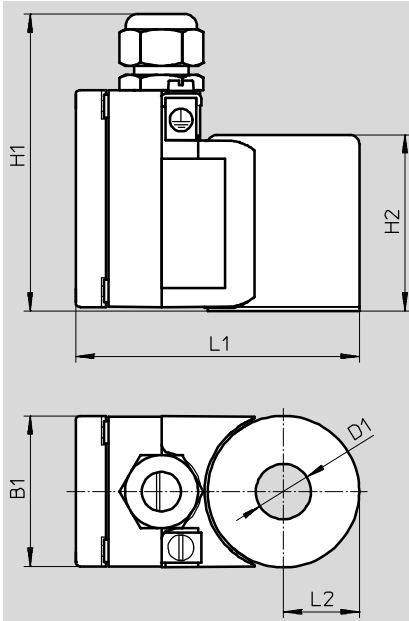
2) Additional information www.festo.com/sp → Certificates.

Solenoid coils VACC-S18-35-...-EX4ME

Technical data

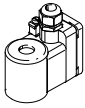
Dimensions

Download CAD data → www.festo.com




Type	B1	D1 Ø	H1	H2	L1	L2
VACC-S18-35-K4-...-EX4ME	50	18.2	100	58	95	25

Ordering data

	Description	Part No.	Type	
		Terminal box, cable entry thread metric, M20x1.5	24 V AC/DC	562897
		24 V AC/DC	570785	VACC-S18-35-K4-1UF-EX4ME
		With fuse		
		110 V AC/DC	562898	VACC-S18-35-K4-2U-EX4ME
		230 V AC/DC	562899	VACC-S18-35-K4-3U-EX4ME

Solenoid coils VACC-S18-120-...-EX4ME

Technical data

-  Voltage
- 24 V AC/DC
- 48 V DC
- 60 V DC
- 110 V AC/DC
- 230 V AC/DC

Nominal power
12.0 watt at 24 V DC



General technical data

Type of mounting	Via knurled nut
Type of actuation	Electrical
Mounting position	Any
Product weight	[g] 580

Materials

Housing	PA, steel
Note on materials	Contains paint-wetting impairment substances
	RoHS compliant

Electrical data

Electrical connection	Terminal box, cable entry thread metric, M20x1.5
Permissible voltage fluctuations	[%] -15 ... 10
Duty cycle	[%] 100
Degree of protection to EN 60529	IP65 with plug socket
Insulation class	H

Characteristic coil data

Nominal operating voltage		24 V AC/DC	24 V AC/DC With fuse	48 V AC/DC	60 V AC/DC	110 V AC/DC	230 V AC/DC
Frequency	[Hz]	50/60	50/60	-	-	50/60	50/60
Power	[W]	12	12	12	12	12	12
	[VA]	12	12	-	-	12	12

ATEX

ATEX category gas	II 2G
Type of ignition protection for gas	Ex e mb II T4
ATEX category for dust	II 2D
Type of ignition protection for dust	Ex tD A21 IP65 T130°C
Explosion ambient temperature	[°C] T4, T130°C: -20°C = Ta = +40°C
Explosion protection certification outside the EU	EPL Db (BR), EPL Db (CN), EPL Gb (BR), EPL Gb (CN)
Certificate issuing authority	NEPSI GYJ111106X
	PTB 08 ATEX 2033 X
	TÜV 12.1946 X

Operating and environmental conditions

Corrosion resistance class CRC ¹⁾	4
CE marking (see declaration of conformity) ²⁾	To EU Explosion Protection Directive (ATEX)

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

2) Additional information www.festo.com/sp → Certificates.

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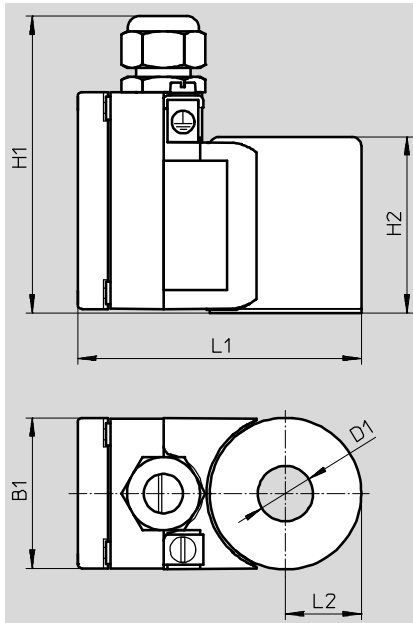
Pilot valves

Solenoid coils VACC-S18-120-...-EX4ME

Technical data

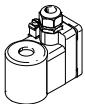
Dimensions

Download CAD data → www.festo.com



Type	B1	D1 Ø	H1	H2	L1	L2
VACC-S18-120-K4-...-EX4ME	50	18.2	100	58	95	25

Ordering data

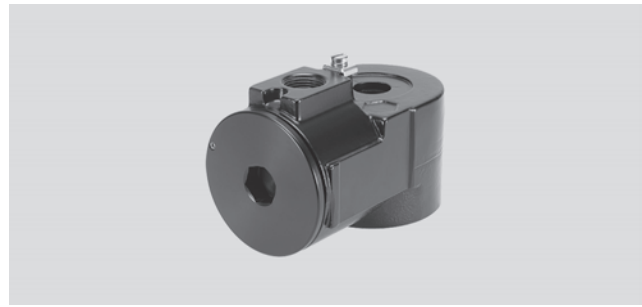
	Description	Part No.	Type	
		Terminal box, cable entry thread metric, M20x1.5	24 V AC/DC	3536527
		24 V AC/DC With fuse	3535840	VACC-S18-120-K4-1UF-EX4ME
		48 V DC	3536573	VACC-S18-120-K4-7-EX4ME
		60 V DC	3536569	VACC-S18-120-K4-27-EX4ME
		110 V AC/DC	3536565	VACC-S18-120-K4-2U-EX4ME
		230 V AC/DC	3536568	VACC-S18-120-K4-3U-EX4ME

Solenoid coils VACC-S18-70-...-U2D

Technical data

- L - Voltage
 24 V DC
 48 V DC
 125 V DC
 220 V DC

Nominal power
 7.0 watt at 24 V DC



General technical data

Type of mounting	Via knurled nut
Type of actuation	Electrical
Mounting position	Any
Product weight	[g] 1700

Materials

Housing	Grey cast iron, wrought aluminium alloy
Note on materials	Contains paint-wetting impairment substances RoHS compliant

Electrical data

Electrical connection	Terminal box, cable entry thread 1/2 NPT
Permissible voltage fluctuations	[%] -15 ... 10
Duty cycle	[%] 100
Degree of protection to EN 60529	IP65 with plug socket
Insulation class	H

Characteristic coil data

Nominal operating voltage	24 V DC	48 V DC	125 V DC	220 V DC
Power	[W] 7.0	7.0	7.0	7.0

Operating and environmental conditions

Nominal operating voltage	24 V DC	48 V DC	125 V DC	220 V DC
Corrosion resistance class CRC ¹⁾	4		4	
CE marking (see declaration of conformity) ²⁾	-		To EU Low Voltage Directive	

- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
 Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.
- 2) Additional information www.festo.com/sp → Certificates.

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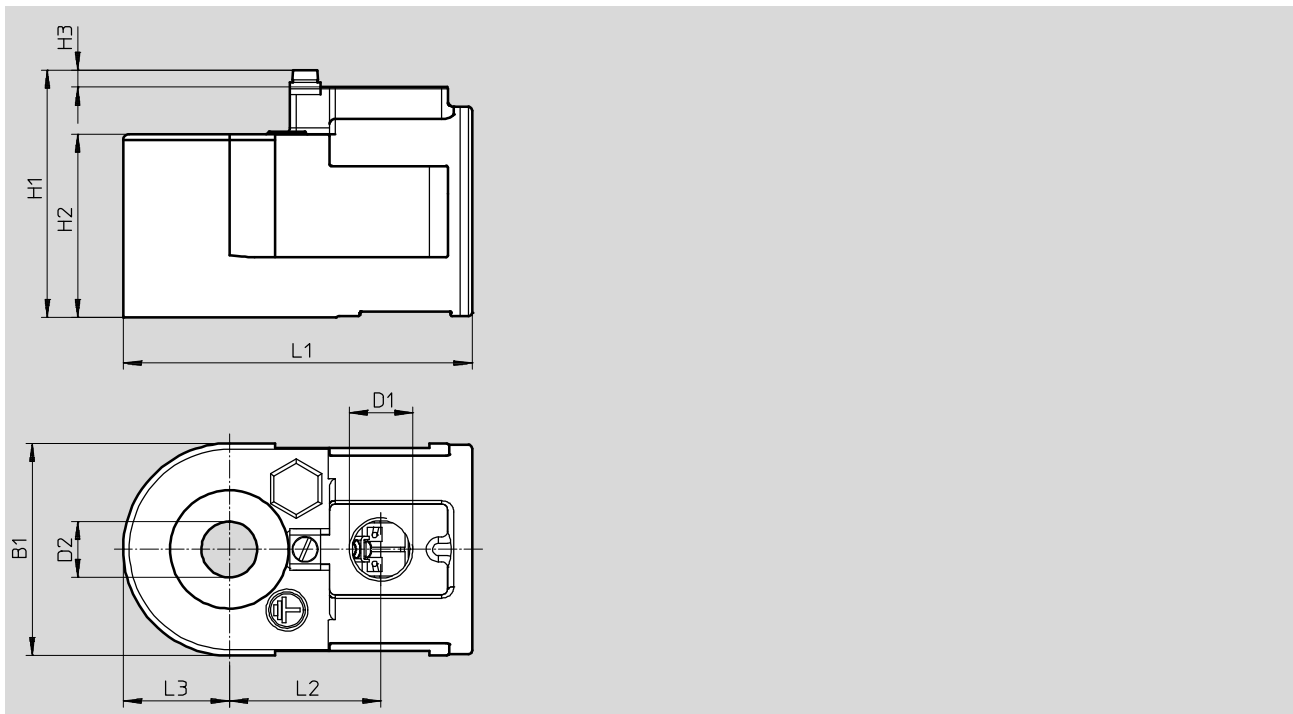
Pilot valves

Solenoid coils VACC-S18-70-...-U2D

Technical data


Dimensions

Download CAD data → www.festo.com



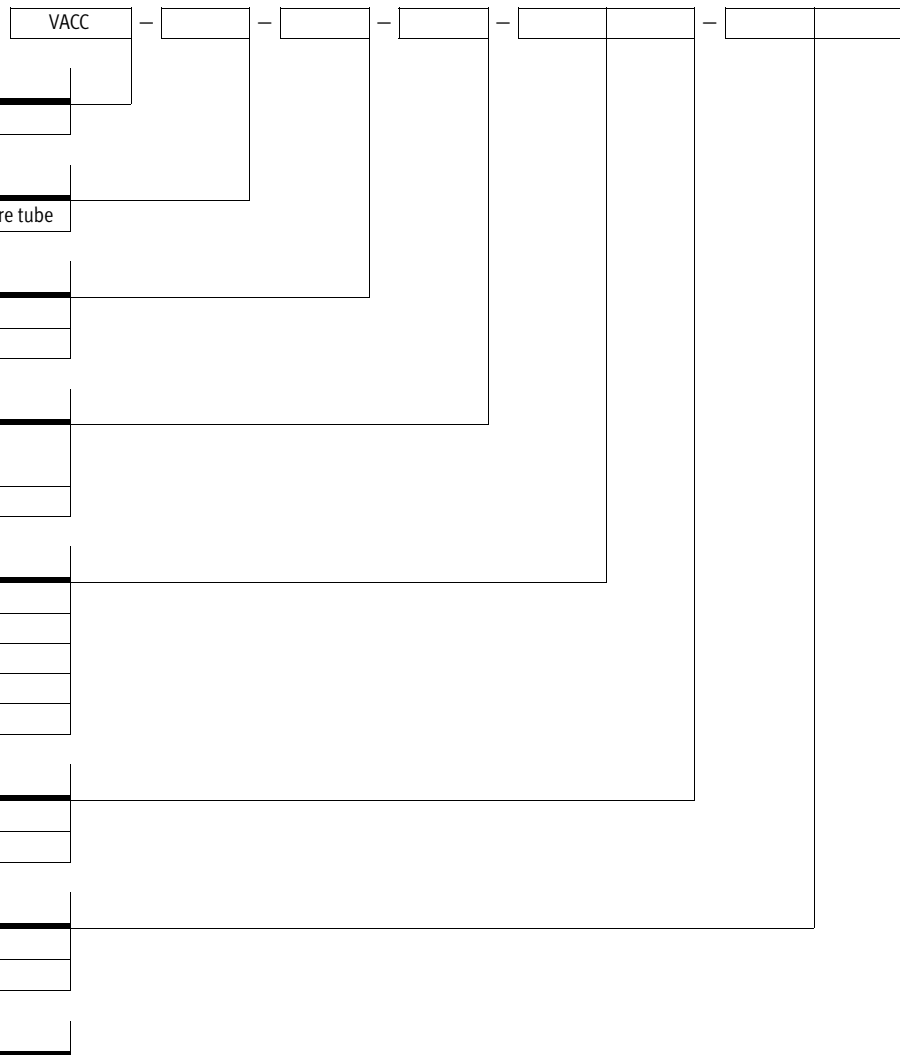
Type	B1	D1	D2 ∅	H1	H2	H3	L1	L2	L3
VACC-S18-70-K5-...-U2D	70	1/2 NPT	18.2	82	60.5	6	115	50	35

Ordering data

	Description	Part No.	Type
	Terminal box, cable entry thread 1/2 NPT	24 V DC	3546816 VACC-S18-70-K5-1-U2D
		48 V DC	3546876 VACC-S18-70-K5-7-U2D
		125 V DC	3546913 VACC-S18-70-K5-16-U2D
		220 V DC	3546949 VACC-S18-70-K5-3-U2D

Solenoid coils VACC-S13

Type codes



Type

VACC	Solenoid coil, C series
------	-------------------------

Solenoid coil type

S13	Solenoid coil, for 13 mm armature tube
-----	----------------------------------------

Power consumption

11	1.1 W
18	1.8 W

Electrical connection

A1	Connection pattern type A, to EN 175301
K4	Cable fitting, metric

Operating voltage

1U	24 V DC and AC
2U	110 V DC and AC
3U	230 V DC and AC
27U	60 V DC and AC
1	24 V DC

Circuitry

-	None
F	With fuse

ATEX certification EU

-	None
EX4	ATEX category II 2GD

Type of ignition protection


-	None
A	Intrinsically safe
ME	Moulded encapsulation, enhanced safety

01

Pilot valves

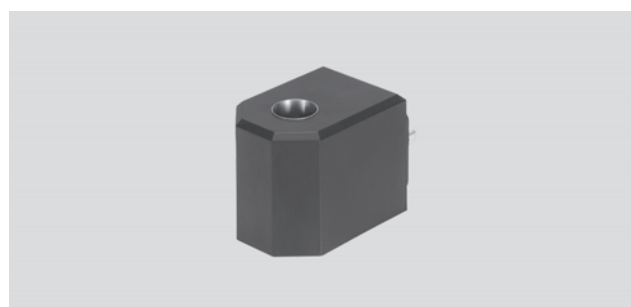
Solenoid coils VACC-S13-18-A1

Technical data

	Voltage
	24 V DC
	24 V AC/DC
	110 V AC/DC
	230 V AC/DC

Nominal power
2 watt at 24 V DC

	Temperature range
	-20 ... +60 °C



General technical data

Type of mounting	Via knurled nut
Type of actuation	Electrical
Mounting position	Any
Product weight [g]	210

Materials

Housing	PA, UP
Note on materials	Contains paint-wetting impairment substances
	RoHS compliant

Electrical data

Electrical connection	Plug pins, 3-pin, with connection pattern to EN 175301-803, type A
Permissible voltage fluctuations [%]	-15 ... 10
Duty cycle [%]	100
Degree of protection to EN 60529	IP65 with plug socket
Insulation class	H

Characteristic coil data

Nominal operating voltage		24 V DC	24 V AC/DC		110 V AC/DC		230 V AC/DC	
Frequency [Hz]		-	40/65	-	40/65	-	40/65	-
Power	[W]	1.8	-	1.8	-	1.8	-	1.8
	[VA]	-	1.8	-	1.8	-	1.8	-

Operating and environmental conditions

Nominal operating voltage		24 V DC	24 V AC/DC	110 V AC/DC	230 V AC/DC
Ambient temperature [°C]		-20 ... 60		-20 ... 60	
Corrosion resistance class CRC ¹⁾		4		4	
CE marking (see declaration of conformity) ²⁾		-		To EU Low Voltage Directive (only for alternating voltage AC)	

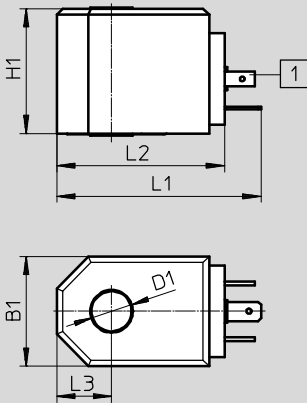
- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.
- 2) Additional information www.festo.com/sp → Certificates.

Solenoid coils VACC-S13-18-A1

Technical data

Dimensions


Download CAD data → www.festo.com



1 Plug pattern type A, to EN 175301-803

Type	B1	D1	H1	L1	L2	L3
VACC-S13-18-A1-...	36	13.1	41	67	55	18

Ordering data

Description	Part No.	Type
	24 V DC	562889 VACC-S13-18-A1-1
	24 V AC/DC	562890 VACC-S13-18-A1-1U
	110 V AC/DC	562891 VACC-S13-18-A1-2U
	230 V AC/DC	562892 VACC-S13-18-A1-3U

01

Pilot valves

Technical data

 Voltage
24 V DC

Nominal power
1.1 watt at 24 V DC



General technical data

Type of mounting	Via knurled nut
Type of actuation	Electrical
Mounting position	Any
Product weight	[g] 330

Materials

Housing	PA, UP
Note on materials	Contains paint-wetting impairment substances RoHS compliant

Electrical data

Electrical connection	Terminal box, cable entry thread metric, M20x1.5
Permissible voltage fluctuations	[%] -15 ... 10
Duty cycle	[%] 100
Maximum input power, Pi	[W] 1.2
Maximum input voltage, Ui	[V] 32
Maximum input current, Ii	[A] 0.2
Required current consumption, Imin	[mA] 16
Degree of protection to EN 60529	IP64
Insulation class	H

Characteristic coil data

Nominal operating voltage	[V DC] 14 ... 32
Power	[W] 0.22 ... 1.1
Effective internal capacitance, Ci	Negligibly low
Effective internal inductance, Li	Negligibly low

Operating and environmental conditions

Corrosion resistance class CRC ¹⁾	4
CE mark (see declaration of conformity) ³⁾	To EU EMC Directive ²⁾ To EU Explosion Protection Directive (ATEX)

- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.
- 2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.
- 3) Additional information www.festo.com/sp → Certificates.

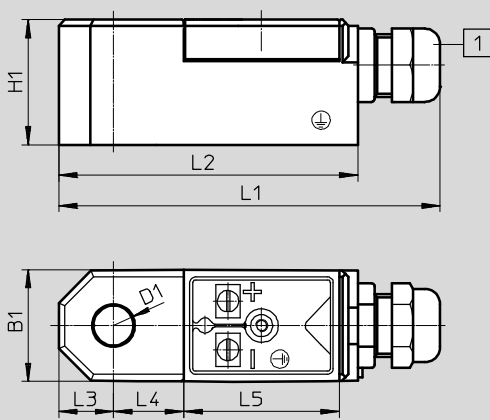
Solenoid coils VACC-S13-11-...-EX4A

Technical data

ATEX	
ATEX category for gas	II 2G
Type of ignition protection for gas	Ex ia IIC T6, T5 Gb
ATEX category for dust	II 2D
Type of ignition protection for dust	Ex ia IIIC T80°C, T95°C Db
Explosion ambient temperature	T5, T95°C: -30°C ≤ Ta ≤ +65°C
	T6, T80°C: -30°C ≤ Ta ≤ +50°C
Explosion protection certification outside the EU	EPL Gb (BR), EPL Gb (CN), EPL Db (BR)
Certificate issuing authority	BVS15 ATEXE030X
	DNV 17.0043X
	NEPSI GYJ111105
	TÜV 12.1949 X

Dimensions

Download CAD data → www.festo.com



1 Terminal box, cable entry thread M20x1.5

Type	B1	D1	H1	L1	L2	L3	L4	L5
VACC-S13-11-K4-1-EX4A	37	13.1	41	131	98	18	23	51

Ordering data

	Description	Part No.	Type
	Terminal box, cable entry thread metric, M20x1.5	562896	VACC-S13-11-K4-1-EX4A

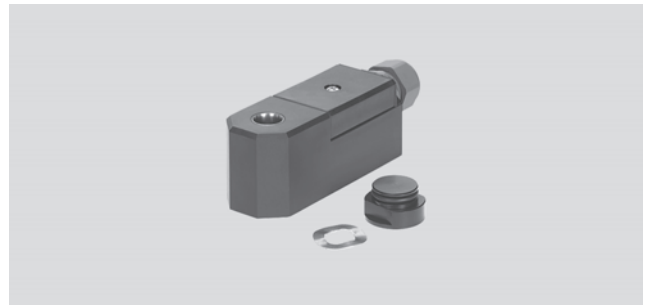
01

Pilot valves

Technical data

- L -	Voltage 24 V AC/DC 60 V AC/DC 110 V AC/DC 230 V AC/DC
-------	-------------------------------------------------------------------

Nominal power
2 watt at 24 V DC



General technical data

Type of mounting	Via knurled nut
Type of actuation	Electrical
Mounting position	Any
Product weight [g]	330

Materials

Housing	PA, UP
Note on materials	Contains paint-wetting impairment substances RoHS compliant

Electrical

Electrical connection	Terminal box, cable entry thread metric, M20x1.5
Permissible voltage fluctuations [%]	-15 ... 10
Duty cycle [%]	100
Insulation class	H
Degree of protection to EN 60529	IP64 (IP65 with internal fuse protection)

Characteristic coil data

Nominal operating voltage	24 V AC/DC		24 V AC/DC With fuse		60 V AC/DC		110 V AC/DC		230 V AC/DC	
	Frequency [Hz]	Power [W]	Frequency [Hz]	Power [W]	Frequency [Hz]	Power [W]	Frequency [Hz]	Power [W]	Frequency [Hz]	Power [W]
Frequency [Hz]	40/65	-	40/65	-	40/65	-	40/65	-	40/65	-
Power [W]	-	1.8	-	1.8	-	1.8	-	1.8	-	1.8
	[VA]	1.8	-	1.8	-	1.8	-	1.8	-	1.8

Operating and environmental conditions

Corrosion resistance class CRC ¹⁾	4
CE marking (see declaration of conformity) ²⁾	To EU Explosion Protection Directive (ATEX)

- Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.
- Additional information www.festo.com/sp → Certificates.

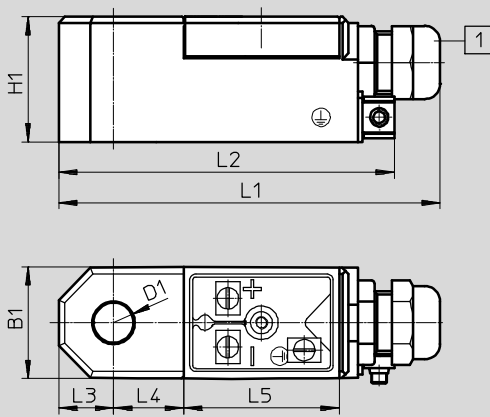
Solenoid coils VACC-S13-18-...-EX4ME

Technical data

ATEX	Solenoid coil without internal fuse	Solenoid coil with internal fuse
ATEX category for gas	II 2G	II 2G
Type of ignition protection for gas	Ex e mb IIC T6, T5, T4 Gb	Ex e mb IIC T6 Gb
ATEX category for dust	II 2D	II 2D
Type of ignition protection for dust	ExtbIIICT85°C, T95°C, T130°C Db	Extb IIIC T70°C Db
Explosion ambient temperature [°C]	T4, T130°C: -20°C ≤ Ta ≤ +60°C	-
	T5, T95°C: -20°C ≤ Ta ≤ +60°C	-
	T6, T80°C: -20°C ≤ Ta ≤ +50°C	T6, T70°C: -20°C ≤ Ta ≤ +40°C
Explosion protection certification outside the EU	EPL Db (BR)	-
	EPL Db (CN)	-
	EPL Db (IEC-EX)	EPL Db (IEC-EX)
	EPL Gb (BR)	-
	EPL Gb (CN)	-
	EPL Gb (IEC-EX)	EPL Gb (IEC-EX)
Certificate issuing authority	BVS15 ATEXE029X	BVS15 ATEXE029X
	IECEX BVS15.0075 X	-
	NEPSI GYJ111104X	-
	TÜV 12.1947 X	-

Dimensions

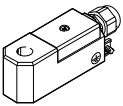
Download CAD data → www.festo.com



1 Terminal box, cable entry thread M20x1.5

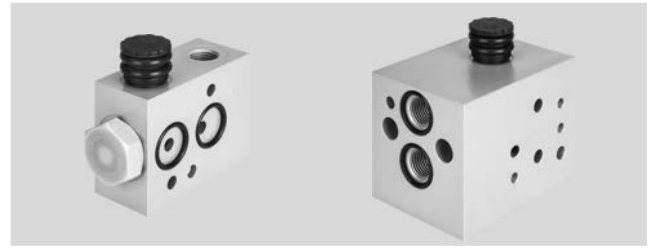
Type	B1	D1	H1	L1	L2	L3	L4	L5
VACC-S13-18-K4-...-EX4ME	37	13.1	41	125	98	18	23	51
VACC-S13-18-K4-27U-EX4ME					111			

Ordering data

Description	Part No.	Type
 Terminal box, cable entry thread metric, M20x1.5	24 V AC/DC	562893 VACC-S13-18-K4-1U-EX4ME
	24 V AC/DC With fuse	570784 VACC-S13-18-K4-1UF-EX4ME
	60 V AC/DC	8040578 VACC-S13-18-K4-27U-EX4ME
	110 V AC/DC	562894 VACC-S13-18-K4-2U-EX4ME
	230 V AC/DC	562895 VACC-S13-18-K4-3U-EX4ME

Accessories – Sub-base VABS-S7-RB/BE-...

Port pattern: NAMUR



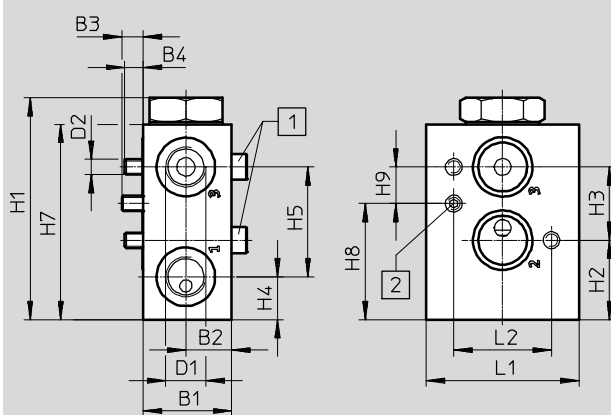
General technical data		Pressurisation and exhaust block VABS-S7-BE-...	Redundancy block VABS-S7-RB-...
Type			
Type of mounting		With through-hole	
Mounting position		Any	
Flow rate for piston valve pressurisation	[m ³ /h]	2.2	–
Flow rate for piston valve exhausting	[m ³ /h]	8.6	–
Product weight	[g]	250	–
Pneumatic connection			
	1	G1/4, 1/4 NPT	G1/4, 1/4 NPT
	2	Flange 1/4, port pattern to NAMUR	Flange 1/4, port pattern to NAMUR
	3	G1/4, 1/4 NPT	G1/4, 1/4 NPT
	12	–	G1/4, 1/4 NPT

Operating and environmental conditions		VABS-S7-BE	VABS-S7-RB
Operating medium		Compressed air to ISO 8573-1:2010 [–:–:–]	
Operating pressure	[bar]	2 ... 8	0 ... 10
Pilot air supply port		Internal	External/internal
Degree of protection		IP65	
Corrosion resistance class CRC ¹⁾		4	

- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Materials	
Sub-base	Aluminium (Ematal coated)
Seals	NBR
Note on materials	Contains paint-wetting impairment substances, RoHS-compliant

Dimensions

Download CAD data → www.festo.com

1) Socket head screw M5x35

2) Threaded pin M5x10

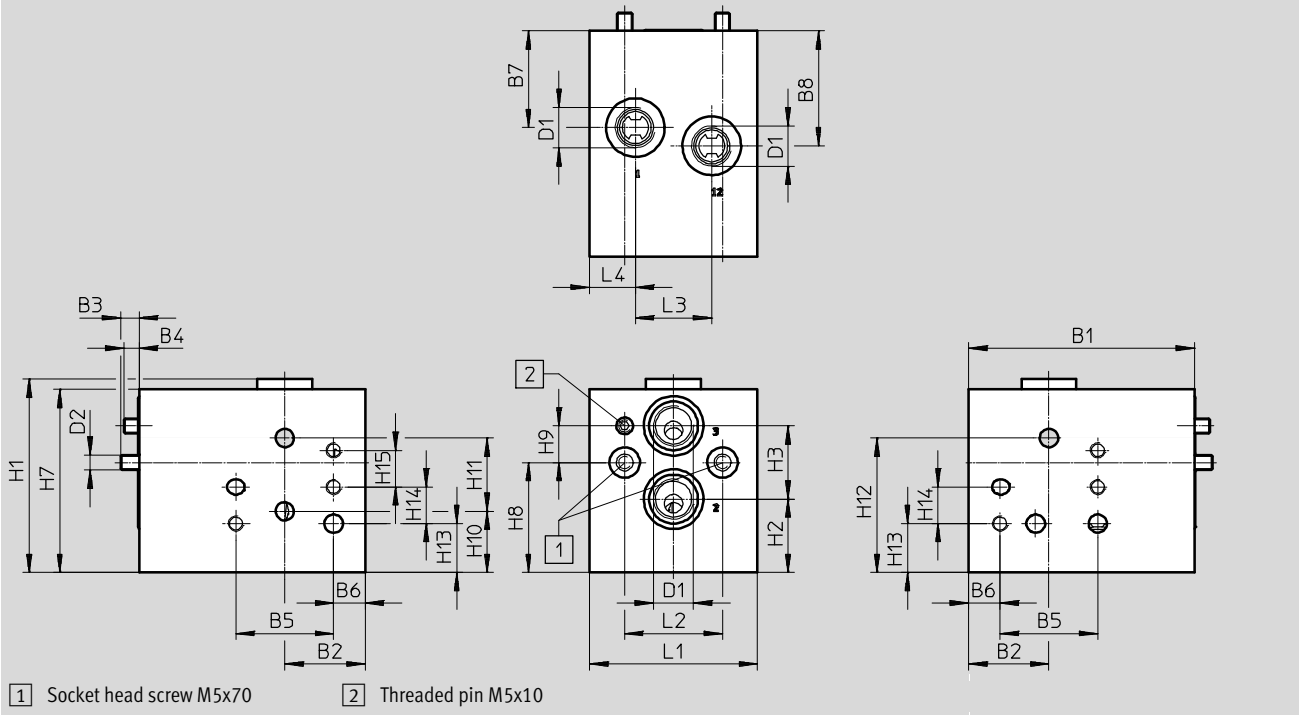
Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H7	H8	H9	L1	L2
VABS-S7-BE-B-G14-V14-A	29	15	7	6	G1/4	M5	72.7	26	24	14	36	64	38	12	50	32
VABS-S7-BE-B-N14-V14-A					1/4 NPT											

Sub-bases

Accessories – Sub-base VABS-S7-RB/BE...

Dimensions

Download CAD data → www.festo.com



Type	B1	B2	B3	B4	B5	B6	B7	B8	D1	D2	L1	L2	L3	L4
VABS-S7-RB-B-G14-V14-A	74	26.3	6	5	32	10.3	31.7	37.7	G1/4	M5	55	32	25	15
VABS-S7-RB-B-N14-V14-A									1/4 NPT					

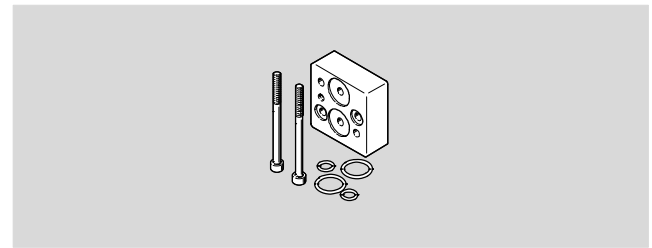
Type	H1	H2	H3	H7	H8	H9	H10	H11	H12	H13	H14	H15
VABS-S7-RB-B-G14-V14-A	63.4	24	24	60	36	12	20	24	44	16	12	12
VABS-S7-RB-B-N14-V14-A												

Ordering data

	Description	Part No.	Type
	Sub-base for mounting two solenoid valves with G-thread port for redundant circuitry, with 1/4 flange, port pattern to NAMUR. Using the additional auxiliary power terminal, the intermediate plate can also be used with pilot-controlled solenoid valves on actuators that have a positioner for fail-safe functions.	3580505	VABS-S7-RB-B-G14-V14-A
	Sub-base for mounting two solenoid valves with NPT-thread port for redundant circuitry, with 1/4 flange, port pattern to NAMUR. Using the additional auxiliary power terminal, the intermediate plate can also be used with pilot-controlled solenoid valves on actuators that have a positioner for fail-safe functions.	4727331	VABS-S7-RB-B-N14-V14-A
	Sub-base as a pressurisation and exhaust block with G-thread port, with 1/4 flange, port pattern to NAMUR.	2999476	VABS-S7-BE-B-G14-V14-A
	Sub-base as a pressurisation and exhaust block with NPT-thread port, with 1/4 flange, port pattern to NAMUR.	4727328	VABS-S7-BE-B-N14-V14-A

Accessories – Mounting plate VAME-S7-P-N-...

Port pattern: NAMUR



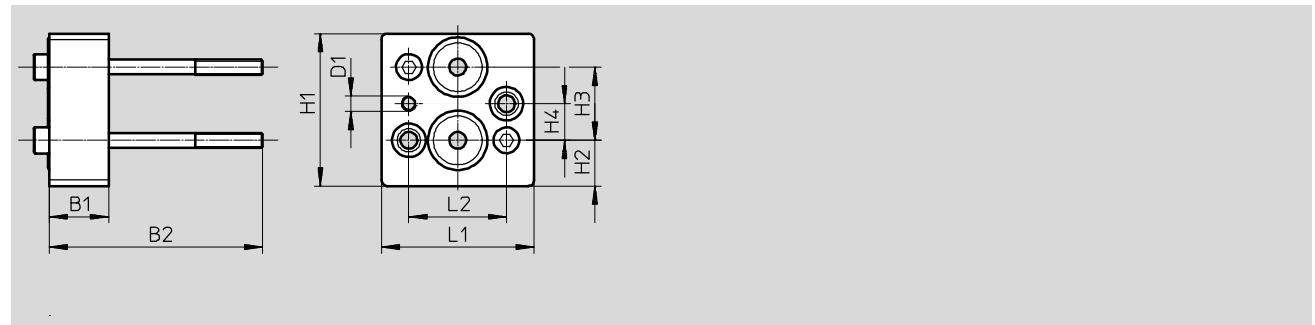
General technical data		
Type of mounting		With through-hole
Mounting position		Any
Pneumatic connection	1	M5, port pattern to NAMUR
	2	Flange 1/4, port pattern to NAMUR
	3	G1/4

Operating and environmental conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [–:–:–]
Operating pressure range [bar]	0 ... 10
Operating pressure range [psi]	0 ... 145
Degree of protection	IP65 (in the installed state)
Corrosion resistance class CRC ¹⁾	4

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Materials	
Mounting plate	Aluminium (Ematal coated)
Seals	NBR
Note on materials	Contains paint-wetting impairment substances, RoHS-compliant

Dimensions Download CAD data → www.festo.com



Type	B1	B2	D1	H1	H2	H3	H4	L1	L2
VAME-S7-P-N-V14-A	19.5	70	M5	50	15	24	12	50	32

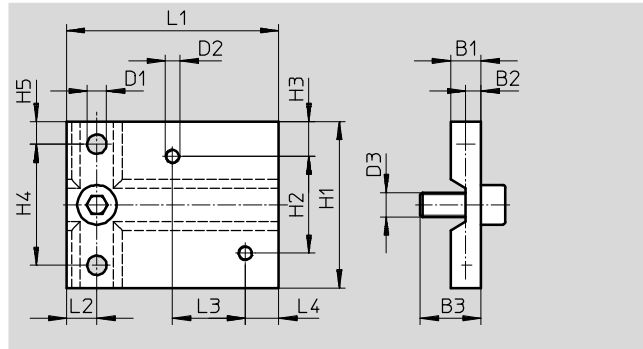
Ordering data		Part No.	Type
	Description		
	Mounting/spacer plate for solenoid valves when combined with ATEX solenoid coils, with 1/4 flange, port pattern to NAMUR	3581412	VAME-S7-P-N-V14-A

Solenoid valves

Accessories

Mounting plate VAME-S7-P

Mounting plate material: Aluminium
(Ematal-coated)
Seals material: NBR
Contains paint-wetting impairment
substances, RoHS-compliant
Mounting: Via through-holes



Dimensions [mm] and ordering data

B1	B2	B3	D1	D2	D3	H1	H2	H3	H4	H5	L1	L2	L3	L4	CRC ¹⁾	Part No.	Type
10	5	20	6.4	M5	M8	55	32	11.5	40	7.5	70	10	24	11	4	563399	VAME-S7-P

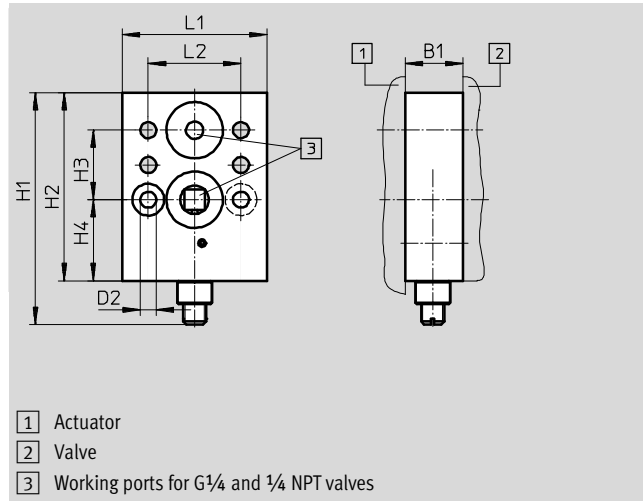
1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Flow control plate for single-acting actuators

Flow control plate material:
Aluminium (Ematal-coated)
Seals material: NBR
Contains paint-wetting impairment
substances, RoHS-compliant
Operating medium: Compressed air to
ISO 8573-1:2010 [7:--:--]
Operating pressure: 0 ... 12 bar
Pilot air supply: internal/external
Mounting position: Any
Mounting: Via through-holes
Degree of protection: IP65



Function:
Flow control for supply air and/or
exhaust air for a drive with NAMUR
interface for valves VOFC/VOFD



Dimensions [mm] and ordering data

B1	D2	H1	H2	H3	H4	L1	L2	CRC ¹⁾	Part No.	Type
20	5.5	80	65	24	28	50	32	4	563401	VABF-S7-F1B5P1-F

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

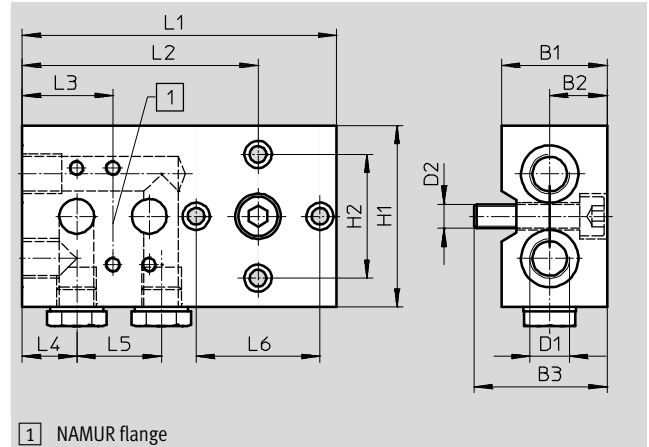
01

Pilot valves

Accessories

Mounting plate

Mounting plate material: Aluminium (Ematal-coated)
 Seals material: NBR
 Contains paint-wetting impairment substances, RoHS-compliant
 Operating medium: Compressed air to ISO 8573-1:2010 [7:--:--]
 Operating pressure 0 ... 10 bar
 Mounting position: Any
 Mounting: Via through-holes
 Degree of protection: IP65



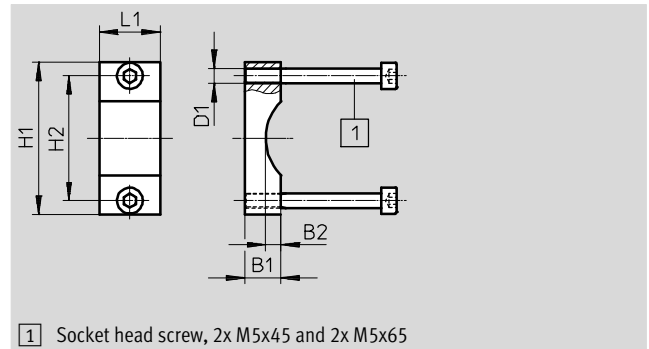
Dimensions [mm] and ordering data

B1	B2	B3	D1	D2	H1	H2	L1	L2	L3	L4	L5	L6	CRC ¹⁾	Part No.	Type
35	19	44	G¼	M8	60	41	104	78	30	18	28	41	4	563396	VABS-S7-S-G14

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
 Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

Mounting bracket

Mounting bracket material: Aluminium (Ematal-coated)
 Contains paint-wetting impairment substances, RoHS-compliant



Dimensions [mm] and ordering data

B1	B2	D1	H1	H2	L1	CRC ¹⁾	Part No.	Type
12	5	M5	50	41	20	4	563403	VAME-S7-Y

1) Corrosion resistance class CRC 4 to Festo standard FN 940070
 Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

01

Pilot valves

Solenoid valves

Accessories

Adapter with filter

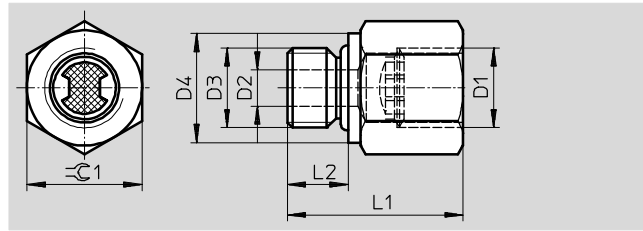
Adapter material: High-alloy stainless steel

Seals material: NBR

Note on materials:

Contains paint-wetting impairment substances, RoHS-compliant

Operating pressure: 2 ... 8 bar



Dimensions [mm] and ordering data

D1	D2	D3	D4	L1	L2	CRC1	CRC ¹⁾	Part No.	Type
1/4 NPT	6	G1/4	18	29	10	19	1	563397	NPFV-AF-G14-N14-MF
G1/4	6	G1/4	18	29	10	19	1	563398	NPFV-AF-G14-G14-MF
1/4 NPT	6	1/4 NPT	18	29	10	19	1	4727333	NPFV-AF-N14-N14-MF

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

Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Exhaust protection G1/4

Housing material: PA

Seals material: EPDM

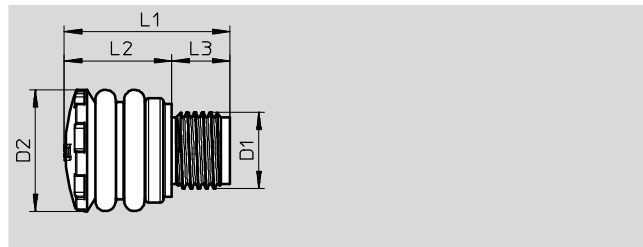
Contains paint-wetting impairment substances, RoHS-compliant

Operating medium: Compressed air to ISO 8573-1:2010 [7:-:-]

Operating pressure 0 ... 10 bar

Ambient temperature: -50 ... +60 °C

Type of mounting: Screw-in, with male thread



Dimensions [mm] and ordering data

D1	D2	L1	L2	L3	Part No.	Type
G1/4, 1/4 NPT	21	28.5	18.5	10	563400	VABD-D3-SN-G14

Exhaust protection 1/2 NPT

Housing material: PA

Seals material: EPDM

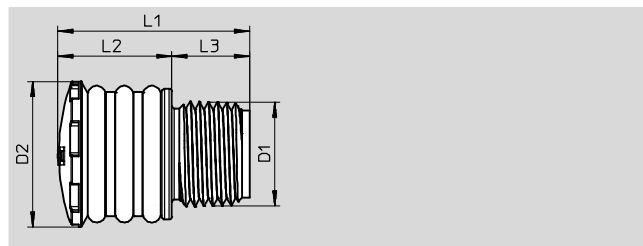
Contains paint-wetting impairment substances, RoHS-compliant

Operating medium: Compressed air to ISO 8573-1:2010 [7:-:-]

Operating pressure: 0 ... 12 bar

Ambient temperature: -50 ... +60 °C

Type of mounting: Screw-in, with male thread



Dimensions [mm] and ordering data

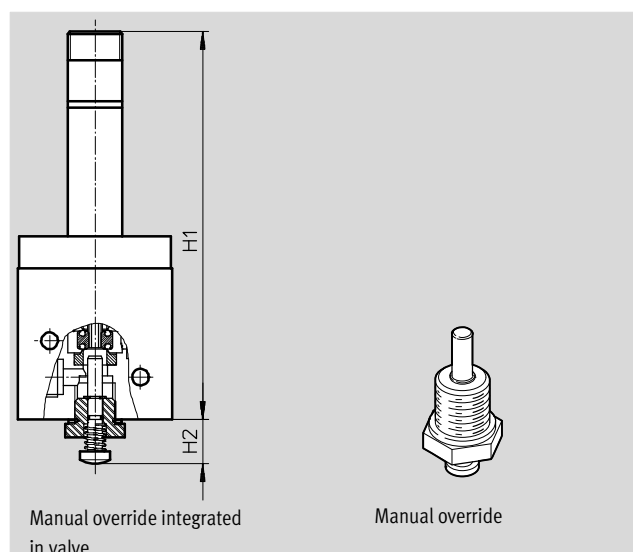
D1	D2	L1	L2	L3	Part No.	Type
G1/2, 1/2 NPT	29	38	23	15	3535104	VABD-D3-SN-N12

Accessories

Manual override

Housing material: Anodised aluminium
 Contains paint-wetting impairment substances, RoHS-compliant
 Actuation: Manual
 Mounting position: Any

Function:
 Can be retrofitted with manual override (VOFD-50T only) in version with spring return, acting directly on the valve seat.
 The manual override can also be used only temporarily, e.g. during commissioning or inspections.

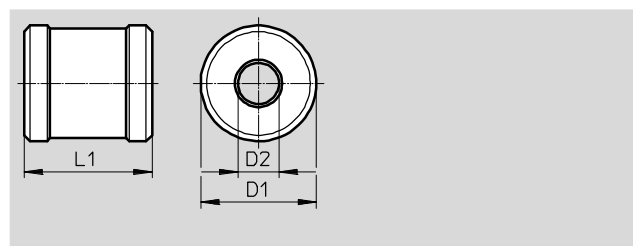


Dimensions [mm] and ordering data				Part No.	Type
H1	H2	CRC ¹⁾			
128	14	3	563402	VAOH-S8	

1) Corrosion resistance class CRC 3 to Festo standard FN 940070
 High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Manual override

Material: Anodised aluminium
 Contains paint-wetting impairment substances, RoHS-compliant
 Function:
 For manual override of basic valves in place of a solenoid coil.



Dimensions [mm] and ordering data						Part No.	Type
D1	D2	L1	Weight [g]	CRC ¹⁾			
38	13.5	42	120	2	3580654	VAOH-MB-S7-S13	

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
 Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Ordering data		Part No.	Type
Description			
Connecting cable		Technical data → Internet: kmc	
	Operating voltage 24 V DC, switching status indication with LED	Cable length 2.5 m	30931 KMC-1-24 DC-2,5-LED
		Cable length 5 m	30933 KMC-1-24 DC-5-LED
		Cable length 10 m	193459 KMC-1-24-10-LED
	Operating voltage up to 240 V AC	Cable length 2.5 m	30932 KMC-1-230 AC-2,5
		Cable length 5 m	30934 KMC-1-230 AC-5
Plug socket		Technical data → Internet: mssd	
	Cable connection using clamping screws	34583	MSSD-C

Accessories for valves

Solenoid coils



Overview, configuration and ordering
→ www.festo.com/catalogue/vacf



Additional information, support and user documentation
→ www.festo.com/sp/vacf



Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/ex

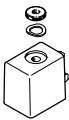

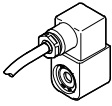




Product range overview and selection aid





- + Solenoid coils for valve series
 - VOFD
 - VOFC
 - VSNC
 - VZWM-L
 - VZWE


Solenoid coils

Product range overview

Version	Type	For valve series			→ Page/ Internet
		VSNC → page 23	VOFC → page 85	VOFD → page 151	
F solenoid coil					
	VACF	■	-	-	67 66
N solenoid coil					
	VACN-N	■	-	-	71
N solenoid coil for explosive atmospheres (→ certification)					
	VACN...-EX2-N VACN...-U4-M VACN...-EX4-M VACN...-EX4-A	■	-	-	74 76 78 80
C solenoid coil					
	VACC-S13	-	■	■	137, 197
	VACC-S18	-	-	■	179

Product range overview

Version	Type	For valve series		→ Page/ Internet
		VZWM-L → page 717	VZWE → page 747	
H solenoid coil				
	MH-2	■	-	725
H1 solenoid coil				
	VACN-H1	-	■	758
X solenoid coil				
	VACN-X	-	■	758
D solenoid coil				
	MD-2	■	-	728

-  - Note

ATEX certification is only effective in combination with other ATEX-certified components.

→ www.festo.com/en/ex

Solenoid coils

Selection aid

Solenoid valves and corresponding solenoid coils			Solenoid coil						
Valve series	Valve type		C	D	F	H	H1	N	X
			Solenoid valves for process automation	VSNC → page 23	-	-	■	-	-
	VOFC → page 85	■	-	-	-	-	-	-	-
	VOFD → page 151	■	-	-	-	-	-	-	-
Process directional control valves	VZWM-L → page 717	-	■	-	■	-	-	-	-
	VZWE → page 747	-	-	-	-	■	-	-	■

02 Sensor boxes

Digital and analogue limit switch boxes with optical display for quarter turn actuators in standard and potentially explosive atmospheres





SRBC

Sensor boxes

- + Sturdy and corrosion-resistant design
- + Intrinsically safe variants to ATEX for zone 1/21

→ page 217



SRBG

Sensor boxes

- + Inductive double sensor
- + Direct mounting on quarter turn actuator
- + Compact and cost-effective

→ page 235



SRBE

Sensor boxes

- + Worldwide certification to ATEX, IECEx, cCSAus
- + Type of ignition protection "flameproof enclosure"

→ page 251

Contents

Sensor boxes SRBC	217
Sensor boxes SRBG	235
Sensor boxes SRBE	251
Sensor boxes SRAP, analogue	269
Limit switch attachment DAPZ	279

Sensor boxes SRBC



Overview, configuration and ordering
→ www.festo.com/catalogue/srbc



Additional information, support and user documentation
→ www.festo.com/sp/srbc



Quick ordering of basic designs
→ page 226, 231



Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/ex



- + Weather-tight housing for outdoor applications
- + Extensive range of switch variants for virtually all applications
- + Intrinsically safe to ATEX
- + cCSAus Listed, General Purpose
- + SIL2 to IEC 61508
- + Two cable inputs for common power supply for the sensor box and solenoid valve

- + Pre-assembled mounting bridge
- + Cable connector and blanking plug included in the scope of delivery

Sensor boxes SRBC

Key features and product range overview

Function

Sensor boxes SRBC are used for electrical feedback and control of the position of process valves actuated using pneumatic quarter turn actuators. They can be mounted quickly and easily on quarter turn actuators with a hole pattern to

VDI/VDE 3845 using mounting adapters. The sturdy design of the sensor box SRBC is ideal for the harsh conditions in process automation.

Innovative

- Pre-assembled mounting adapter for ease of installation
- The trip cams can be set easily without additional tools
- Sturdy, corrosion-resistant design, ideal for use in harsh operating conditions
- Clearly visible 3D position indicator allows rapid detection of the current position of the quarter turn actuator

Flexible

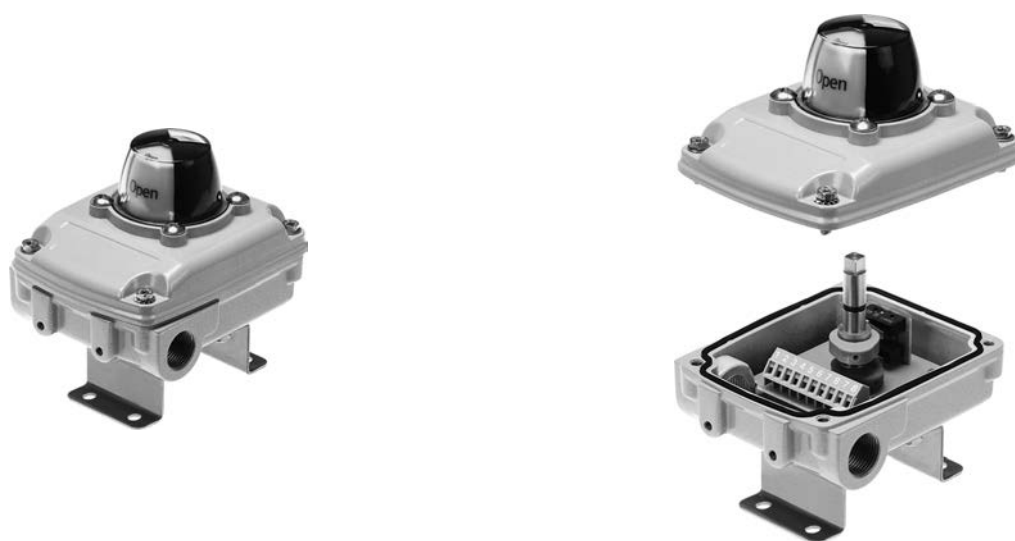
- Weather-tight housing for outdoor applications too
- Mechanical, inductive or magnetic switch variants for virtually all ranges of application
- Intrinsically safe variants for use in potentially explosive areas
- Two cable inputs for common power supply for the sensor box and solenoid valve as standard

Design

- Sturdy aluminium housing with two cable inputs M20x1.5
- Captive stainless steel screws on the housing cover
- Pre-assembled stainless steel mounting adapter 80x30 H20 for ease of mounting on standard drives as per VDI/VDE 3845
- Cable connector and blanking plug included in the scope of delivery
- 3D OPEN/CLOSED position indicator
- Mechanical, inductive or magnetic switch variants
- Number of switches: 2
- IP67, NEMA 4/4x
- cCSAus Listed, General Purpose
- ATEX ia version
- SIL 2 to IEC 61508

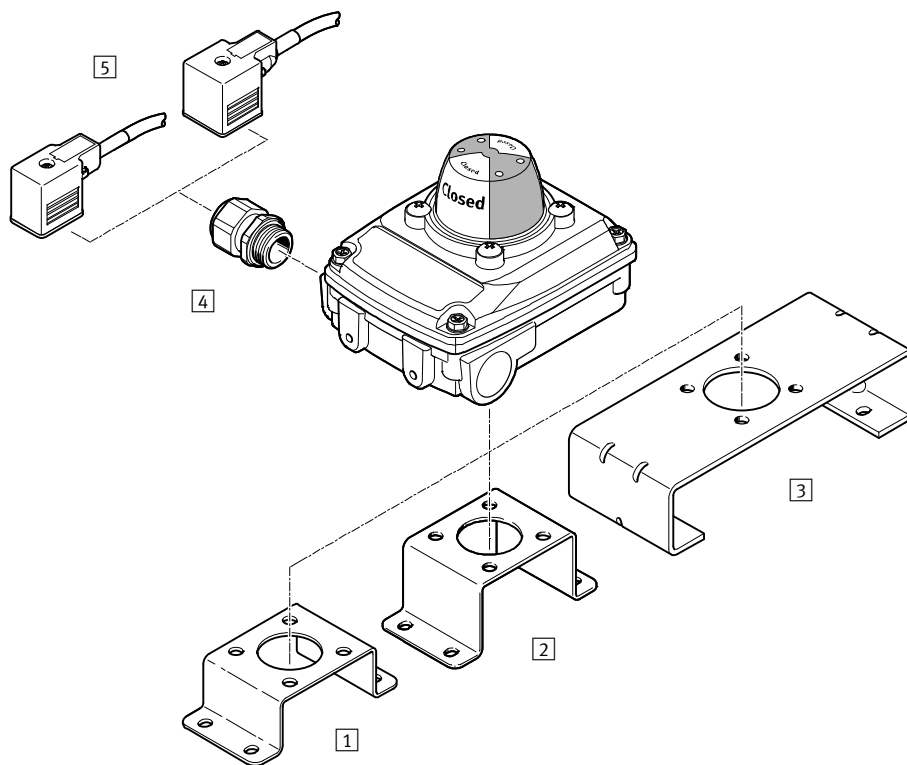


Product range overview



Measuring principle	Type	Operating voltage range	Switching output	Switching element function
Electromechanical	SRBC-...-MW-22A-1W-	0...250 V AC 0...30 V DC	Contacting	Toggle switch, single-pole (SPDT)
Magnetic reed	SRBC-...-R-2A-1W-	0...120 V AC 0...175 V DC	Contacting	Toggle switch, single-pole (SPDT)
Inductive	SRBC-...-N-20N-ZC-	8.2 V DC	NAMUR	N/C contact
Inductive	SRBC-...-N-20N-ZC-...-EX6	8.2 V DC	NAMUR	N/C contact
Inductive	SRBC-...-N-1-P-	10...30 V DC	PNP	N/O contact
Inductive	SRBC-...-N-1-N-	10...30 V DC	NPN	N/O contact
Inductive	SRBC-...-N-1-ZU-	5...60 V DC	Contactless, 2-wire	N/O contact

Peripherals overview



Accessories	Brief description	→ Page/Internet
1 Mounting adapter DARQ-K-X1-A1-F05-20-R1	<ul style="list-style-type: none"> • Mounting adapter for mounting sensor boxes on quarter turn actuators with hole pattern 30 x 80 mm, shaft height 20 mm • Included in the scope of delivery of the sensor box and pre-assembled 	232
2 Mounting adapter DARQ-K-X1-A1-F05-30-R1	<ul style="list-style-type: none"> • Mounting adapter for mounting sensor boxes on quarter turn actuators with hole pattern 30 x 80 mm, shaft height 30 mm • Can be ordered separately as an accessory 	232
3 Mounting adapter DARQ-K-X1-A2-F05-30-R1	<ul style="list-style-type: none"> • Mounting adapter for mounting sensor boxes on quarter turn actuators with hole pattern 30 x 130 mm, shaft height 30 mm • Can be ordered separately as an accessory 	232
4 Cable connector NETC-P-M20	<ul style="list-style-type: none"> • Polymer cable connector M20x1.5 • Included in the scope of delivery of the sensor box • Further cable connectors can be ordered separately as an accessory 	233
5 Connecting cable NEBV	<ul style="list-style-type: none"> • For valve connection for sensor box with terminal rail connection • Can be ordered separately as an accessory 	233

Sensor boxes SRBC

Type codes SRBC

SRBC - C - A3 - YR - 90 - N - 1 - N - C2 - P20 -

Type	
SRBC	Limit switch attachment

Design	
C	Sensor box

Mechanical interface	
A3	Mounting adapter, hole pattern 30 x 80 mm, shaft height 20 mm

Display type	
YR	Position indicator yellow/red

Measuring range	
90	0 ... 90°

Sensor principle	
N	Proximity sensors, inductive
R	Reed with contact
MW	Floating contact, changeover switch

Nominal operating voltage	
2A	110 V AC, 50-60 Hz
20N	8.2 V DC, NAMUR
22A	250 V AC
1	24 V DC

Electrical output	
N	NPN
P	PNP
1W	1-pin toggle switch
ZC	2-wire N/C contact
ZU	2-wire N/O contact

Electrical connection	
C2	Screw terminal

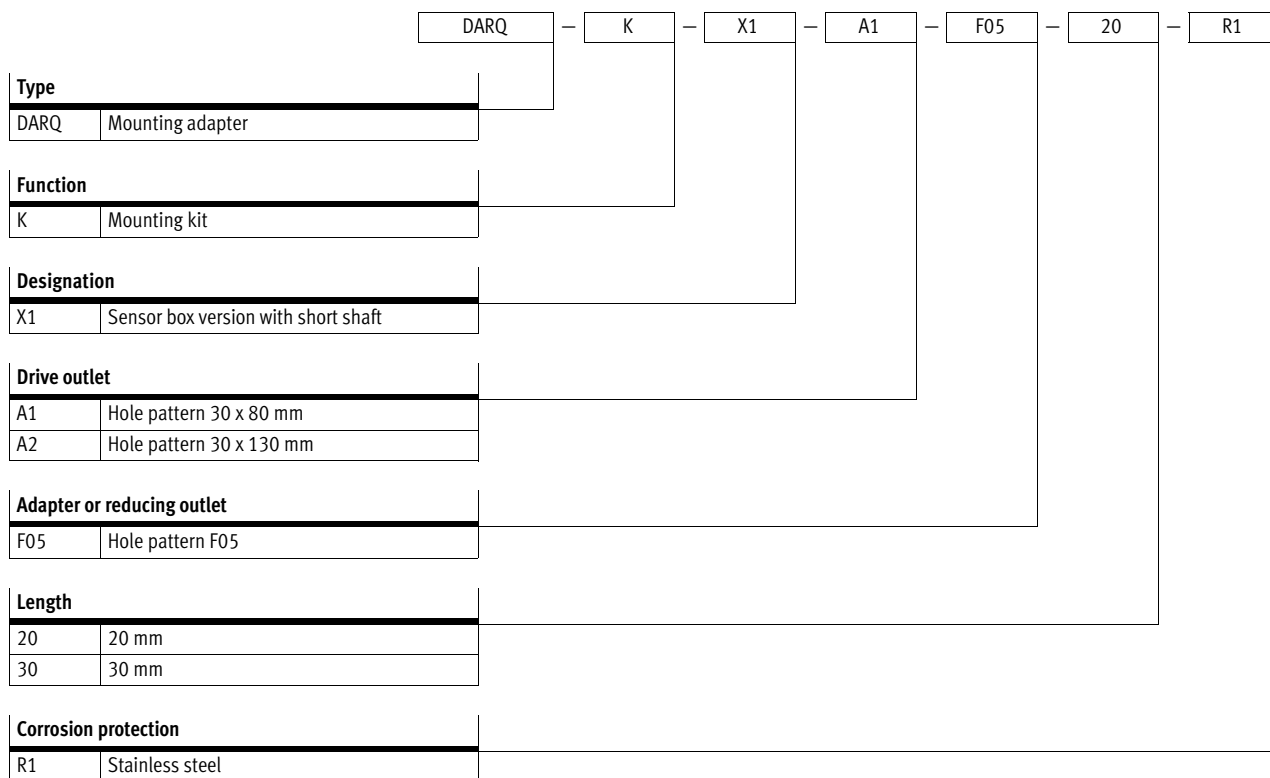
Cable connector	
P20	M20x1.5, polymer

EU certification	
-	None
EX6	II 1GD

02

Sensor boxes

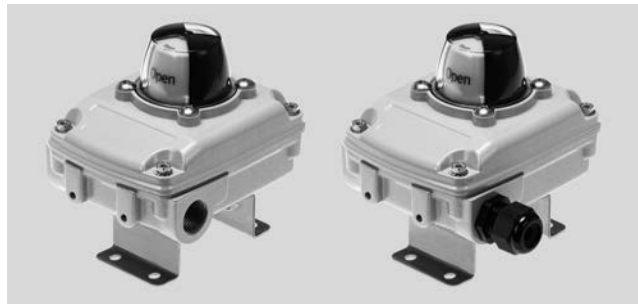
Type codes DARQ



Sensor boxes SRBC, electromechanical and magnetic reed

Technical data

- Measuring principle: electromagnetic or magnetic reed
- Switching element function: toggle switch, single-pole (SPDT)
- For DC and AC voltage
- Pre-assembled mounting adapter 80 x 30 H20
- Cable connector and blanking plug included in the scope of delivery



General technical data

Type SRBC-...	-MW	-R
Setting range for angle detection [°]	0 ... 90	
Based on standard	ISO 5211	
	VDI/VDE 3845	
	-	EN 60947-5-2
Type of mounting	On flange to ISO 5211	
	With mounting bracket	

Electrical characteristic data

Type SRBC-...	-MW	-R
Measuring principle	Mechanical/electrical	Magnetic reed
Switching output	Contacting	
Switching element function	Toggle switch, single-pole	
Operating voltage range [V]	0 ... 250	0 ... 120
Alternating current AC		
Max. output current AC [mA]	3000 (at 250 V)	250 (at 120 V)
Operating voltage range [V]	0 ... 30	0 ... 175
Direct current DC		
Max. output current DC [mA]	3000 (at 30 V)	250 (at 175 V)

Electromechanical components

Type SRBC-...	-MW	-R
Cable connector	M20x1.5	
Permissible cable diameter [mm]	5 ... 13	
Electrical connection	10-pin	
	Screw terminal	
Nominal conductor cross section that can be connected [mm ²]	0.25 ... 2.5	
Materials		
Cable connection	PA	
Blanking plug	PA	

Sensor boxes SRBC, electromechanical and magnetic reed

Technical data

Operating and environmental conditions		
Ambient temperature	[°C]	-20 ... +80
Storage temperature	[°C]	-20 ... +80
Degree of protection		IP67 NEMA 4/4X
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
CE marking (see declaration of conformity) ¹⁾		To EU Low Voltage Directive To EU RoHS Directive
Approval certificate		c CSA us (OL)
Safety integrity level (SIL)		SIL 2

1) Additional information www.festo.com/sp → Certificates.

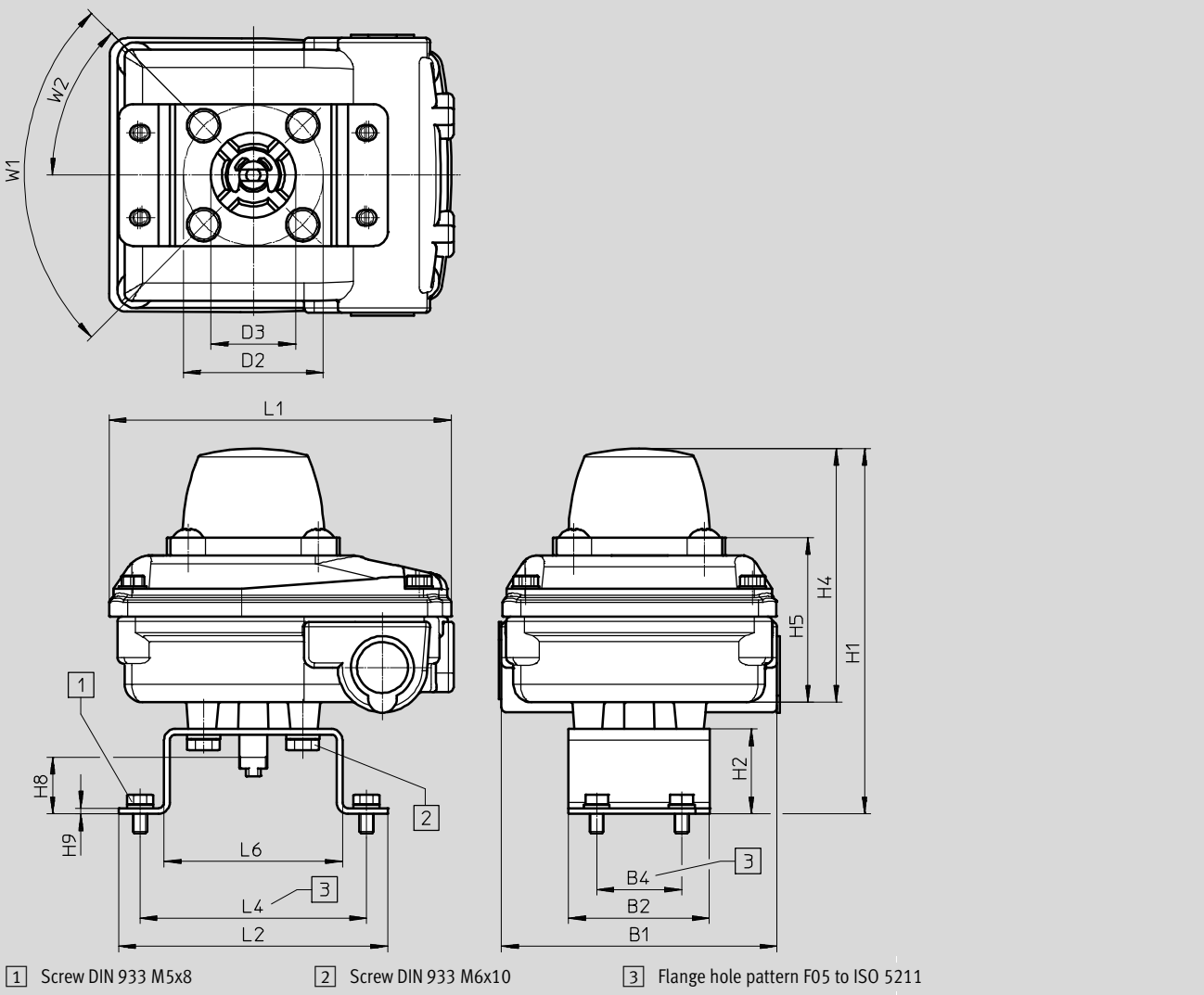
Materials	
Housing	Die-cast aluminium
Wall mounting bracket	High-alloy stainless steel
Shaft	
Circlip	
Washer	
Screws	
Seals	NBR
Pointer	PC
Note on materials	RoHS compliant Contains paint-wetting impairment substances

Sensor boxes SRBC, electromechanical and magnetic reed

Technical data

Dimensions

Download CAD data → www.festo.com



SRBC	B1	B2	B4	D2 Ø	D3 Ø	H1	H2 +0.5	H4
With DARQ-K-X1-A1-F05-20-R1	98	50	30	50	30	129	30	90
With DARQ-K-X1-A1-F05-30-R1						139	40	

SRBC	H5	H8	H9	L1	L2	L4	L6	W1	W2
With DARQ-K-X1-A1-F05-20-R1	58.2	20	2	120	95	80	63	90°	45°
With DARQ-K-X1-A1-F05-30-R1		30							

02

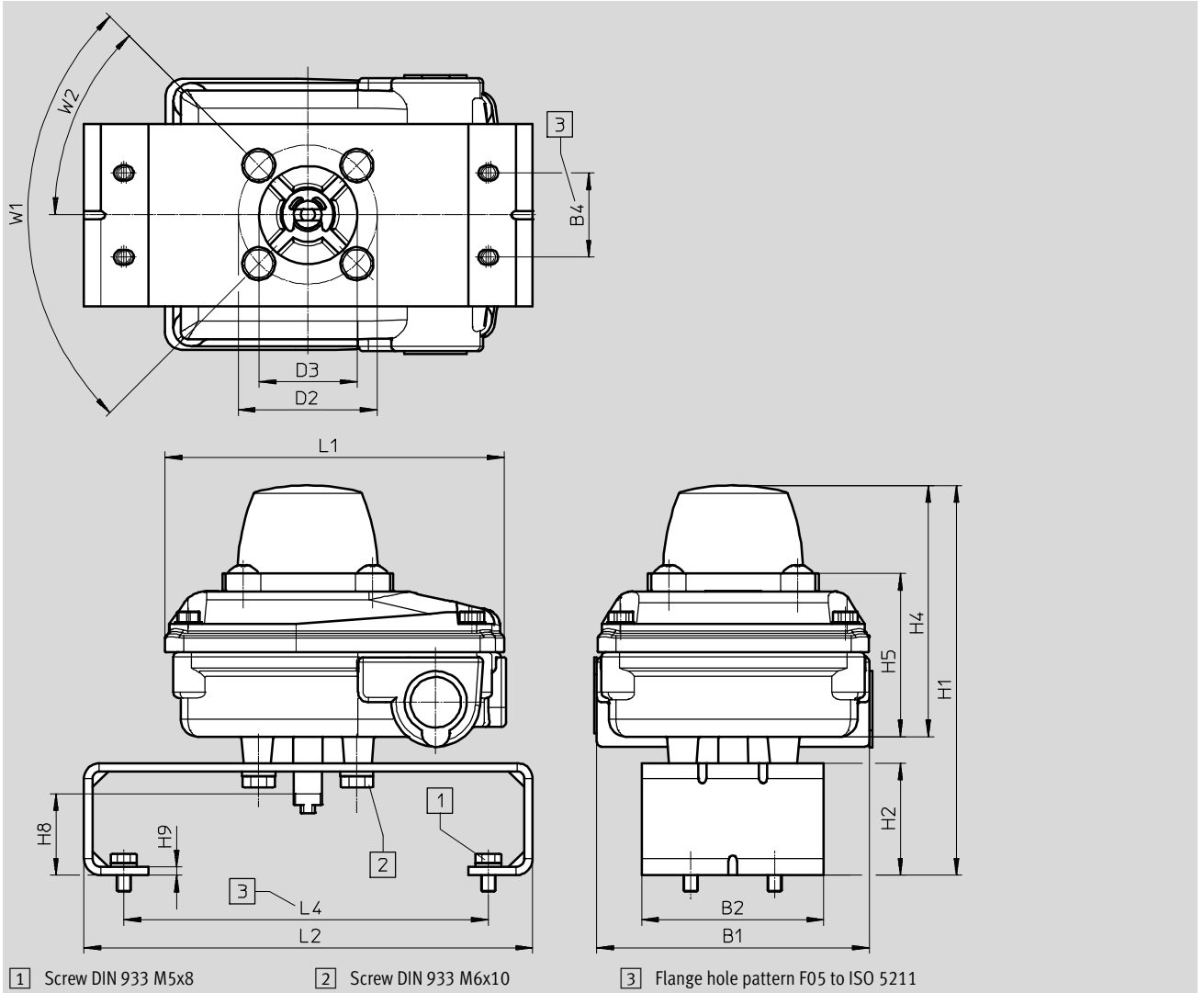
Sensor boxes

Sensor boxes SRBC, electromechanical and magnetic reed

Technical data

Dimensions

Download CAD data → www.festo.com



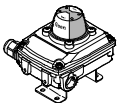
SRBC	B1	B2	B4	D2 ∅	D3 ∅	H1	H2 +0.5	H4
With DARQ-K-X1-A2-F05-30-R1	98	65	30	50	35	139	40	90

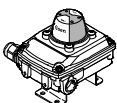
SRBC	H5	H8	H9	L1	L2	L4	W1	W2
With DARQ-K-X1-A2-F05-30-R1	58.2	30	3	120	160	130	90°	45°

Sensor boxes SRBC, electromechanical and magnetic reed

Technical data

★ Core product range

Ordering data					
	Brief description	Dimensions Mounting adapter [mm]	Weight [g]	Part No.	Type
	Sensor box including pre-assembled mounting adapter; cable connector and blanking plug included in the scope of delivery	30 x 80, H: 20	800	★ 3482805	SRBC-CA3-YR90-MW-22A-1W-C2P20

Ordering data					
	Brief description	Dimensions Mounting adapter [mm]	Weight [g]	Part No.	Type
	Sensor box including pre-assembled mounting adapter; cable connector and blanking plug included in the scope of delivery	30 x 80, H: 20	800	3482811	SRBC-CA3-YR90-R-2A-1W-C2P20

02

Sensor boxes

Technical data

- Inductive measuring principle
- Switching outputs PNP, NPN, 2-wire DC, NAMUR
- Pre-assembled mounting adapter 80 x 30 H20
- Cable connector and blanking plug included in the scope of delivery



General technical data		-1-P	-1-N	-1-ZU	-20N	-20N-...-EX6
Type SRBC-...						
Setting range for angle acquisition	[°]	0 ... 90				
Based on standard		ISO 5211				
		VDI/VDE 3845				
		EN 60947-5-2			EN 60947-5-6	
Type of mounting		On flange to ISO 5211				
		With mounting bracket				

Electrical characteristic data		-1-P	-1-N	-1-ZU	-20N	-20N-...-EX6
Type SRBC-...						
Measuring principle		Inductive				
Switching output		PNP	NPN	Non-contacting, 2-wire	NAMUR	
Switching element function		N/O contact			N/C contact	
Operating voltage range	[V DC]	10 ... 30		5 ... 60	8.2	
Max. input voltage U_i	[V]	-				
Max. output current DC	[mA]	100			3	
Voltage drop	[V]	≤ 3		≤ 5	-	
Idle current	[mA]	≤ 15		-		
Residual current	[mA]	0 ... 0.5		0 ... 1	-	
Minimum load current	[mA]	-		4	-	
Effective internal inductance L_i	[μH]	-				100
Effective internal capacitance C_i	[nF]	-				100
Max. input parameters intrinsically safe circuit ¹⁾		-				See IECEx certificate
		-				See ATEX certificate
Reverse polarity protection		For all electrical connections			-	
Protection against short circuit		Pulsed		-		

Electromechanical components		-1-P	-1-N	-1-ZU	-20N	-20N-...-EX6
Type SRBC-...						
Cable connector		M20x1.5				
Permissible cable diameter	[mm]	5 ... 13				5.5 ... 13
Electrical connection		10-pin				
		Screw terminal				
Nominal conductor cross section that can be connected	[mm ²]	0.25 ... 2.5				
Materials						
Cable connection		PA				
Blanking plug		PA				

Sensor boxes SRBC, inductive

Technical data

Operating and environmental conditions		-1-P	-1-N	-1-ZU	-20N	-20N-...-EX6
Type SRBC-...						
Ambient temperature	[°C]	-20 ... +70		-20 ... +80		
Storage temperature	[°C]	-20 ... +70		-20 ... +80		-20 ... +70
Degree of protection		IP67 NEMA 4/4X				
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				
CE marking (see declaration of conformity) ¹⁾		To EU EMC Directive ²⁾ To EU RoHS Directive				
		-				To EU Explosion Protection Directive (ATEX)
Approval certificate		c CSA us (OL) RCM mark				-
ATEX category for gas		-				II 1G
ATEX category for dust		-				II 1D
Type of ignition protection for gas		-				Ex ia IIC T6/T5 Ga
Type of ignition protection for dust		-				Ex ia IIIC Txx°C Da
Explosion-proof temperature rating		-				See IECEx certificate
		-				See ATEX certificate
Explosion protection certification outside the EU		-				EPL Ga (IEC-EX)
		-				EPL Da (IEC-EX)
Safety integrity level (SIL)		SIL 2				

1) Additional information www.festo.com/sp → Certificates.

2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → Certificates.

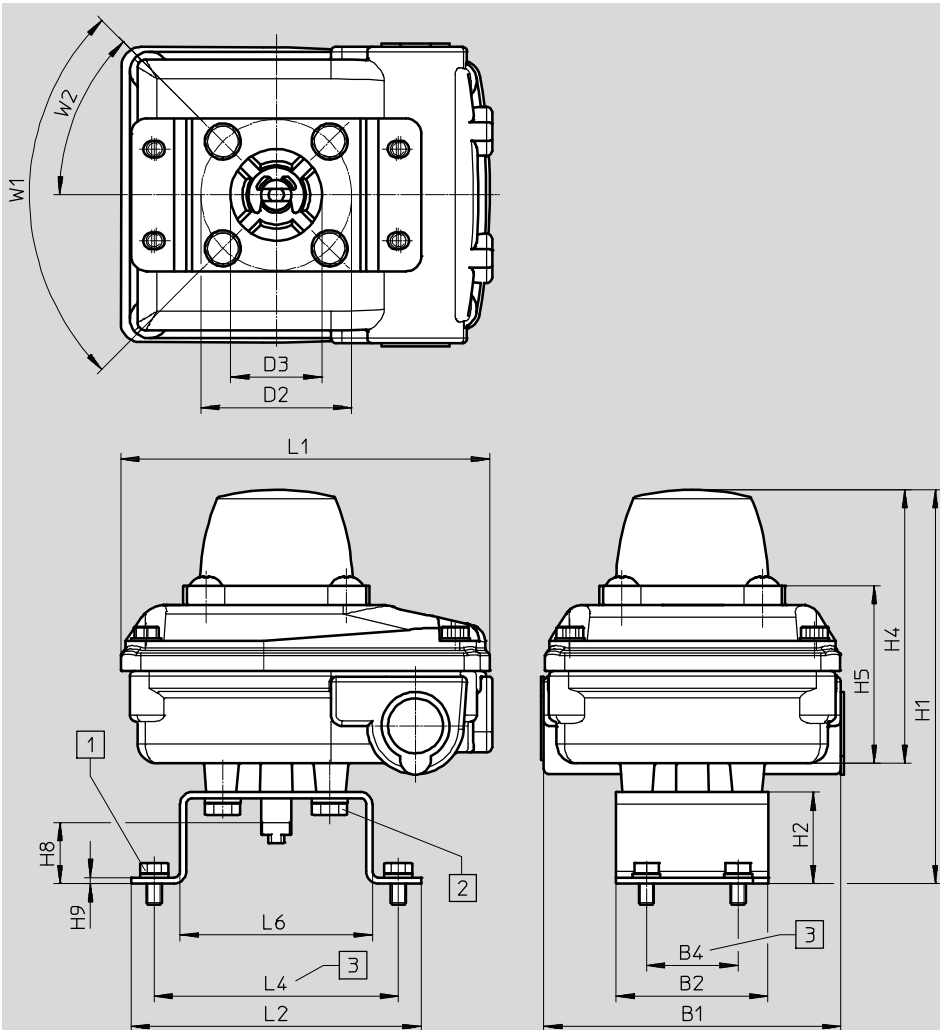
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Materials	
Housing	Die-cast aluminium
Wall mounting bracket	High-alloy stainless steel
Shaft	
Circlip	
Washer	
Screws	
Seals	NBR
Pointer	PC
Note on materials	RoHS compliant
	Contains paint-wetting impairment substances

Technical data

Dimensions

Download CAD data → www.festo.com



1 Screw DIN 933 M5x8

2 Screw DIN 933 M6x10

3 Flange hole pattern F05 to ISO 5211

SRBC	B1	B2	B4	D2 ∅	D3 ∅	H1	H2 +0.5	H4
With DARQ-K-X1-A1-F05-20-R1	98	50	30	50	30	129	30	90
With DARQ-K-X1-A1-F05-30-R1						139	40	

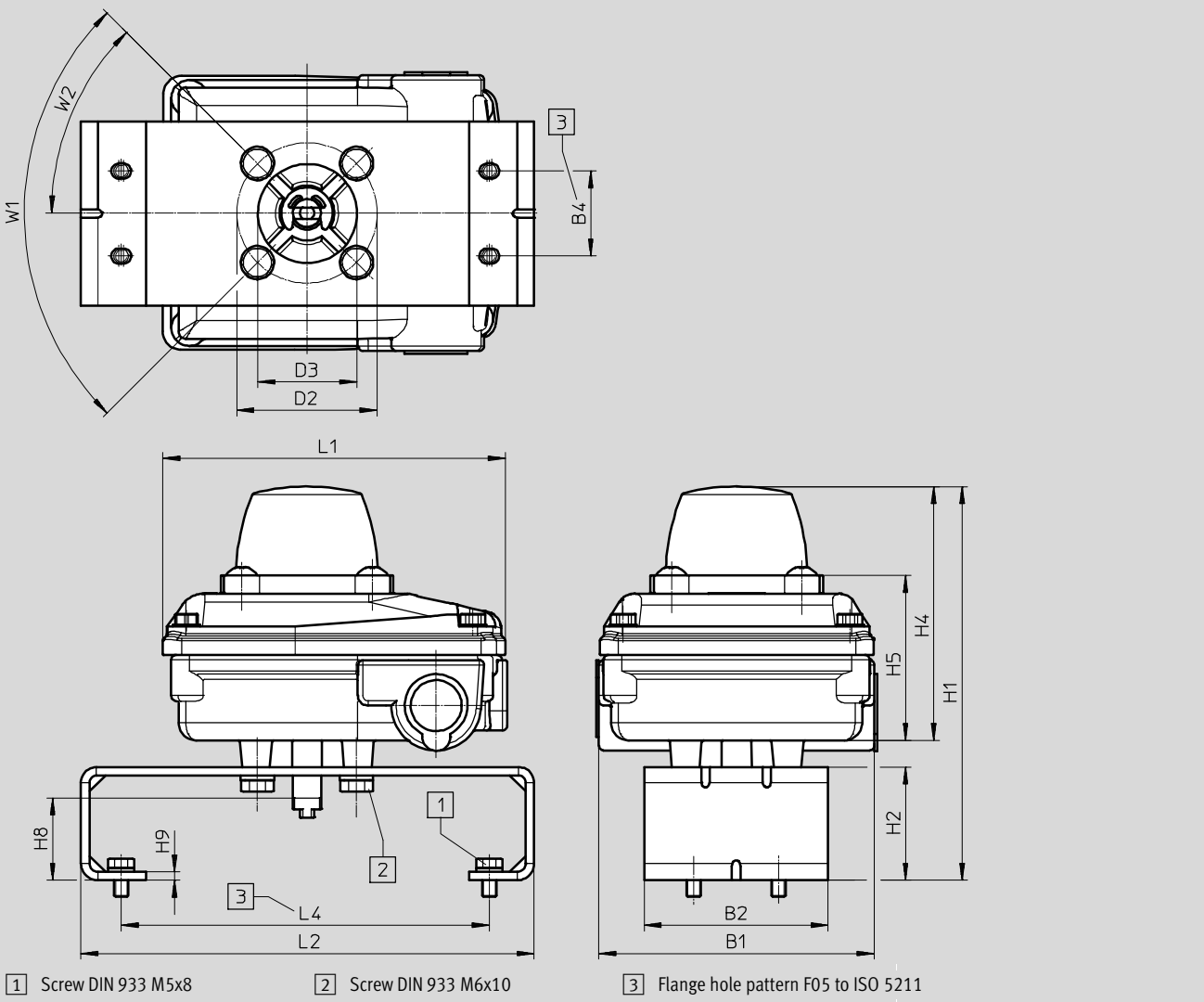
SRBC	H5	H8	H9	L1	L2	L4	L6	W1	W2
With DARQ-K-X1-A1-F05-20-R1	58.2	20	2	120	95	80	63	90°	45°
With DARQ-K-X1-A1-F05-30-R1		30							

Sensor boxes SRBC, inductive

Technical data

Dimensions

Download CAD data → www.festo.com



SRBC	B1	B2	B4	D2 ∅	D3 ∅	H1	H2 +0.5	H4
With DARQ-K-X1-A2-F05-30-R1	98	65	30	50	35	139	40	90

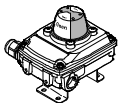
SRBC	H5	H8	H9	L1	L2	L4	W1	W2
With DARQ-K-X1-A2-F05-30-R1	58.2	30	3	120	160	130	90°	45°

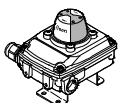
02

Sensor boxes

Technical data

★ Core product range

Ordering data		Brief description	Dimensions Mounting adapter [mm]	Weight [g]	Part No.	Type
	Sensor box including pre-assembled mounting adapter; cable connector and blanking plug included in the scope of delivery	30 x 80, H: 20	800	★ 3482807	SRBC-CA3-YR90-N-20N-ZC-C2P20-EX6	
				★ 3482808	SRBC-CA3-YR90-N-1-P-C2P20	

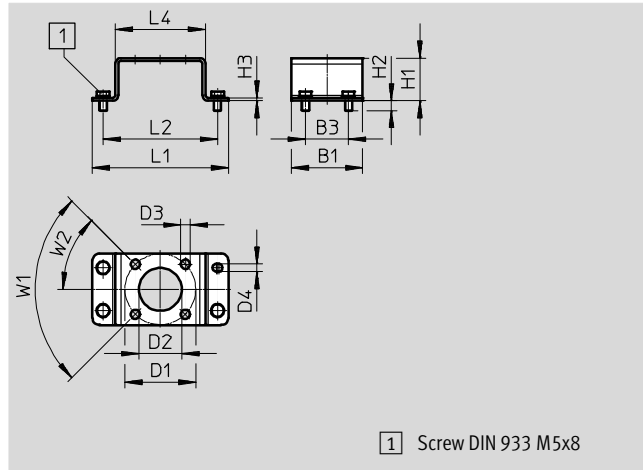
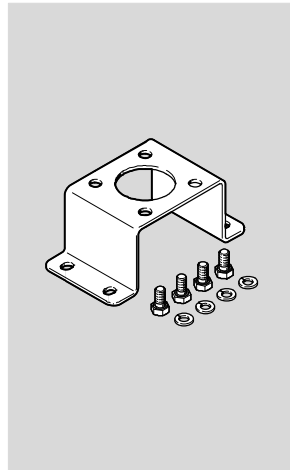
Ordering data		Brief description	Dimensions Mounting adapter [mm]	Weight [g]	Part No.	Type
	Sensor box including pre-assembled mounting adapter; cable connector and blanking plug included in the scope of delivery	30 x 80, H: 20	800	3482806	SRBC-CA3-YR90-N-20N-ZC-C2P20	
				3482809	SRBC-CA3-YR90-N-1-N-C2P20	
				3482810	SRBC-CA3-YR90-N-1-ZU-C2P20	

Sensor boxes SRBC

Accessories

Mounting adapter DARQ-K-X1-A1-...

- Mounting adapter for mounting on standard drives as per VDI/VDE 3845
- Size 30x80, height 20 or 30x80, high 30
- Mounting screws included in the scope of delivery
- Material:
High-alloy stainless steel
- Contains paint-wetting impairment substances, RoHS compliant



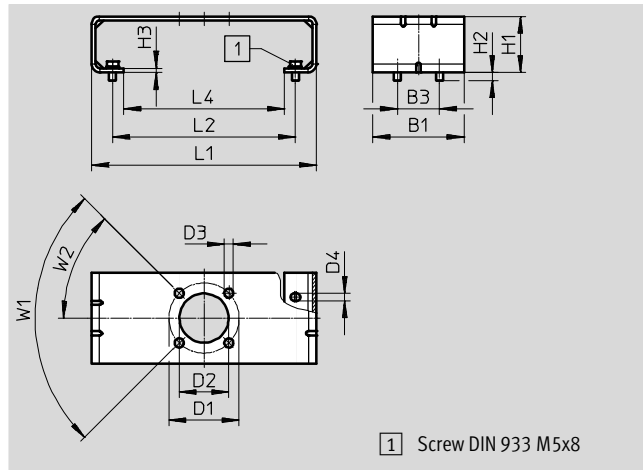
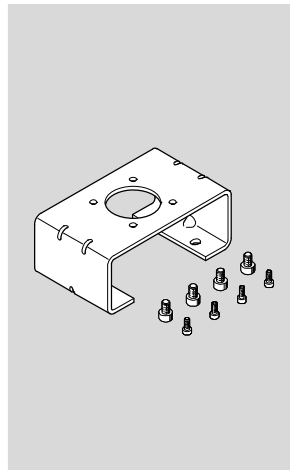
1 Screw DIN 933 M5x8

Dimensions and ordering data

B1	B3	D1	D2	D3	D4	H1	H2	H3	L1	L2	L4	W1	W2	Weight [g]	Part No.	Type
		∅	∅	∅	∅	+0.5										
50	30	50	30	6.5	5.5	30	6.8	2	95	80	63	90°	45°	350	3636269	DARQ-K-X1-A1-F05-20-R1
						40								380	3636270	DARQ-K-X1-A1-F05-30-R1

Mounting adapter DARQ-K-X1-A2-...

- Mounting adapter for mounting on standard drives as per VDI/VDE 3845
- Size 30x130, height 30
- Mounting screws included in the scope of delivery
- Material:
High-alloy stainless steel
- Contains paint-wetting impairment substances, RoHS compliant




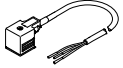
1 Screw DIN 933 M5x8

Dimensions and ordering data

B1	B3	D1	D2	D3	D4	H1	H2	H3	L1	L2	L4	W1	W2	Weight [g]	Part No.	Type
		∅	∅	∅	∅	+0.5										
65	30	50	35	6.5	5.4	40	5.8	3	160	130	114	90°	45°	460	3886114	DARQ-K-X1-A2-F05-30-R1

Accessories

Ordering data					
	Description	Material	Colour	Part No.	Type
Cable connector NETC					
	M20x1.5	Metal	Metal	568279	NETC-M-M20-P4
	M20x1.5	Polymer	Black	4464895	NETC-P-M20
	M20x1.5	Polymer	Blue	4197362	NETC-P-M20-EX4

Ordering data					
	Electrical connection	Cable length [m]	Protective circuit	Part No.	Type
Connecting cables NEBV for valve connection for sensor box with terminal rail connection					
	Angled socket, connection pattern type A, EN 175301-803	0.6	Yes	3679776	NEBV-A1W3F-P-K-0.6-N-LE3
			No	3579466	NEBV-A1W3-K-0.6-N-LE3
	Angled socket, connection pattern type B, to industry standard 11 mm	0.6	Yes	3679778	NEBV-B2W3F-P-K-0.6-N-LE3
			No	3579468	NEBV-B2W3-K-0.6-N-LE3

Sensor boxes

SRBG



Overview, configuration and ordering
→ www.festo.com/catalogue/srbg



Additional information, support and user documentation
→ www.festo.com/sp/srbg



Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/ex



- + Inductive double sensor
- + Direct mounting on quarter turn actuator
- + Compact and stable
- + M12 plug connector or terminal rail connection
- + Switching output: PNP, NAMUR, 2-wire DC, AS-Interface
- + cULus Listed, General Purpose
- + Intrinsically safe versions to ATEX and SIL2 to IEC 61508

+ Position indicators SASF → page 247

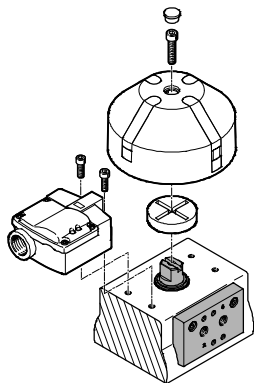
Sensor boxes SRBG

Key features

Function

SRBG sensor boxes are the compact solution when it comes to electrical feedback signals and monitoring the position of process valves which are actuated with pneumatic quarter turn actuators. They can be mounted directly without

other accessories on quarter turn actuators with a mounting interface to VDI/VDE 3845. Direct mounting means that they require minimal space.



Innovative

- Direct mounting on quarter turn actuators to VDI/VDE 3845
- No adjustment is necessary when mounting the sensor
- LED on-site status display for the switching status, supply voltage and solenoid valve output
- For clockwise and anticlockwise rotating actuators with 90° and 180° rotation

Flexible

- SRBG-...-M12 with space-saving sensor connection via M12 plug connector
- SRBG-...-C2 with terminal rail connection for sensor and solenoid valve for connecting the sensor and solenoid valve to the same power supply if required
- Extensive range of switching outputs for virtually all applications
- AS-Interface versions for easy and cost-effective networking of sensors and solenoid valves
- Intrinsically safe Ex ia version for use in potentially explosive areas

Design

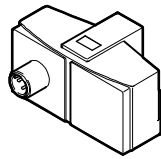
- Inductive double sensor
- Compact plastic housing
- PNP, NAMUR, 2-wire DC, AS-Interface switching outputs
- Direct mounting on quarter turn actuators to VDI/VDE 3845
- M12 plug connector or terminal rail connection
- LED on-site status display
- IP67
- cULus Listed, General Purpose
- Intrinsically safe Ex ia version
- SIL 2 to IEC 61508



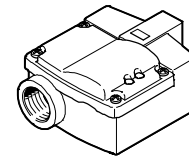
Product range overview

Product range overview

Variant SRBG-...-M12



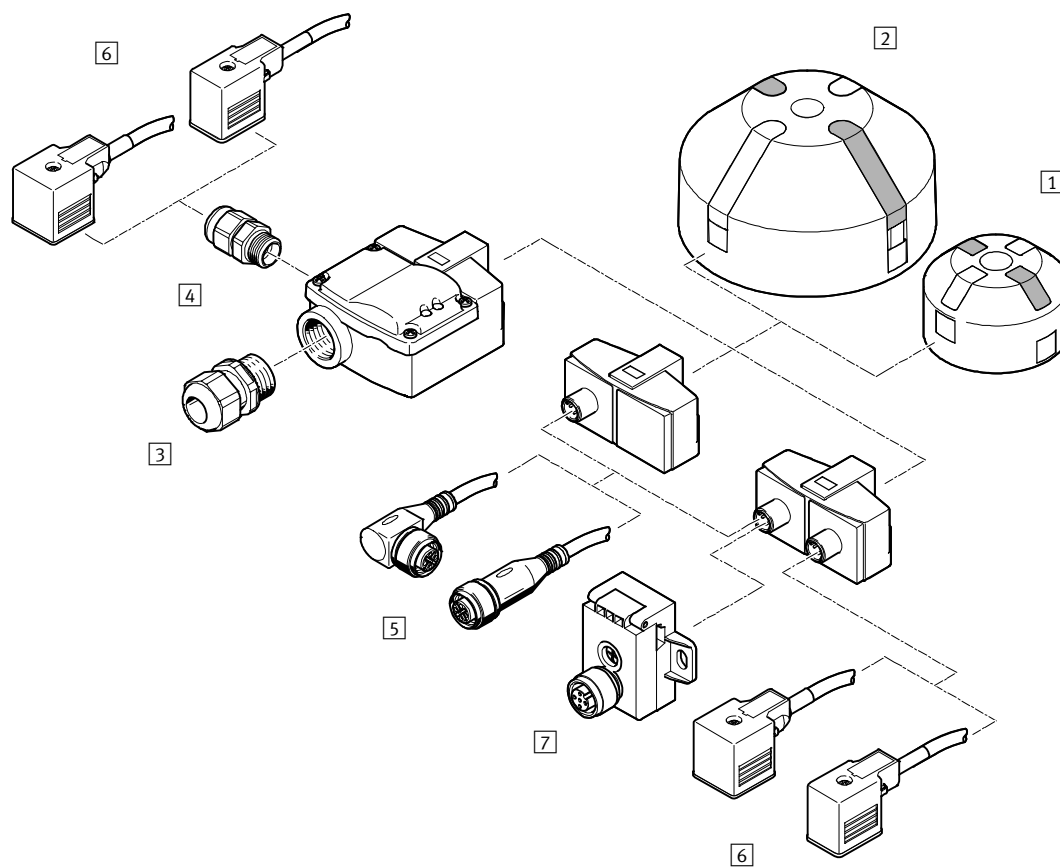
Variant SRBG-...-C2



Electrical connection	Type	Operating voltage range [V]	Switching output	Switching element function	Pin allocation	→ Page
M12 plug connector	SRBG-C1-N-1-P-M12	10 ... 30	PNP	N/O contact		240
	SRBG-C1-N-1-ZU-M12	6 ... 60	Non-contacting, 2-wire	N/O contact		
	SRBG-C1-N-20N-ZC-M12-EX5	8.2	NAMUR	N/C contact		
	SRBG-C1-N-1-AS-M12-M12	26.5 ... 31.6	AS-Interface	Programmable		
Terminal rail connection	SRBG-C1-N-1-P-C2-C2	10 ... 30	PNP	N/O contact		244
	SRBG-C1-N-1-ZU-C2-C2	6 ... 60	Non-contacting, 2-wire	N/O contact		
	SRBG-C1-N-20N-ZC-C2-C2-EX5	8.2	NAMUR	N/C contact		

Sensor boxes SRBG

Peripherals overview



Accessory	Brief description	→ Page/Internet
1 Position indicator SASF-...-A34	<ul style="list-style-type: none"> Position indicator with 4 actuating elements fixed at an offset of 90° For mounting hole pattern 30 x 80 mm, shaft height 20 mm and 30 mm 	248
2 Position indicator SASF-...-A56	<ul style="list-style-type: none"> Position indicator with 4 actuating elements fixed at an offset of 90° For mounting hole pattern 30 x 130 mm, shaft height 30 mm and 50 mm 	248
3 Cable connector NETC-P-M20-...	<ul style="list-style-type: none"> Polymer cable connector M20x1.5 Black Blue 	249
4 Cable connector NETC-P-M12-...	<ul style="list-style-type: none"> Polymer cable connector M12x1.5 Black Blue 	249
5 Connecting cables NEBU-M12	Connecting cable for system connection SRBG	249
6 Connecting cables NEBV-...	Connecting cables for connecting a solenoid valve to SRBG-...-C2 or SRBG-...-M12-M12	249
7 AS-Interface components	AS-Interface components for bus connection of SRBG-C1-N-1-AS-M12-M12	250

Type codes

SRBG

		SRBG	–	C1	–	N	–	20N	–	ZC	–	C2	–	C2	–	EX5
Type																
SRBG	Sensor box															
Design																
C1	Dual sensor															
Sensor principle																
N	Proximity sensor, inductive															
Nominal operating voltage																
1	24 V DC															
20N	8.2 V DC, NAMUR															
Electrical output																
P	PNP															
ZC	2-wire N/C contact															
ZU	2-wire N/O contact															
AS	AS-Interface															
Electrical connection																
C2	Screw terminal															
M12	M12 plug connector, A-coded															
Electrical connection, valve																
–	Without															
C2	Screw terminal															
M12	M12 plug connector, A-coded															
EU certification																
–	None															
EX5	II1G															

SASF

		SASF	–	S2	–	B	–	F	–	A34	
Type											
SASF	Actuator for dual sensor										
Designation											
S2	SRBG										
Actuator											
B	Actuator										
Switching position											
F	Fixed										
Mechanical interface											
A34	Hole pattern 30 x 80 mm, shaft height 20 mm and 30 mm										
A56	Hole pattern 30 x 130 mm, shaft height 30 mm and 50 mm										

Sensor boxes SRBG-...-M12

Technical data

- Compact housing with M12 plug connection
- Direct mounting on quarter turn actuators to VDI/VDE 3845
- PNP, NAMUR, 2-wire DC, AS-Interface switching outputs
- AS-Interface version as A/B slave with extended addressing for up to 62 slaves
- cULus Listed, General Purpose
- Intrinsically safe version to ATEX and SIL 2 to IEC 61508



General technical data

Type SRBG-...	-P	-ZU	-ZC	-AS
Based on standard	VDI/VDE 3845			
	EN 60947-5-2		EN 60947-5-6	EN 60947-5-2
Mounting position	Any			

Electrical data

Type SRBG-...	-P	-ZU	-ZC	-AS
Measuring principle	Inductive			
Switching output	PNP	Non-contacting, 2-wire	NAMUR	AS-Interface
Switching element function	N/O contact		N/C contact	N/C or N/O contact, switchable
Max. switching frequency [Hz]	500		3000	100
Max. switching output voltage [V DC]	-			26.4
Operating voltage range [V DC]	10 ... 30	6 ... 60	8.2	26.5 ... 31.6
Max. output current DC [mA]	100		3	100
Max. switching capacity DC [W]	-			2.5
Voltage drop [V]	≤ 3	≤ 6	-	
Idle current [mA]	≤ 25	-		≤ 35
Residual current [mA]	0 ... 0.5	0 ... 1	-	
Minimum load current [mA]	-		4	-
Reverse polarity protection	For all electrical connections			-
Short circuit protection	Pulsed	-	Yes	-
AS-Interface				
Protocol	-			AS-Interface
Protocol version	-			V3.0
Addressing range	-			1A ... 31A (0) 1B ... 31B
Product identification	-			IO code: D ID code: A ID1 code: 7 ID2 code: E

Technical data

Display/operation				
Type SRBG-...	-P	-ZU	-ZC	-AS
Ready status display	Green LED	–		Green LED
Switching status indication	Yellow LED			
Status display	–			Yellow LED = valve switching status
	–			Red LED = wire break/short circuit at valve

Electromechanical components				
Type SRBG-...	-P	-ZU	-ZC	-AS
Electrical connection, input	Plug connector			
	M12x1			
	4-pin			
Electrical connection, output	–			Socket
	–			M12x1
	–			4-pin

Operating and environmental conditions				
Type SRBG-...	-P	-ZU	-ZC	-AS
Ambient temperature [°C]	–25 ... +70		–25 ... +100	–25 ... +70
Storage temperature [°C]	–25 ... +70		–40 ... +100	–25 ... +70
Degree of protection	IP67			
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			
Degree of contamination	3			
Certification	c UL us (OL)			
	RCM compliance mark			
CE marking	To EU EMC Directive ¹⁾			
	–		To EU Explosion Protection Directive (ATEX)	–
ATEX category gas	–		II 1G	–
Type of ignition protection for gas	–		Ex ia IIC T6 GA	–
Explosion-proof temperature rating	–		–25°C ≤ Ta ≤ +100°C	–
Safety Integrity Level (SIL)	–		SIL 2	–

- 1) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Materials	
Housing	PBT
Screws	High-alloy stainless steel
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

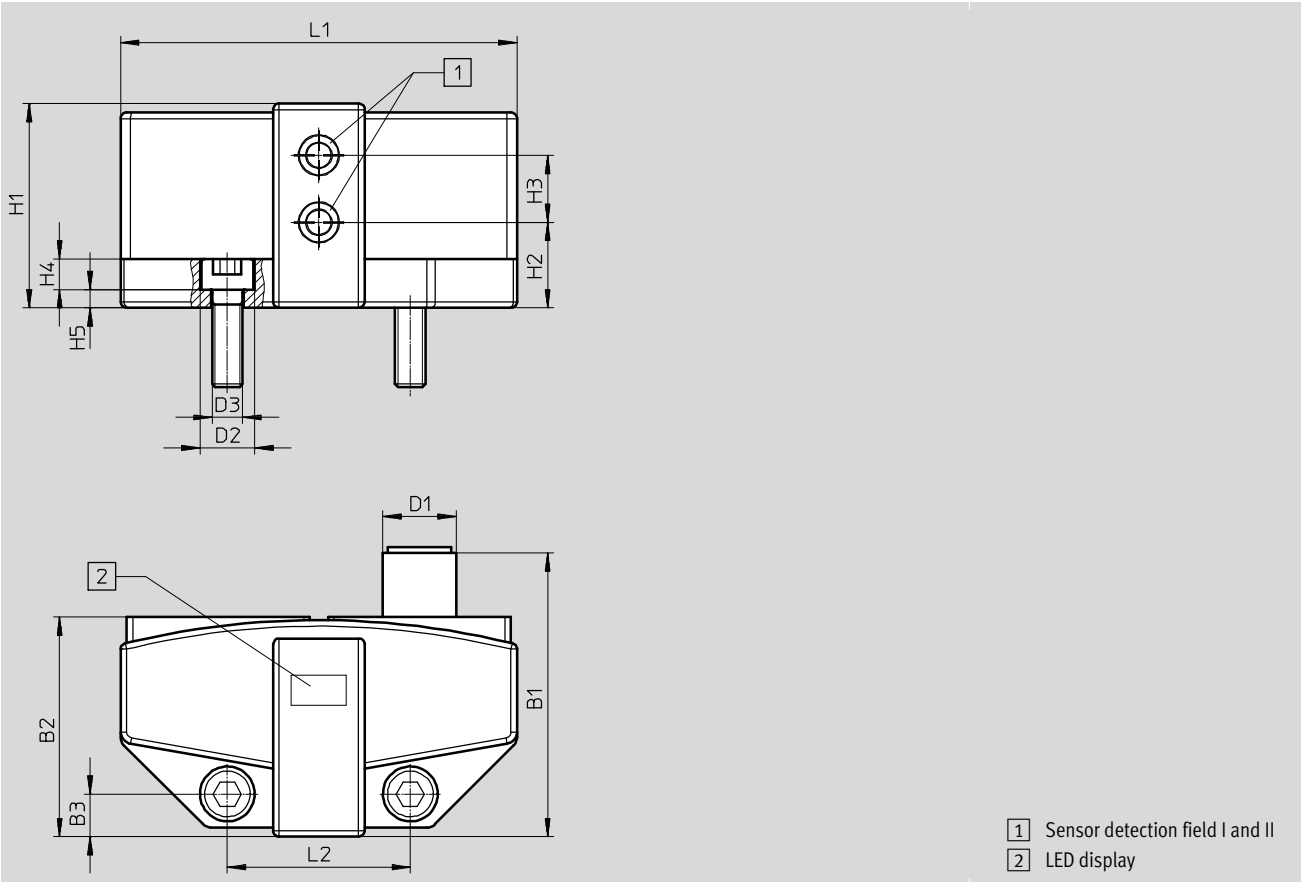
Sensor boxes SRBG-...-M12

Technical data

Dimensions

SRBG-...-M12

Download CAD data → www.festo.com



Type	B1	B2	B3	D1	D2 ∅	D3 ∅
SRBG-C1-N-1-P-M12	46.5	36	7	M12x1	9	5.4
SRBG-C1-N-1-ZU-M12						
SRBG-C1-N-20N-ZC-M12-EX5						

Type	H1	H2	H3	H4	H5	L1	L2
SRBG-C1-N-1-P-M12	33.5	14	11	5	3	65	30
SRBG-C1-N-1-ZU-M12							
SRBG-C1-N-20N-ZC-M12-EX5							

02

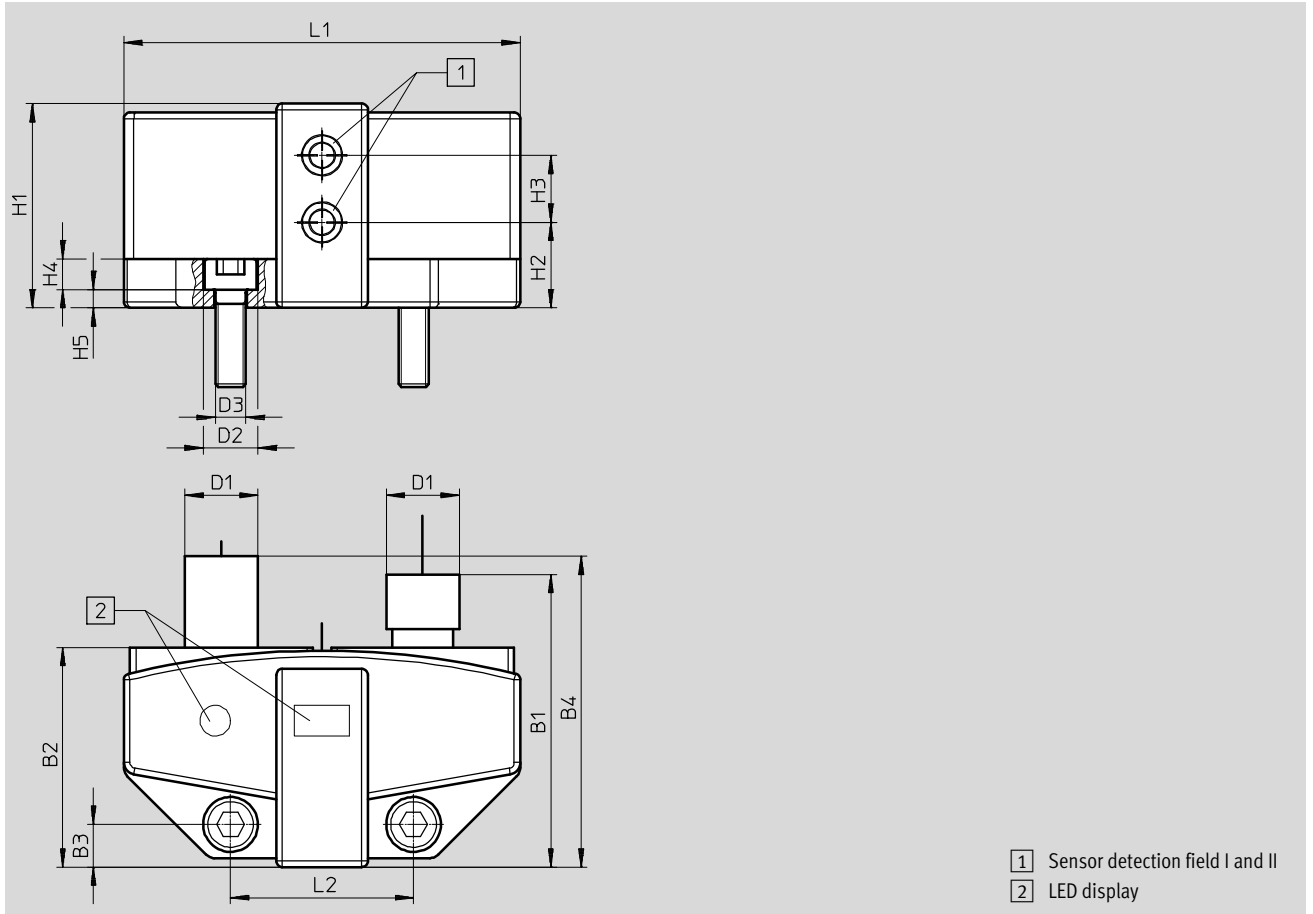
Sensor boxes

Technical data

Dimensions

SRBG-...-M12-M12

Download CAD data → www.festo.com



Type	B1	B2	B3	B4	D1	D2 ∅	D3 ∅
SRBG-C1-N-1-AS-M12-M12	48	36	7	51	M12x1	9	5.4

Type	H1	H2	H3	H4	H5	L1	L2
SRBG-C1-N-1-AS-M12-M12	33.5	14	11	5	3	65	30

Ordering data

	Brief description	Dimensions [mm]	Weight [g]	Part No.	Type
	Sensor box with M12 plug connection	65 x 45, H: 35	70	3568055	SRBG-C1-N-1-P-M12
				3568056	SRBG-C1-N-1-ZU-M12
				3568057	SRBG-C1-N-20N-ZC-M12-EX5
				3567908	SRBG-C1-N-1-AS-M12-M12

Sensor boxes SRBG-...-C2

Technical data

- Compact housing with terminal rail connection for sensor and solenoid valve
- Direct mounting on quarter turn actuators to VDI/VDE 3845
- PNP, NAMUR, 2-wire DC switching outputs
- cULus Listed, General Purpose
- Intrinsically safe version to ATEX and SIL 2 to IEC 61508



General technical data

Type SRBG-...	-P	-ZU	-ZC
Based on standard	VDI/VDE 3845 EN 60947-5-2		EN 60947-5-6
Mounting position	Any		

Electrical data

Type SRBG-...	-P	-ZU	-ZC
Measuring principle	Inductive		
Switching output	PNP	Non-contacting, 2-wire	NAMUR
Switching element function	N/O contact		N/C contact
Max. switching frequency [Hz]	500		3000
Operating voltage range [V DC]	10 ... 30	6 ... 60	8.2
Max. output current DC [mA]	100		3
Voltage drop [V]	≤ 3	≤ 6	–
Idle current [mA]	≤ 25	–	–
Residual current [mA]	0 ... 0.5	0 ... 1	–
Minimum load current [mA]	–	4	–
Reverse polarity protection	For all electrical connections		
Protection against short circuit	Pulsed	–	Yes

Technical data

Display/operation			
Type SRBG-...	-P	-ZU	-ZC
Ready status display	Green LED	-	
Switching status indication	Yellow LED		
Status display	Yellow LED = valve switching status		

Electromechanical components			
Type SRBG-...	-P	-ZU	-ZC
Electrical connection, input	Spring-loaded terminal		
Electrical connection, output	Spring-loaded terminal		
Cable connector	M20x1.5		
	M12x1.5		
Connectable nominal conductor cross section [mm ²]	0.2 ... 2.5		

Operating and environmental conditions			
Type SRBG-...	-P	-ZU	-ZC
Ambient temperature [°C]	-25 ... +70		-25 ... +100
Storage temperature [°C]	-25 ... +70		-40 ... +100
Degree of protection	IP67		
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		
Degree of contamination	3		
Certification	c UL us (OL)		
	RCM compliance mark		
CE marking	To EU EMC Directive ¹⁾		
	-		To EU Explosion Protection Directive (ATEX)
ATEX category gas	-		II 1G
Explosion ignition protection type for gas	-		Ex ia IIC T6 GA
Explosion-proof temperature rating	-		-25°C ≤ Ta ≤ +86°C
Safety Integrity Level (SIL)	-		SIL 2

- 1) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

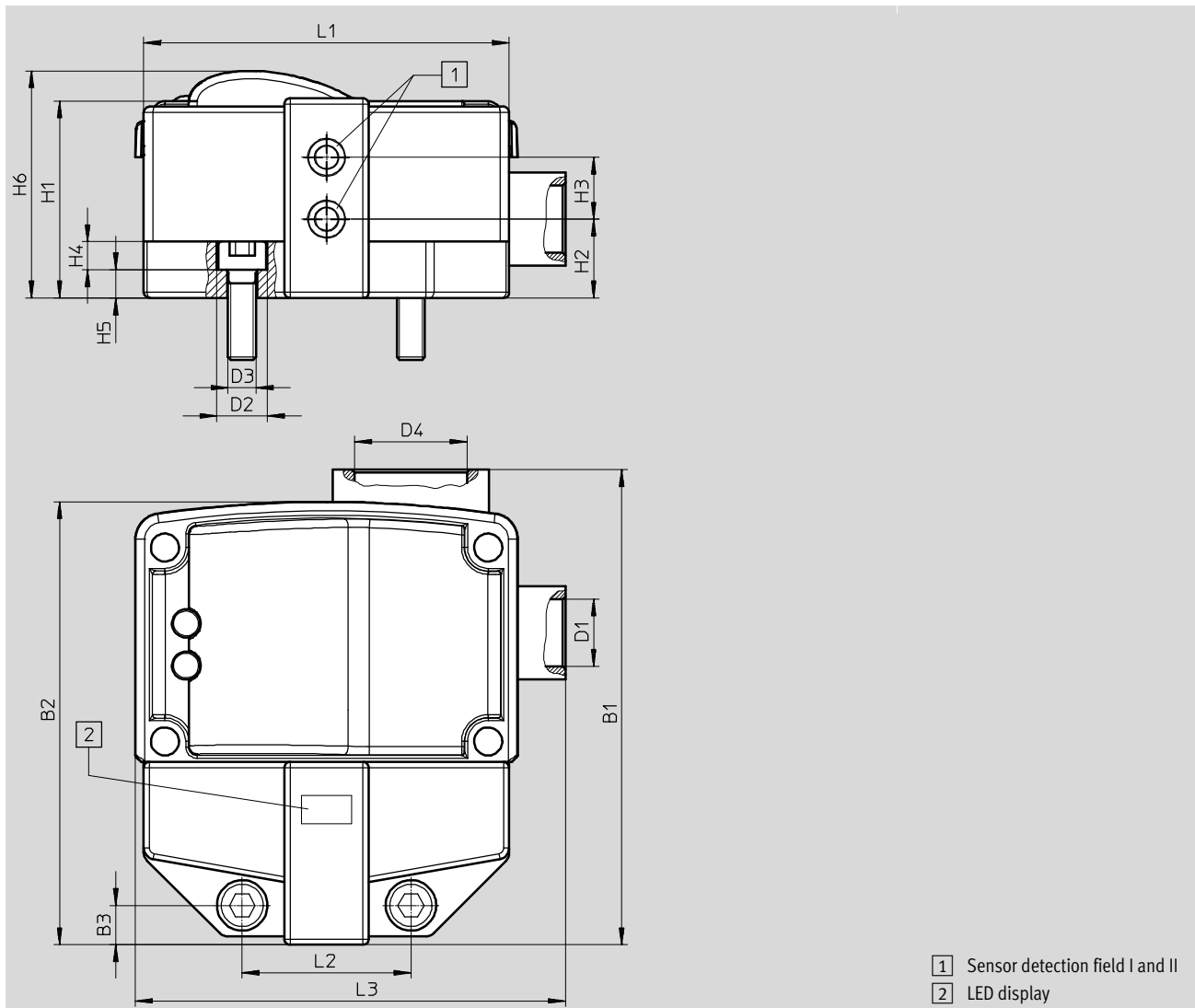
Materials	
Housing	PBT
Screws	High-alloy stainless steel
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

Sensor boxes SRBG-...-C2

Technical data

Dimensions

Download CAD data → www.festo.com



Type	B1	B2	B3	D1	D2 Ø	D3 Ø	D4	H1
SRBG-C1-N-1-P-C2-C2	84.5	78.8	7	M12x1	9	5.4	M20x1.5	35
SRBG-C1-N-1-ZU-C2-C2								
SRBG-C1-N-20N-ZC-C2-C2-EX5								

Type	H2	H3	H4	H5	H6	L1	L2	L2
SRBG-C1-N-1-P-C2-C2	14	11	5	5	40	65	30	76.5
SRBG-C1-N-1-ZU-C2-C2								
SRBG-C1-N-20N-ZC-C2-C2-EX5								

Ordering data

	Brief description	Dimensions [mm]	Weight [g]	Part No.	Type
	Sensor box with terminal rail connection	65 x 90, H: 40	170	3568165	SRBG-C1-N-1-P-C2-C2
				3568166	SRBG-C1-N-1-ZU-C2-C2
				3568167	SRBG-C1-N-20N-ZC-C2-C2-EX5

Accessories

Position indicator SASF for sensor boxes SRBG

- For mounting on drive shaft of standard actuators to VDI/VDE 3845
- Four fixed actuating lugs offset by 90°
- For clockwise and anticlockwise rotating actuators with 90° and 180° rotation
- Made from conductive plastic material, which prevents static discharge and is suitable for use in Ex zones
- Two position indicators suitable for all quarter turn actuator sizes



General technical data	
Type SASF-...	-A34 -A56
Type of mounting	To VDI/VDE 3845
Adjustment range of swivel angle [deg]	0 ... 90

Operating and environmental conditions	
Type SASF-...	-A34 -A56
Ambient temperature [°C]	-25 ... +80
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

- 1) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

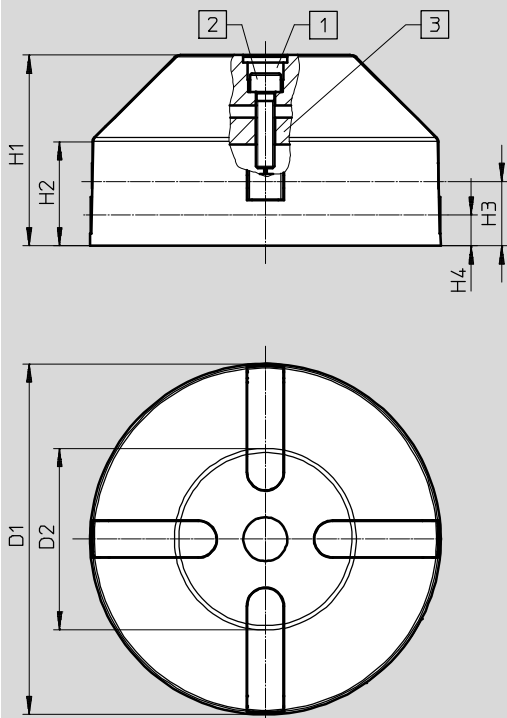
Materials	
Housing	PBT
	PP
	High-alloy stainless steel
Spacer	PA
Screws	High-alloy stainless steel
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

Sensor boxes SRBG

Accessories

Dimensions

Download CAD data → www.festo.com



- 1 Blanking plug
- 2 Screw DIN 912 M6x25
- 3 Spacer

Type	D1 ∅	D2 ∅	H1	H2	H3	H4
SASF-S2-B-F-A34	65	41.9	38.5	26.5	18.5	7.5
SASF-S2-B-F-A56	115	59	62.5	34	21	10

Possible combinations

Function	Drives	Sizes	SASF-S2-B-F-A34	SASF-S2-B-F-A56
Double-acting	DFPD	10 ... 480	■	-
	DAPS	0008 ... 1920	■	-
	DAPS	2880 ... 8000	-	■
	DAPS-CR	0120 ... 0480	■	-
Single-acting	DFPD	20 ... 480	■	-
	DAPS	0015 ... 0960	■	-
	DAPS	1440 ... 4000	-	■
	DAPS-CR	0060 ... 0240	■	-


Ordering data – Position indicator



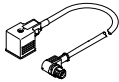
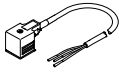
	Brief description	Dimensions [mm]	Weight [g]	Part No.	Type
	Mounting on drive shaft of standard actuators to VDI/VDE 3845	Mounting hole pattern 30 x 80 mm Shaft height 20 and 30 mm	55	4046082	SASF-S2-B-F-A34
		Mounting hole pattern 30 x 130 mm Shaft height 30 and 50 mm	140	4077125	SASF-S2-B-F-A56

02

Sensor boxes

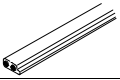

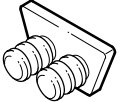

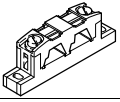
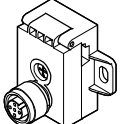
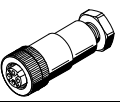
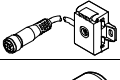
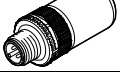
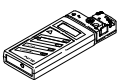


Accessories

Ordering data		Description	Colour	Part No.	Type
Cable connectors NETC					
	M20x1.5 made from polymer		Black	4464895	NETC-P-M20
			Blue	4197362	NETC-P-M20-EX4
	M12x1.5 made from polymer		Black	4197367	NETC-P-M12
			Blue	4197366	NETC-P-M12-EX4

Ordering data		Electrical connection	Cable length	Protective circuit	Part No.	Type
		Left	Right	[m]		
Connecting cables NEBU						
	Straight socket, M12x1, 5-pin	Cable, open end, 4-wire	2.5	-	550326	NEBU-M12G5-K-2.5-LE4
			5		541328	NEBU-M12G5-K-5-LE4
			7		8003134	NEBU-M12G5-K-7-LE4
	Angled socket, M12x1, 5-pin	Cable, open end, 4-wire	2.5	-	550325	NEBU-M12W5-K-2.5-LE4
			5		541329	NEBU-M12W5-K-5-LE4
			10		569841	NEBU-M12W5-K-10-LE4
Connecting cables NEBV for valve connection for sensor box with AS-Interface						
	Angled socket, connection pattern type A, EN 175301-803		0.3	Yes	3679771	NEBV-A1W3F-P-K-0.3-N-M12W3
				No	3579461	NEBV-A1W3-K-0.3-N-M12W3
			0.6	Yes	3679772	NEBV-A1W3F-P-K-0.6-N-M12W3
				No	3579462	NEBV-A1W3-K-0.6-N-M12W3
			0.3	Yes	3679773	NEBV-B2W3F-P-K-0.3-N-M12W3
				No	3579463	NEBV-B2W3-K-0.3-N-M12W3
0.6	Yes	3679774	NEBV-B2W3F-P-K-0.6-N-M12W3			
	No	3579464	NEBV-B2W3-K-0.6-N-M12W3			
Connecting cables NEBV for valve connection for sensor box with terminal rail connection						
	Angled socket, connection pattern type A, EN 175301-803		0.6	Yes	3679776	NEBV-A1W3F-P-K-0.6-N-LE3
				No	3579466	NEBV-A1W3-K-0.6-N-LE3
	Angled socket, connection pattern type B, to industry standard 11 mm		0.6	Yes	3679778	NEBV-B2W3F-P-K-0.6-N-LE3
				No	3579468	NEBV-B2W3-K-0.6-N-LE3

Sensor boxes SRBG

Accessories

Ordering data		Part No.	Type
	Description		
AS-Interface components			
	Flat cable for AS-Interface components, yellow, cable length 100 m	18940	KASI-1,5-Y-100
	Flat cable for AS-Interface components, black, cable length 100 m	18941	KASI-1,5-Z-100
	Cable cap for flat cable (pack of 50)	18787	ASI-KK-FK
	Cable sleeve (pack of 20)	165593	ASI-KT-FK
	Cable distributor for flat cables, rotatable cables	18786	ASI-KVT-FK
	Cable distributor for flat cables, symmetrical cables	18797	ASI-KVT-FK-S
	AS-Interface data to socket M12, 4-pin	572225	NEFU-X22F-M12G4
	Straight socket, 4-pin, screw terminal for connecting AS-Interface stations to the AS-Interface bus system	18789	ASI-SD-PG-M12
	AS-Interface data and load voltage supply to socket M12, 4-pin, cable length 1 m	572227	NEFU-X24F-1-M12G4
	AS-Interface module as bus termination	567035	CACF-BT-AS
Miscellaneous			
	Addressing device for AS-Interface stations	18959	ASI-PRG-ADR
	Addressing cable for addressing device	18960	KASI-ADR
	Primary switched mode, modular power supply, 24 V DC power supply 5 A, 10 A	2247681	CACN-3A-1-5
		2247682	CACN-3A-1-10

02

Sensor boxes

Sensor boxes SRBE



Overview, configuration and ordering
→ www.festo.com/catalogue/srbe



Additional information, support and user documentation
→ www.festo.com/sp/srbe



Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/ex



- + Measuring principle: electromagnetic, magnetic reed or inductive
- + Switching element function toggle switch, single-pole (SPDT) and double-pole (DPDT)
- + Switching outputs PNP, NPN, 2-wire DC, NAMUR
- + For DC and AC voltage

- + Pre-assembled mounting bridge
- + Suitable for use in potentially explosive areas
 - ATEX: II 2G & II 2D
 - IECEx: EPL Gb; EPL Db
 - Type of ignition protection: Ex d & Ex td

Sensor boxes SRBE

Key features and product range overview

Function

Sensor boxes SRBE are used for electrical feedback and control of the position of process valves actuated using pneumatic quarter turn actuators. They are suitable for use in potentially explosive environments. They can be mounted quickly

and easily on quarter turn actuators with a connection pattern to VDI/VDE 3845 using mounting adapters.

Innovative

- Pre-assembled mounting adapter for ease of installation
- The trip cams can be set easily without additional tools
- Sturdy, corrosion-resistant design, ideal for use in harsh operating conditions
- Clearly visible 3D position indicator allows rapid detection of the current position of the quarter turn actuator

Flexible

- Worldwide certifications (ATEX, IECEX, cCSAus, INMETRO) for use in potentially explosive environments
- The type of protection of the flameproof enclosure enables installation without safety barriers or NAMUR amplifier in potentially explosive environments
- Weather-tight housing for outdoor applications too
- Mechanical, inductive or magnetic switch variants for virtually all ranges of application
- Two cable inputs for common power supply for the sensor box and solenoid valve as standard

Design

- Sturdy aluminium housing with two cable inputs
- Captive stainless steel screws on the housing cover
- Pre-assembled stainless steel mounting adapter 80x30 H20 for ease of mounting on standard actuators to VDI/VDE 3845
- 3D OPEN/CLOSED position indicator
- Mechanical, inductive or magnetic switch variants
- Number of switches: 2
- IP67, NEMA 4/4x
- ATEX, IECEX, cCSAus, INMETRO
- SIL 2 to IEC 61508



Key features and product range overview

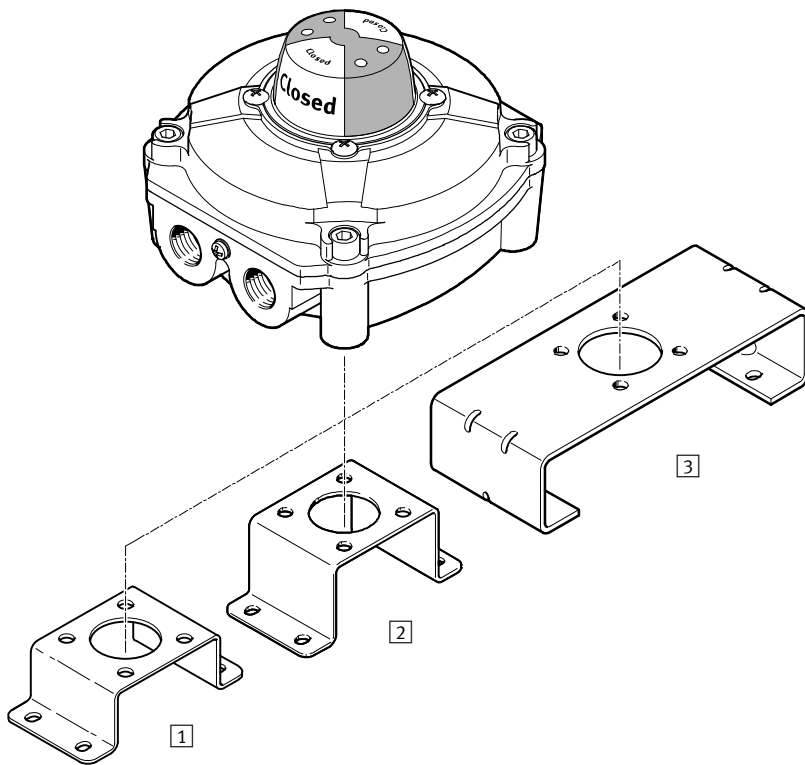
Product range overview



Measuring principle	Type	EX certifications	Operating voltage range	Switching output	Switching element function
Electromechanical	SRBE-...-MW-22A-1W-...-EX	ATEX, IECEX, INMETRO	0 ... 250 V AC	Contacting	Toggle switch, single-pole (SPDT)
	SRBE-...-MW-22A-1W-...-C1	cCSAus	0 ... 30 V DC		
Electromechanical	SRBE-...-MW-22A-2W-...-EX	ATEX, IECEX, INMETRO	0 ... 250 V AC	Contacting	Toggle switch, double-pole (DPDT)
	SRBE-...-MW-22A-2W-...-C1	cCSAus	0 ... 30 V DC		
Magnetic reed	SRBE-...-R-2A-1W-...-EX	ATEX, IECEX, INMETRO	0 ... 240 V AC	Contacting	Toggle switch, single-pole (SPDT)
	SRBE-...-R-2A-1W-...-C1	cCSAus	0 ... 30 V DC		
Inductive	SRBE-...-N-20N-ZC-...-EX	ATEX, IECEX, INMETRO	8.2 V DC	NAMUR	N/C contact
	SRBE-...-N-20N-ZC-...-C1	cCSAus			
Inductive	SRBE-...-N-1-P-...-EX	ATEX, IECEX, INMETRO	10 ... 30 V DC	PNP	N/O contact
	SRBE-...-N-1-P-...-C1	cCSAus			
Inductive	SRBE-...-N-1-N-...-EX	ATEX, IECEX, INMETRO	10 ... 30 V DC	NPN	N/O contact
	SRBE-...-N-1-N-...-C1	cCSAus			
Inductive	SRBE-...-N-1-ZU-...-EX	ATEX, IECEX, INMETRO	5 ... 60 V DC	Contactless, 2-wire	N/O contact
	SRBE-...-N-1-ZU-...-C1	cCSAus			

Sensor boxes SRBE

Peripherals overview



02

Sensor boxes

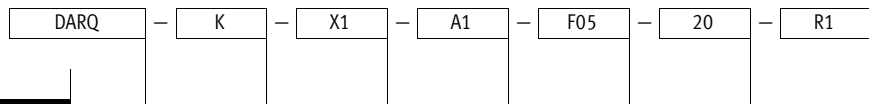
Accessories	Brief description	→ Page/Internet
<p>1 Mounting adapter DARQ-K-X1-A1-F05-20-R1</p>	<ul style="list-style-type: none"> • Mounting adapter for mounting sensor boxes on quarter turn actuators with hole pattern 30 x 80 mm, shaft height 20 mm • Included in the scope of delivery of the sensor box and pre-assembled 	267
<p>2 Mounting adapter DARQ-K-X1-A1-F05-30-R1</p>	<ul style="list-style-type: none"> • Mounting adapter for mounting sensor boxes on quarter turn actuators with hole pattern 30 x 80 mm, shaft height 30 mm • Can be ordered separately as an accessory 	267
<p>3 Mounting adapter DARQ-K-X1-A2-F05-30-R1</p>	<ul style="list-style-type: none"> • Mounting adapter for mounting sensor boxes on quarter turn actuators with hole pattern 30 x 130 mm, shaft height 30 mm • Can be ordered separately as an accessory 	267

Type codes SRBE

		SRBE	-	C	-	A3	-	YR	-	90	-	N	-	1	-	N	-	C2	-	N12	-	EX
Type																						
SRBE	Limit switch attachment																					
Design																						
C	Sensor box																					
Mechanical interface																						
A3	Mounting adapter, hole pattern 30 x 80 mm, shaft height 20 mm																					
Display type																						
YR	Position indicator yellow/red																					
Measuring range																						
90	0 ... 90°																					
Sensor principle																						
N	Proximity sensors, inductive																					
R	Reed with contact																					
MW	Floating contact, changeover switch																					
Nominal operating voltage																						
2A	110 V AC, 50-60 Hz																					
20N	8.2 V DC, NAMUR																					
22A	250 V AC																					
1	24 V DC																					
Electrical output																						
N	NPN																					
P	PNP																					
1W	1-pin toggle switch																					
2W	2-pin toggle switch																					
ZC	2-wire N/C contact																					
ZU	2-wire N/O contact																					
Electrical connection																						
C2	Screw terminal																					
Connecting thread																						
M20	M20																					
N12	1/2 NPT																					
EU certification																						
C1	CSA mark (Canada)																					
EX	EX certification (ATEX)																					

Mounting kits DARQ

Type codes DARQ



Type	
DARQ	Mounting adapter

Function	
K	Mounting kit

Designation	
X1	Sensor box version with short shaft

Actuator outlet	
A1	Hole pattern 30 x 80 mm
A2	Hole pattern 30 x 130 mm

Adapter or reducing outlet	
F05	Hole pattern F05

Length	
20	20 mm
30	30 mm

Corrosion protection	
R1	Stainless steel

02

Sensor boxes

Sensor boxes SRBE, electromechanical and magnetic reed

Technical data

- Measuring principle:
electromagnetic or magnetic reed
- Switching element function: toggle
switch, single-pole (SPDT) and
double-pole (DPDT)
- For DC and AC voltage
- Pre-assembled mounting adapter
80 x 30 H20



General technical data		-MW-...-1W	-MW-...-2W	-R
Type SRBE-...				
Setting range for angle acquisition	[°]	0 ... 90		
Based on standard		ISO 5211		
		VDI/VDE 3845		
				EN 60947-5-2
Type of mounting		On flange to ISO 5211		
		With mounting bracket		

Electrical data		-MW-...-1W	-MW-...-2W	-R
Type SRBE-...				
Measuring principle		Mechanical/electrical		Magnetic reed
Switching output		Contacting		
Switching element function		Toggle switch, single-pole	Toggle switch, double-pole	Toggle switch, single-pole
Operating voltage range	[V]	0 ... 250		0 ... 240
Alternating current AC				
Max. output current AC	[mA]	3000 (at 250 V)		416 (at 240 V)
Operating voltage range	[V]	0 ... 30		
Direct current DC				
Max. output current DC	[mA]	6000 (at 30 V)		3000 (at 30 V)

Electromechanical components		-MW-...-1W	-MW-...-2W	-R
Type SRBE-...				
Electrical connection		10-pin	14-pin	10-pin
		Screw terminal		
Nominal conductor cross section that can be connected	[mm ²]	0.25 ... 2.5		
Cable connector		M20x1.5 for ...-C2M20-...		
		1/2 NPT for ...-C2N12-...		

Materials	
Housing	Epoxy-coated die-cast aluminium
Shaft	High-alloy stainless steel
Screws	High-alloy stainless steel
Mounting bracket	High-alloy stainless steel
Seals	NBR
Pointer	PC
Note on materials	RoHS compliant
	Contains paint-wetting impairment substances

Sensor boxes SRBE, electromechanical and magnetic reed

Technical data

Operating and environmental conditions		-MW-...-1W	-MW-...-2W	-R
Type SRBE-...				
Ambient temperature	[°C]	-20 ... +60		
Storage temperature	[°C]	-20 ... +60		
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		
CE marking		To EU Low Voltage Directive ¹⁾		
Safety integrity level (SIL)		SIL 2		
Certifications for ...-EX variants		-MW-...-1W	-MW-...-2W	-R
Degree of protection		IP67		
CE marking		To EU Explosion Protection Directive (ATEX)		
ATEX category for gas		II 2G		
ATEX category for dust		II 2D		
Explosion ambient temperature		-20 ... +60		
Type of ignition protection for gas		Ex d IIC T6 Gb		
Type of ignition protection for dust		Ex tb IIIC T75°C Db		Ex tb IIIC T61°C Db
Explosion protection certification outside the EU		EPL Db (IEC-EX)		
		EPL Db (BR)		
		EPL Db (CN)		
		EPL Gb (IEC-EX)		
		EPL Gb (BR)		
		EPL Gb (CN)		
Certificate issuing authority		DNV 16.0067X (INMETRO)		
		FTZU 15 ATEX 0095X (PESO)		
		GYJ 16.1497X (NEPSI)		
		IECEX FTZU 15.0014X		
Certifications for ...-C1 variants		-MW-...-1W	-MW-...-2W	-R
Degree of protection		IP67		
		NEMA 4/4X		
Type of ignition protection for gas		AEx d IIB T5 Gb		
		Ex d IIB T5 Gb		
				AEx nA IIC T5 Gc
				Ex nA IIC T5 Gc
Type of ignition protection for dust		AEx tb IIIC T108°C Db		
		Ex tb IIIC T108°C Db		
Explosion protection certification outside the EU		Class I, Div. 1 (CA)		
		Class I, Div. 1 (US)		
				Class I, Div. 2 (CA)
				Class I, Div. 2 (US)
		Class II, Div. 1 (CA)		
		Class II, Div. 1 (US)		
		Class III (CA)		
		Class III (US)		
		EPL Db (CA)		
		EPL Db (US)		
		EPL Gb (CA)		
		EPL Gb (US)		
				EPL Gc (CA)
			EPL Gc (US)	
Certificate issuing authority		CSA 263311		

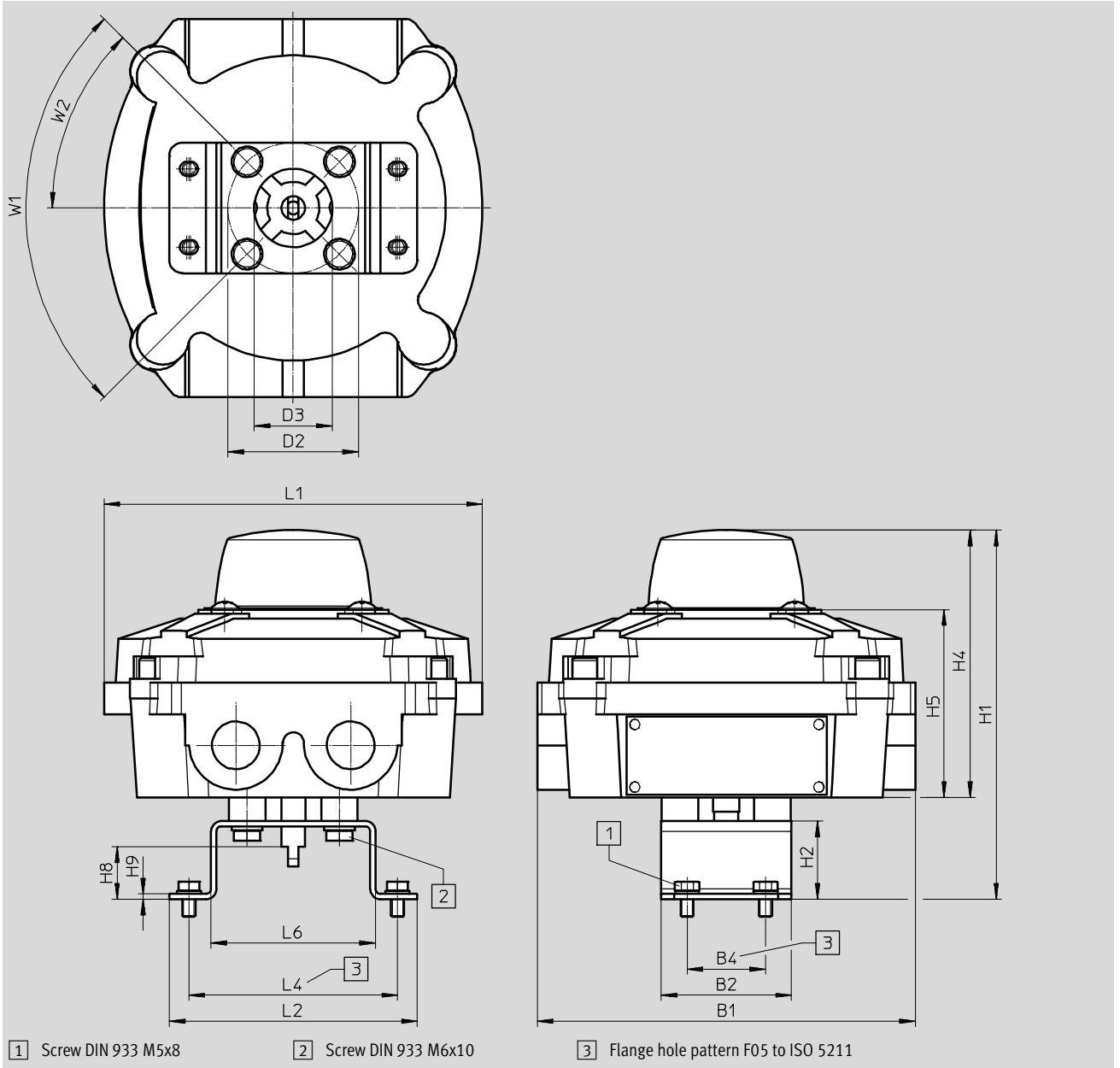
1) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Sensor boxes SRBE, electromechanical and magnetic reed

Technical data

Dimensions

Download CAD data → www.festo.com



SRBE	B1	B2	B4	D2 ∅	D3 ∅	H1	H2	H4
							+0.5	
With DARQ-K-X1-A1-F05-20-R1	145	50	30	50	30	141.5	30	102.5
With DARQ-K-X1-A1-F05-30-R1						151.5	40	

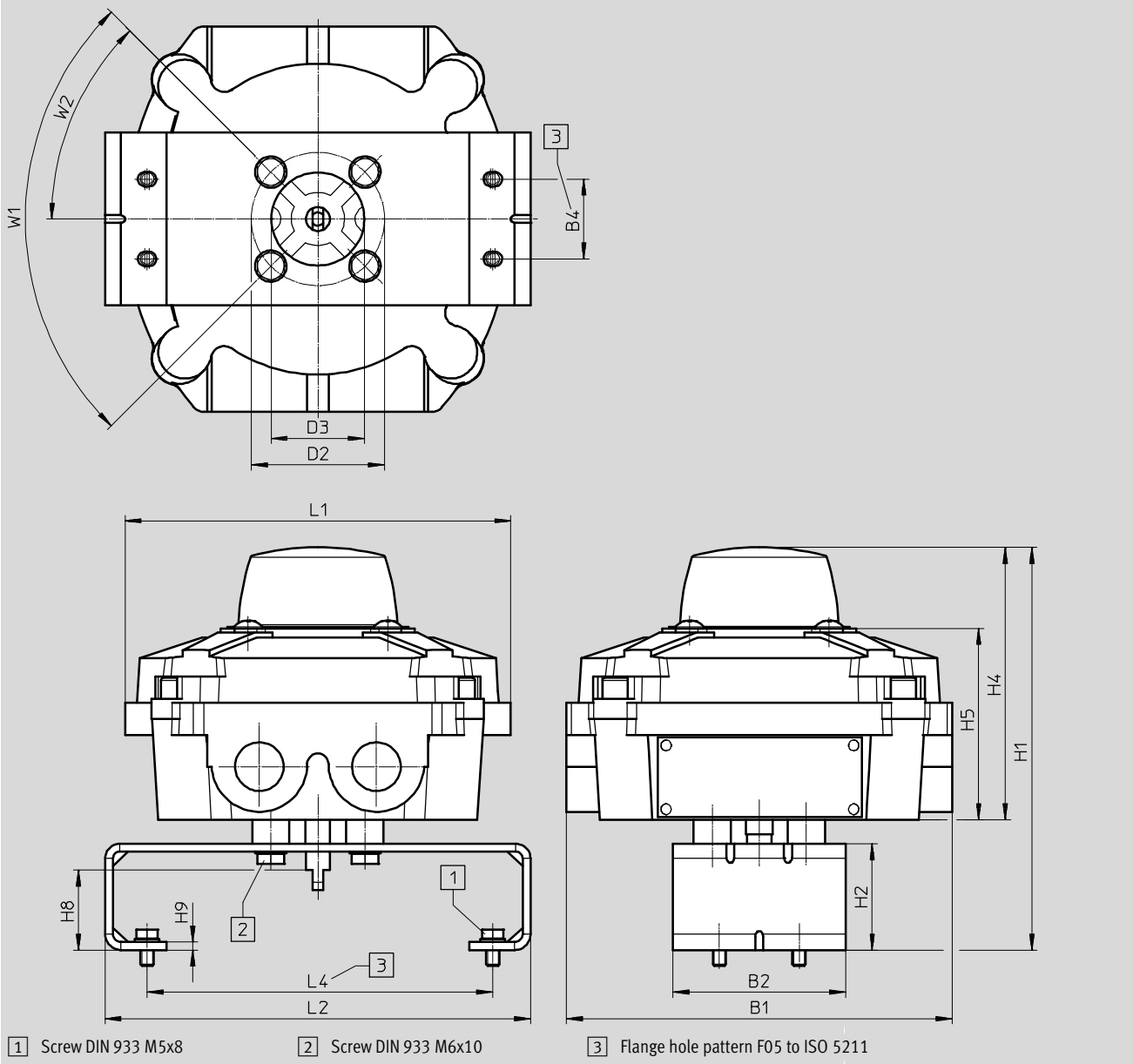
SRBE	H5	H8	H9	L1	L2	L4	L6	W1	W2
With DARQ-K-X1-A1-F05-20-R1	72	20	2	145	95	80	63	90°	45°
With DARQ-K-X1-A1-F05-30-R1		30							

Sensor boxes SRBE, electromechanical and magnetic reed

Technical data

Dimensions

Download CAD data → www.festo.com



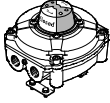
SRBE	B1	B2	B4	D2 ∅	D3 ∅	H1	H2 +0.5	H4
With DARQ-K-X1-A2-F05-30-R1	145	65	30	50	35	151.5	40	102.5

SRBE	H5	H8	H9	L1	L2	L4	W1	W2
With DARQ-K-X1-A2-F05-30-R1	72	30	3	145	160	130	90°	45°

02 Sensor boxes

Sensor boxes SRBE, electromechanical and magnetic reed

Technical data

Ordering data		Dimensions	Weight	Part No.	Type
	Brief description	Mounting adapter [mm]	[g]		
	Sensor box including pre-assembled mounting adapter	30 x 80, H: 20	1700	3471008	SRBE-CA3-YR90-MW-22A-1W-C2N12-EX
				3471009	SRBE-CA3-YR90-MW-22A-1W-C2M20-EX
				3471010	SRBE-CA3-YR90-MW-22A-2W-C2N12-EX
				3471011	SRBE-CA3-YR90-MW-22A-2W-C2M20-EX
				3471020	SRBE-CA3-YR90-R-2A-1W-C2N12-EX
				3471021	SRBE-CA3-YR90-R-2A-1W-C2M20-EX
				3998917	SRBE-CA3-YR90-MW-22A-1W-C2N12-C1
				3998918	SRBE-CA3-YR90-MW-22A-2W-C2N12-C1
				3998923	SRBE-CA3-YR90-R-2A-1W-C2N12-C1

Sensor boxes SRBE, inductive

Technical data

- Inductive measuring principle
- Switching outputs PNP, NPN, 2-wire
DC, NAMUR
- Pre-assembled mounting adapter
80 x 30 H20



General technical data

Type SRBE-...	-1-P	-1-N	-1-ZU	-20N
Setting range for angle detection [°]	0 ... 90			
Based on standard	ISO 5211			
	VDI/VDE 3845			
	EN 60947-5-2			EN 60947-5-6
Type of mounting	On flange to ISO 5211			
	With mounting bracket			

Electrical data

Type SRBE-...	-1-P	-1-N	-1-ZU	-20N
Measuring principle	Inductive			
Switching output	PNP	NPN	Non-contacting, 2-wire	NAMUR
Switching element function	N/O contact			N/C contact
Operating voltage range [V DC]	10 ... 30		5 ... 60	8.2
Voltage drop [V]	≤ 3		≤ 5	–
Max. output current [mA]	100			3
Idle current [mA]	≤ 15		–	–
Residual current [mA]	0 ... 0.5		0 ... 1	–
Minimum load current [mA]	–		4	–
Reverse polarity protection	For all electrical connections			–
Protection against short circuit	Pulsed		–	–

Electromechanical components

Electrical connection	10-pin
	Screw terminal
Nominal conductor cross section that can be connected [mm ²]	0.25 ... 2.5
Cable connector	M20x1.5 for ...-C2M20-...
	1/2 NPT for ...-C2N12-...

Materials

Housing	Epoxy-coated die-cast aluminium
Shaft	High-alloy stainless steel
Screws	High-alloy stainless steel
Mounting bracket	High-alloy stainless steel
Seals	NBR
Pointer	PC
Note on materials	RoHS compliant
	Contains paint-wetting impairment substances

Technical data

Operating and environmental conditions		
Type SRBE-...		
Ambient temperature	[°C]	-20 ... +60
Storage temperature	[°C]	-20 ... +60
CE marking		To EU EMC Directive ¹⁾
Approval certificate		RCM mark
Shock resistance		Shock test with severity level 2 according 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
Safety integrity level (SIL)		SIL 2
Certifications for ...-EX variants		-1-ZU
Degree of protection		IP67
CE marking		As per EU Explosion Protection Directive (ATEX)
ATEX category for gas		II 2G
ATEX category for dust		II 2D
Explosion ambient temperature		-20 ... +60
Type of ignition protection for gas		Ex d IIC T6 Gb
Type of ignition protection for dust		Ex tb IIIC T61°C Db
Explosion protection certification outside the EU		EPL Db (IEC-EX)
		EPL Db (BR)
		EPL Db (CN)
		EPL Gb (IEC-EX)
		EPL Gb (BR)
		EPL Gb (CN)
Certificate issuing authority		DNV 16.0067X (INMETRO)
		FTZU 15 ATEX 0095X (PESO)
		GYJ 16.1497X (NEPSI)
		IECEx FTZU 15.0014X
Certifications for ...-C1 variants		
Degree of protection		IP67
		NEMA 4/4X
Type of ignition protection for gas		AEx d IIB T5 Gb
		Ex d IIB T5 Gb
		AEx nA IIC T5 Gc
		Ex nA IIC T5 Gc
Type of ignition protection for dust		AEx tb IIIC T108°C Db
		Ex tb IIIC T108°C Db
Explosion protection certification outside the EU		Class I, Div. 1 (CA)
		Class I, Div. 1 (US)
		Class I, Div. 2 (CA)
		Class I, Div. 2 (US)
		Class II, Div. 1 (CA)
		Class II, Div. 1 (US)
		Class III (CA)
		Class III (US)
		EPL Db (CA)
		EPL Db (US)
		EPL Gb (CA)
		EPL Gb (US)
		EPL Gc (CA)
		EPL Gc (US)
Certificate issuing authority		CSA 263311

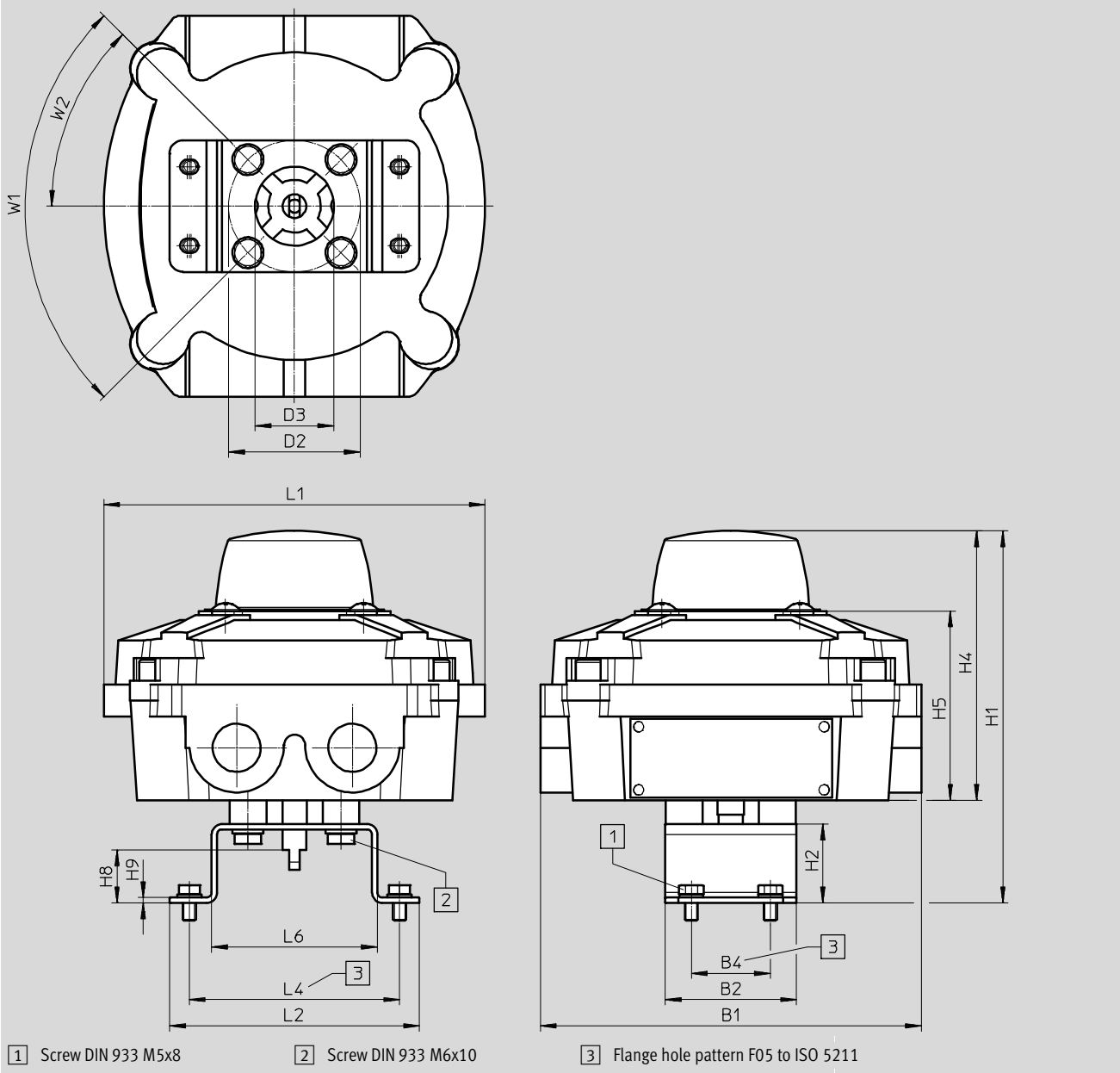
1) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Sensor boxes SRBE, inductive

Technical data

Dimensions

Download CAD data → www.festo.com



SRBE	B1	B2	B4	D2 ∅	D3 ∅	H1	H2 +0.5	H4
With DARQ-K-X1-A1-F05-20-R1	145	50	30	50	30	141.5	30	102.5
With DARQ-K-X1-A1-F05-30-R1						151.5	40	

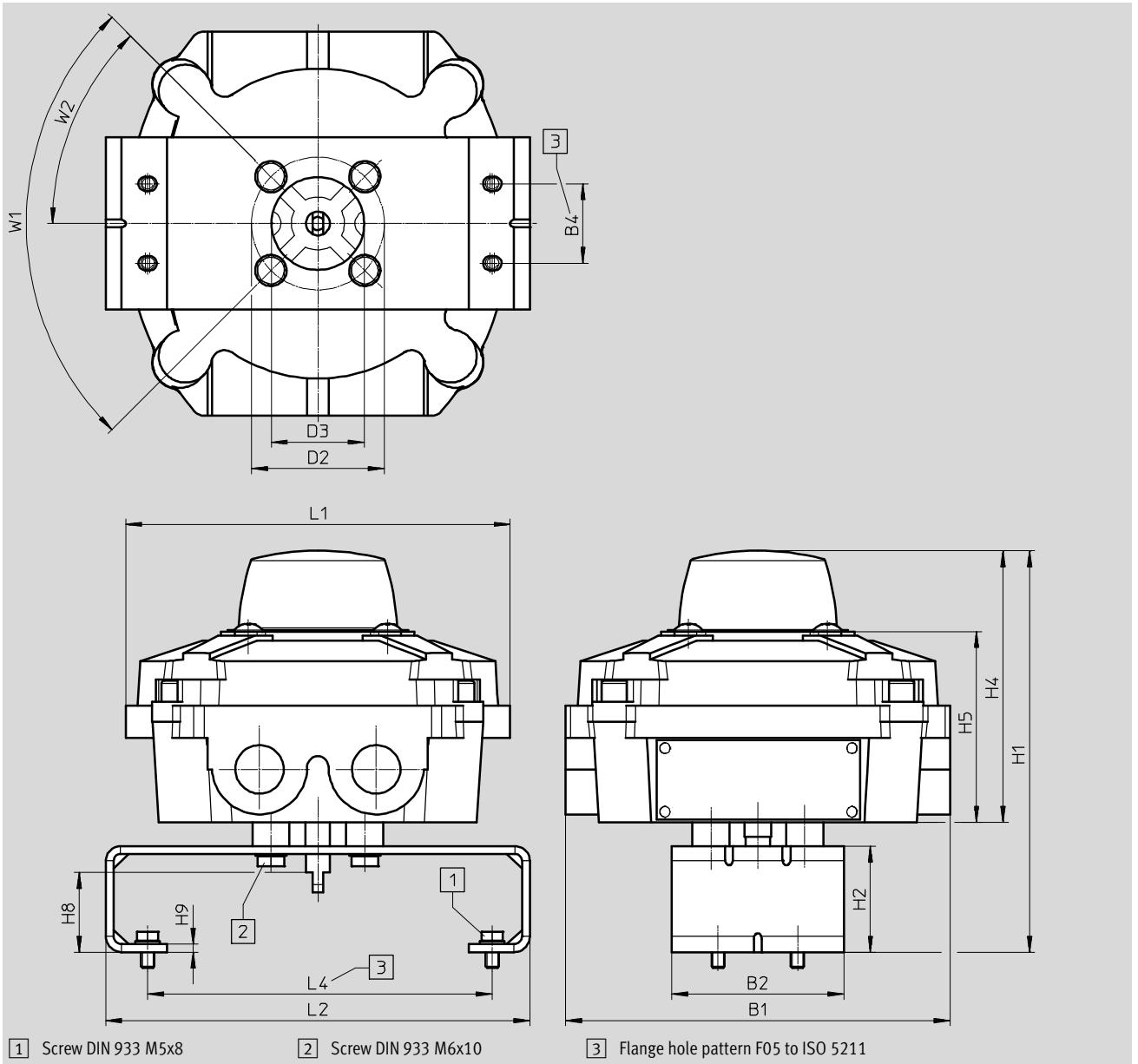
SRBE	H5	H8	H9	L1	L2	L4	L6	W1	W2
With DARQ-K-X1-A1-F05-20-R1	72	20	2	145	95	80	63	90°	45°
With DARQ-K-X1-A1-F05-30-R1		30							

02 Sensor boxes

Technical data

Dimensions

Download CAD data → www.festo.com

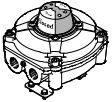


SRBE	B1	B2	B4	D2 ∅	D3 ∅	H1	H2	H4
With DARQ-K-X1-A2-F05-30-R1	145	65	30	50	35	151.5	40 +0.5	102.5

SRBE	H5	H8	H9	L1	L2	L4	W1	W2
With DARQ-K-X1-A2-F05-30-R1	72	30	3	145	160	130	90°	45°

Sensor boxes SRBE, inductive

Technical data

Ordering data		Dimensions	Weight	Part No.	Type
	Brief description	Mounting adapter [mm]	[g]		
	Sensor box including pre-assembled mounting adapter	30 x 80, H: 20	1700	3471012	SRBE-CA3-YR90-N-20N-ZC-C2N12-EX
				3471013	SRBE-CA3-YR90-N-20N-ZC-C2M20-EX
				3471014	SRBE-CA3-YR90-N-1-P-C2N12-EX
				3471015	SRBE-CA3-YR90-N-1-P-C2M20-EX
				3471016	SRBE-CA3-YR90-N-1-N-C2N12-EX
				3471017	SRBE-CA3-YR90-N-1-N-C2M20-EX
				3471018	SRBE-CA3-YR90-N-1-ZU-C2N12-EX
				3471019	SRBE-CA3-YR90-N-1-ZU-C2M20-EX
				3998919	SRBE-CA3-YR90-N-20N-ZC-C2N12-C1
				3998920	SRBE-CA3-YR90-N-1-P-C2N12-C1
				3998921	SRBE-CA3-YR90-N-1-N-C2N12-C1
				3998922	SRBE-CA3-YR90-N-1-ZU-C2N12-C1

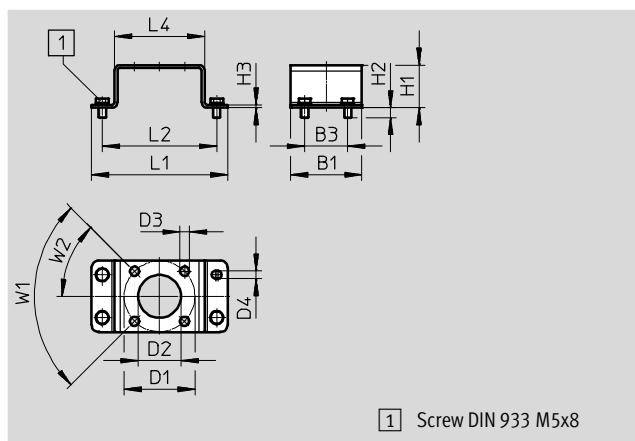
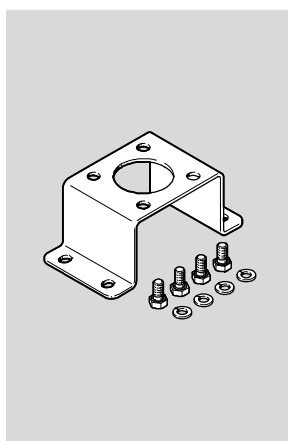
02

Sensor boxes

Accessories

Mounting adapter DARQ-K-X1-A1-...

- Mounting adapter for mounting on standard actuators to VDI/VDE 3845
- Mounting screws included in the scope of delivery
- Size 30 x 80
- Material: High-alloy stainless steel
- Contains paint-wetting impairment substances, RoHS compliant

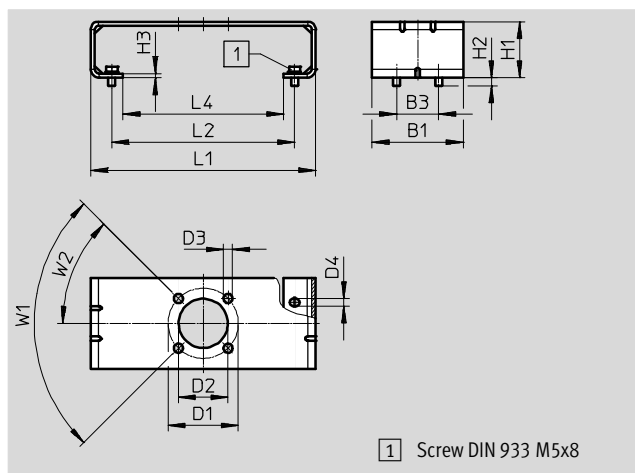
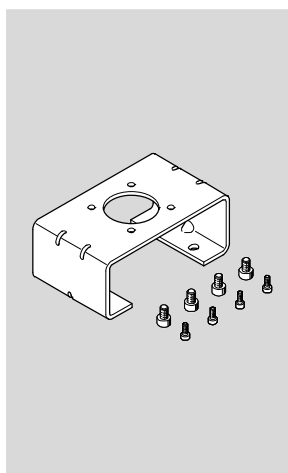


Dimensions and ordering data

B1	B3	D1	D2	D3	D4	H1	H2	H3	L1	L2	L4	W1	W2	Weight [g]	Part No.	Type
50	30	50	30	6.5	5.5	30	6.8	2	95	80	63	90°	45°	350	3636269	DARQ-K-X1-A1-F05-20-R1
						40								380		

Mounting adapter DARQ-K-X1-A2-...

- Mounting adapter for mounting on standard actuators to VDI/VDE 3845
- Mounting screws included in the scope of delivery
- Size 30 x 130
- Material: High-alloy stainless steel
- Contains paint-wetting impairment substances, RoHS compliant



Dimensions and ordering data

B1	B3	D1	D2	D3	D4	H1	H2	H3	L1	L2	L4	W1	W2	Weight [g]	Part No.	Type
65	30	50	35	6.5	5.4	40	5.8	3	160	130	114	90°	45°	460	3886114	DARQ-K-X1-A2-F05-30-R1

Sensor boxes, analogue SRAP



Overview, configuration and ordering
→ www.festo.com/catalogue/srap



Additional information, support and user documentation
→ www.festo.com/sp/srap



Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/ex



- + Analogue sensor box
- + For monitoring the position of quarter turn actuators

- + Output signal 4 ... 20 mA

Sensor boxes SRAP, analogue

Key features

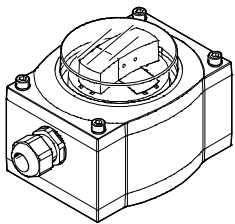
General information

Analogue sensor box for greater functionality. The analogue sensor box monitors the position of semi-rotary actuators and reports this back to the controller via an analogue 4 ... 20 mA output signal.

Advantages

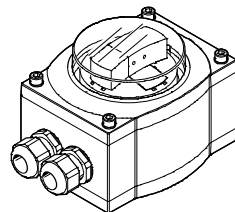
- Simple mounting and commissioning: with teach-in function for flexible adjustment of the zero point within a range from 0 – 270°
- Everything in view, including from a distance: colour-based indication of the current position of the semi-rotary actuator
- Innovative and intelligent: homing to the actual swivel angle makes optimum use of the initial range
- Sturdy and explosion-proof: a match for even harsh, corrosive and potentially explosive environments thanks to corrosion-resistant and waterproof metal housing
- Insensitive to vibration. Always supplies a stable signal as there is no contact between the shaft and sensor
- Quick and easy integration in existing systems thanks to the industrial analogue output signal
- Cost and time savings thanks to the common power supply for the sensor box and solenoid valve
- Cost-efficient regulation in combination with 5/3-way valve compared with positioner solution
- Festo know-how in automation: concept and solution from a single source
- You can find information on the media resistance of the product at → www.festo.com

1 cable connector



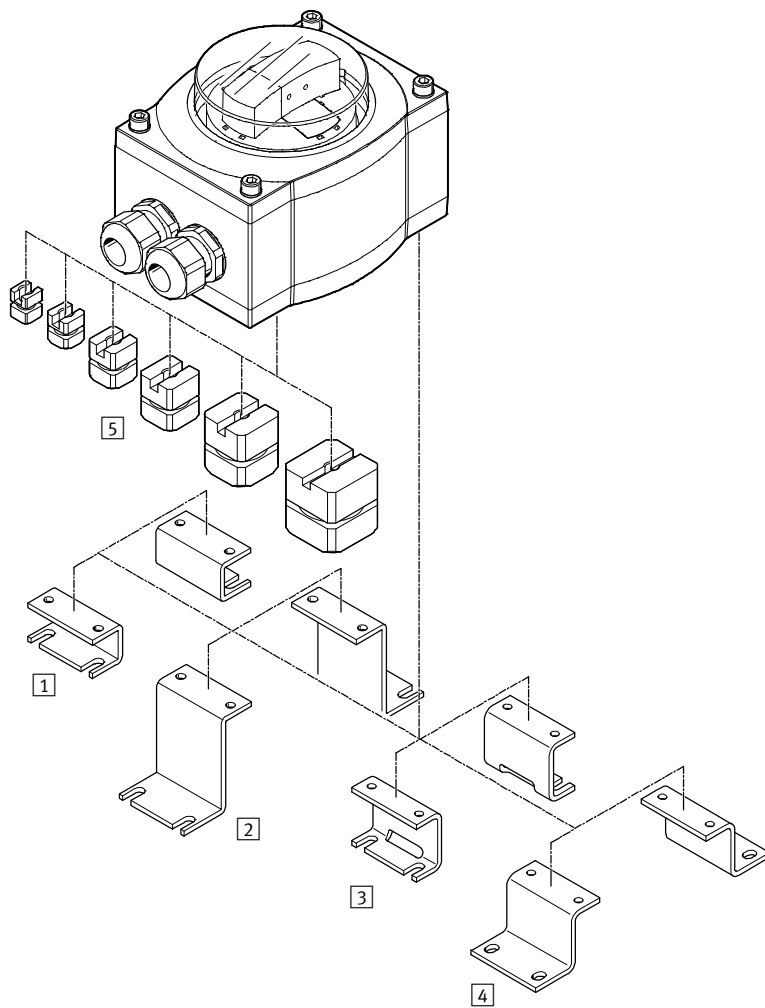
- Power supply for sensor box only

2 cable connectors



- Common power supply for sensor box and solenoid valve

Peripherals overview



Mounting attachments and accessories

	Brief description	→ Page/Internet
1	Adapter kit DASB-P1-HA-SB	Hole pattern 30x80 mm, height 20 mm 277
2	Adapter kit DASB-P1-HL-SB	Hole pattern 30x130 mm, height 50 mm 277
3	Adapter kit DASB-P1-HB-SB	Hole pattern 30x80 mm, height 30 mm 277
4	Adapter kit DASB-P1-HC-SB	Hole pattern 30x130 mm, height 30 mm 277
5	Coupling DARQ-C-S9	For direct mounting of sensor boxes SRAP 277
	Coupling DARQ-C-S11	For direct mounting of sensor boxes SRAP 277
	Coupling DARQ-C-S14	For direct mounting of sensor boxes SRAP 277
	Coupling DARQ-C-S17	For direct mounting of sensor boxes SRAP 277
	Coupling DARQ-C-S22	For direct mounting of sensor boxes SRAP 277
	Coupling DARQ-C-S27	For direct mounting of sensor boxes SRAP 277

Sensor boxes SRAP, analogue

Type codes

SRAP - M - CA1 - BB270 - 1 - A - T2P20 - EX2

Function

SRAP	Analogue sensor box
------	---------------------

Product version

M	Primarily metal
---	-----------------

Design

C	Sensor box
---	------------

Mechanical interface

A1	Direct mounting, hole pattern 30x80 mm
----	-------------------------------------------

Indicator type

-	No indicator
BB	Blue/black position indicator
GR	Green/red position indicator
YB	Yellow/black position indicator

Measuring range

270	0 ... 270°
-----	------------

Nominal operating voltage

1	24 V DC
---	---------

Electrical output

A	4 ... 20 mA
---	-------------

Electrical connection

T	Terminal box
---	--------------

Valve connection

-	None
2	With valve connection

Cable connector

M20	M20x1.5, metal
P20	M20x1.5, polymer

Temperature range

-	Standard -20 ... +80 °C
---	-------------------------

EU certification

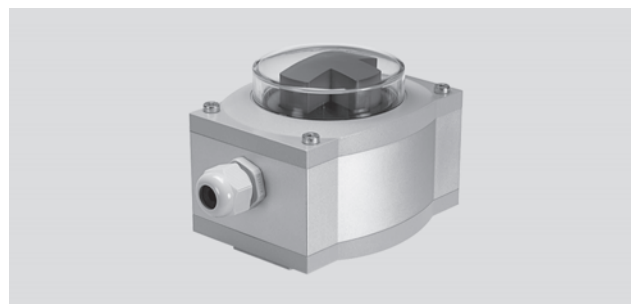
-	None
EX2	II 3GD

02

Sensor boxes

Technical data

- The analogue sensor box not only reports the open/closed position of the semi-rotary actuator, but also detects the entire swivel range and reports this back to the controller via an analogue signal
- The integrated sensors are based on proven 2D Hall technology



General technical data			
Adjustment range for angle detection	[°]		0 ... 270
Based on standard			VDI/VDE 3845 (NAMUR)
Design			Angular
Mounting position			Any
Measured variable			Swivel angle
Measuring principle			Magnetic Hall
Adjustment options			Teach-in
			Teach-in via electrical connection
Idle current	[mA]		12 ... 20
Analogue output	[mA]		4 ... 20
Repetition accuracy of analogue output			+/- 1 deg
Operating voltage range	Direct voltage DC	[V]	15 ... 30
Insulation voltage		[V]	50
Surge capacity		[kV]	0.8
Protection against short circuit			Yes
Protection against overloading			Yes
Reverse polarity protection			For all electrical connections
Electrical connection			9-pin
			Screw terminal
			Plug-in
Cable connector			M20x1.5
Max. cable length	[m]		30
Permissible cable diameter	[mm]		5 ... 13
Connectable nominal conductor cross section	[mm ²]		2.5
Product weight	[g]		1000
Housing material			Wrought aluminium alloy
Note on materials			RoHS-compliant

Sensor boxes SRAP, analogue

Technical data

Operating and environmental conditions

Certification	C-Tick
	c UL us - Recognized (OL)
	RCM trademark
Ambient temperature [°C]	-20 ... +80 °C
Protection class	IP65
CE mark (see declaration of conformity)	To EU EMC Directive
Electrical protection class	III
Degree of contamination	3
Corrosion resistance class CRC ¹⁾	3

- 1) Corrosion resistance class 3 according to Festo standard 940 070
Components subject to high corrosion stress. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface.

Operating and environmental conditions with explosion protection

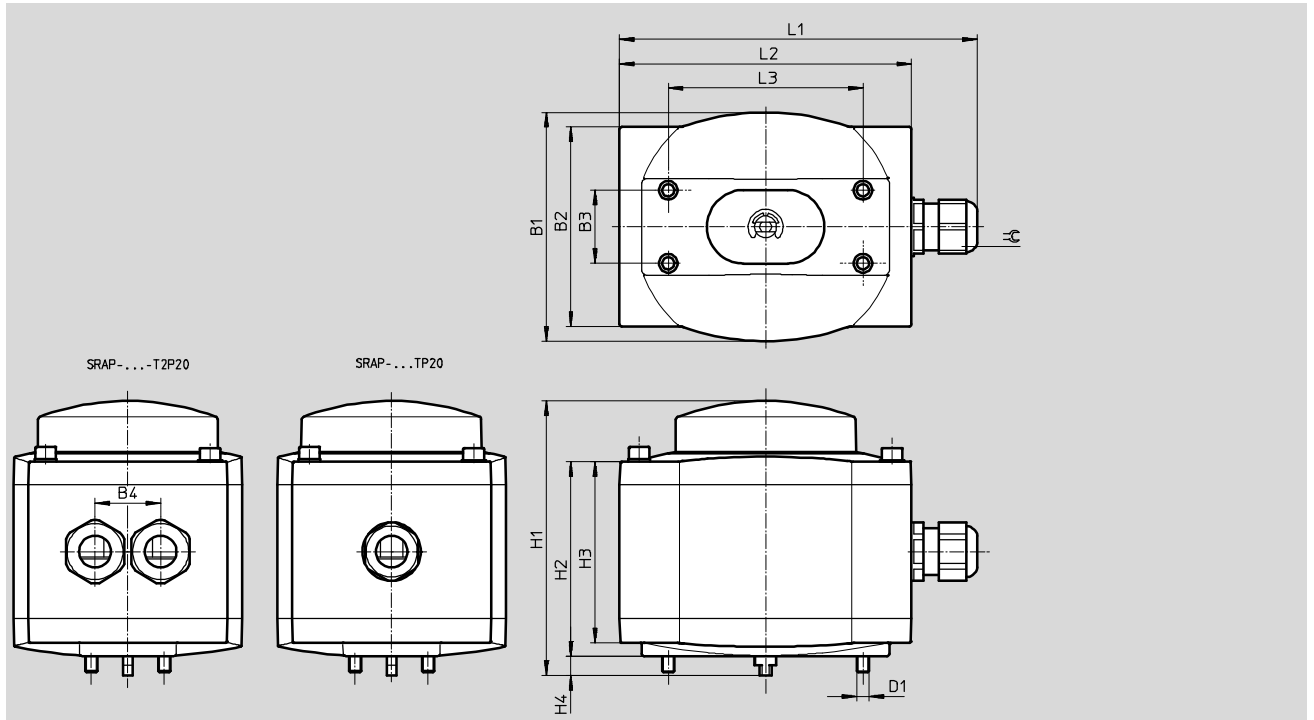
Certification	C-Tick
	c UL us - Recognized (OL)
	RCM trademark
Ambient temperature [°C]	-20 ... +80 °C
Protection class	IP65
CE mark (see declaration of conformity)	To EU EMC Directive To EU Explosion Protection Directive (ATEX)
ATEX category for gas	II 3G
Explosion ignition protection type for gas	Ex nA IIC T5 X Gc
ATEX category for dust	II 3D
Explosion ignition protection type for dust	Ex tc IIIC T90°C X Dc IP65
Explosion-proof ambient temperature	-20 °C ≤ Ta ≤ +80 °C
Explosion protection certification outside the EU	EPL Dc (RU)
	EPL Gc (RU)
Electrical protection class	III
Degree of contamination	3
Corrosion resistance class CRC ¹⁾	3

- 1) Corrosion resistance class 3 according to Festo standard 940 070
Components subject to high corrosion stress. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface.

Technical data

Dimensions

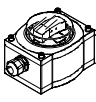
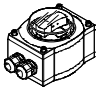
Download CAD data → www.festo.com

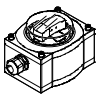
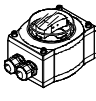


Type	B1	B2 ±1	B3	B4	D1	H1	H2	H3	H4	L1	L2 ±1	L3	⌀
SRAP-M-CA1-BB270-1-A-TP20	94	82	30	-	M5	112.7	80	74.5	7.8	148	120	80	24
SRAP-M-CA1-BB270-1-A-TP20-EX2										147			22
SRAP-M-CA1-GR270-1-A-TM20										148			24
SRAP-M-CA1-GR270-1-A-TP20										147			22
SRAP-M-CA1-GR270-1-A-TP20-EX2										148			24
SRAP-M-CA1-YB270-1-A-TM-20										147			22
SRAP-M-CA1-YB270-1-A-TP-20										148			24
SRAP-M-CA1-YB270-1-A-TP-20-EX2										147			22
SRAP-M-CA1-GR270-1-A-T2P20										148			24
SRAP-M-CA1-GR270-1-A-T2P20-EX2										147			22
SRAP-M-CA1-270-1-A-T2P20										148			24
SRAP-M-CA1-270-1-A-T2P20-EX2										147			22

Sensor boxes SRAP, analogue

Technical data

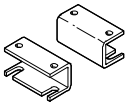
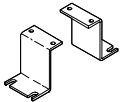
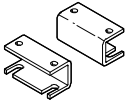
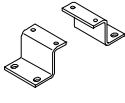



Ordering data – Sensor boxes SRAP, analogue without explosion protection			
	Position indicator	Part No.	Type
	Blue/black	568236	SRAP-M-CA1-BB270-1-A-TP20
	Red/green	568238	SRAP-M-CA1-GR270-1-A-TM20
	Red/green	568239	SRAP-M-CA1-GR270-1-A-TP20
	Yellow/black	568242	SRAP-M-CA1-YB270-1-A-TM20
	Yellow/black	568243	SRAP-M-CA1-YB270-1-A-TP20
	Red/green	568246	SRAP-M-CA1-GR270-1-A-T2P20
	No indicator	570527	SRAP-M-CA1-270-1-A-T2P20

Ordering data – Sensor boxes SRAP, analogue with explosion protection			
	Position indicator	Part No.	Type
	Blue/black	568237	SRAP-M-CA1-BB270-1-A-TP20-Ex2
	Red/green	568241	SRAP-M-CA1-GR270-1-A-TP20-Ex2
	Yellow/black	568245	SRAP-M-CA1-YB270-1-A-TP20-Ex2
	Red/green	568247	SRAP-M-CA1-GR270-1-A-T2P20-Ex2
	No indicator	570528	SRAP-M-CA1-270-1-A-T2P20-Ex2

02

Sensor boxes

Accessories

Dimensions and ordering data		Brief description	Part No.	Type
Adapter kit				
	<ul style="list-style-type: none"> • Adapter kit for DAPS • Shaft height 20 mm, hole patterns 80x30 mm 		568275	DASB-P1-HA-SB
	<ul style="list-style-type: none"> • Adapter kit for third-party drives • Shaft height 50 mm, hole patterns 130x30 mm 		568276	DASB-P1-HL-SB
	<ul style="list-style-type: none"> • Adapter kit for DAPS • Shaft height 30 mm, hole patterns 80x30 mm 		572418	DASB-P1-HB-SB
	<ul style="list-style-type: none"> • Adapter kit for DAPS • Shaft height 30 mm, hole patterns 130x30 mm 		572419	DASB-P1-HC-SB
Couplings				
	Couplings for direct mounting of sensor boxes SRAP		568674	DARQ-C-S9
			568675	DARQ-C-S11
			568676	DARQ-C-S14
			568677	DARQ-C-S17
			568678	DARQ-C-S22
			568679	DARQ-C-S27
Cable connector				
	Polymer cable connector M20x1.5		568278	NETC-P-M20-P4
	Metal cable connector M20x1.5		568279	NETC-M-M20-P4

Limit switch attachments

DAPZ



Overview, configuration and ordering
→ www.festo.com/catalogue/dapz



Additional information, support and user documentation
→ www.festo.com/sp/dapz



Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/ex

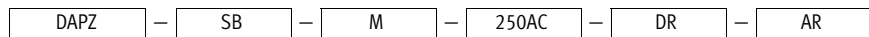


- + Drive interface to NAMUR VDI/VDE 3845
- + Quick and easy assembly and connection
- + Integrated actuation of the solenoid valve

- + DAPZ-SB-I... (measuring principle: inductive), DAPZ-SB-M... (measuring principle: mechanical) with AS-i interface

Limit switch attachments DAPZ

Type codes



Type	
DAPZ	Limit switch attachment

Specification	
SB	Sensor box

Measuring principle	
I	Inductive
M	Electrical, micro switch

Operating voltage	
25DC	8 V DC
30DC	30 V DC
250AC	250 V AC/DC

Version	
EX	Explosion-proof
D	Display
R	Round design

Variant	
AR	Foot height adjustable

02

Sensor boxes

Limit switch attachments DAPZ

Technical data

- Drive interface to Namur
VDI/VDE 3845
- Quick and easy assembly
and connection
- Integrated solenoid valve actuation



General technical data			DAPZ-SB-M-250AC-DR-AR	DAPZ-SB-I-30DC-DR-AR	DAPZ-SB-I-25DC-EXDR-AR
Measuring principle			Mechanical, electrical	Inductive	Inductive
Based on standard			EN 60947-5-1	EN 60947-5-2	EN 60947-5-6
			VDI/VDE 3845 (NAMUR)		
Design			Round		
Mounting position			Any		
Protection against short circuit			No	Pulsed	No
Switching element function			Changeover switch	Normally open contact	Normally closed contact
Protection against reverse polarity			No	For all electrical connections	No
Switching position display			Yes		
Switching output			–	PNP	Namur
Operating voltage range	Direct current DC	[V]	4 ... 250	10 ... 30	–
	Alternating current AC	[V]	4 ... 250	–	–
Intrinsic current consumption at operating voltage		[mA]	1 ... 5	0 ... 100	–
Nominal operating voltage DC		[V]	–	–	8
Max. input power Pi		[mW]	–	–	34
Max. input voltage Ui	Direct current DC	[V]	–	–	16
Max. input current Ii		[mA]	–	–	25
Insulation voltage		[V]	250	50	25
Surge capacity		[kV]	2.5	0.5	0.5
Max. output current		[mA]	5,000	100	–
Switching current	Attenuated	[mA]	–	–	0 ... 1
	Non-attenuated	[mA]	–	–	3
Minimum load current			1 mA at 4 V/DC	–	–
Electrical connection			Screw terminal		
Permissible cable diameter		[mm]	7 ... 13		
Cable connector			M20x1.5		

Limit switch attachments DAPZ

Technical data

Operating and environmental conditions	DAPZ-SB-M-250AC-DR-AR	DAPZ-SB-I-30DC-DR-AR	DAPZ-SB-I-25DC-EXDR-AR
Ambient temperature [°C]	-20 ... +70 °C		
Protection class	IP67		
CE marking (see declaration of conformity)	To EU Low Voltage Directive	-	To EU Explosion Protection Directive (ATEX)
ATEX category for gas	-	-	II 2GX
Explosion ignition protection type for gas	-	-	EEx ia IIB T6
Explosion-proof temperature rating	-	-	-20 °C ≤ Ta ≤ +70 °C
Certificate issuing authority	-	-	PTB 00 ATEX 2032 X
Explosion protection certification outside the EU	-	-	EPL Gb (RU)
	-	-	EPL Gc (RU)
PFD	-	-	4,69E-04
PFH	-	-	1,07E-07
Degree of contamination	3		
Corrosion resistance class CRC ¹⁾	2		

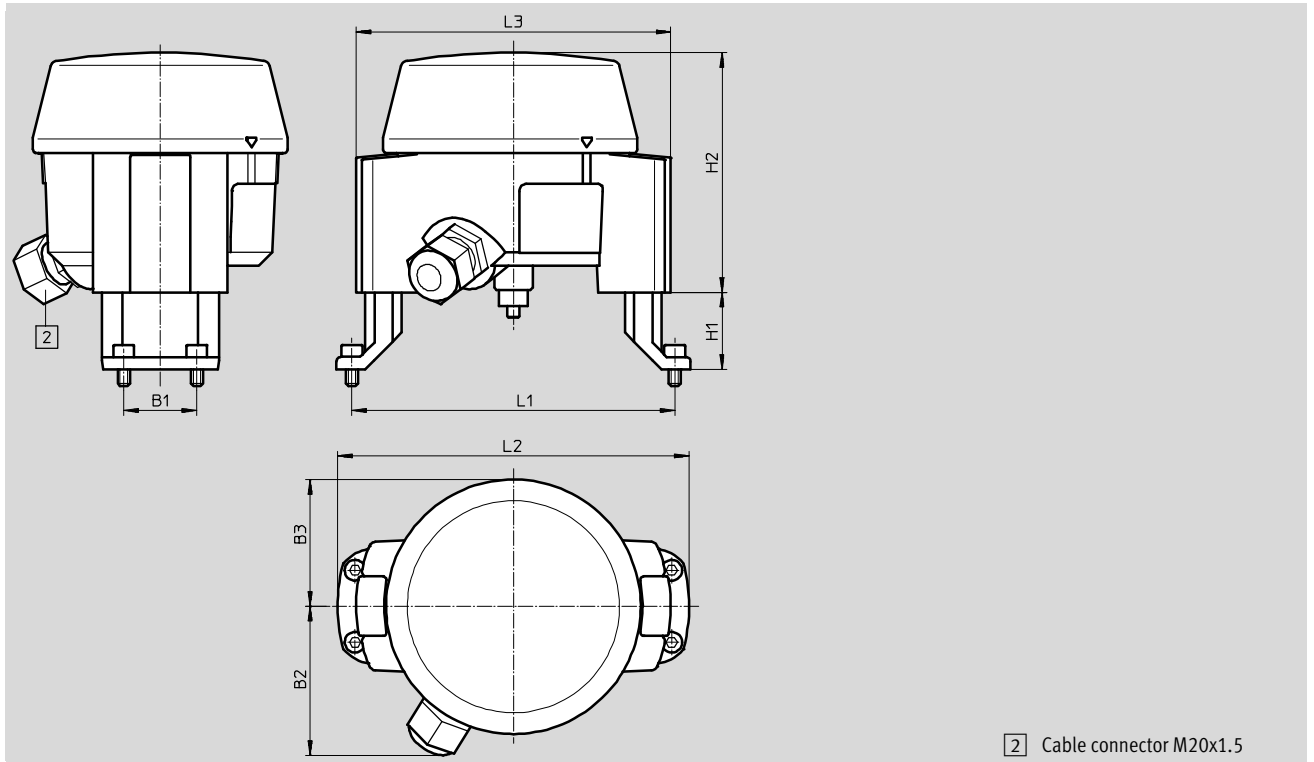
- 1) Corrosion resistance class 2 according to Festo standard 940 070
 Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Materials	
Housing cover	PC
Housing socket, bracket	ABS, PC
Seals	NBR
Note on materials	RoHS-compliant

Technical data

Dimensions

Download CAD data → www.festo.com








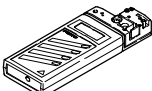
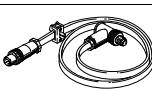
	B1	B2	B3	H1	H2	L1	L2	L3
Feet mounted inwards								
Foot height adjustable	30	62	52.5	20, 30, 50	100	80	66	130
Feet mounted outwards								
Foot height adjustable	30	62	52.5	20, 30, 50	100	130	144	130

Ordering data

Sensing type	Variant	Measuring principle	Part No.	Type
Mechanical	Basic version	Mechanical, electrical	534474	DAPZ-SB-M-250AC-DR-AR
Contactless	Basic version	Inductive	534475	DAPZ-SB-I-30DC-DR-AR
Contactless	Explosion-proof	Inductive	534476	DAPZ-SB-I-25DC-EXDR-AR

Limit switch attachments DAPZ

Accessories

Ordering data	Brief description	Part No.	Type
Fieldbus connection			
	Flat cable for AS-interface components, yellow, 100 m	18940	KASI-1,5-Y-100
	Cable distributor for flat cable, cable rotatable	18786	ASI-KVT-FK
	Cable distributor for flat cable, cable symmetrical	18797	ASI-KVT-FK-S
	Cable cap for flat cable (50 included in the scope of delivery)	18787	ASI-KK-FK
	Cable sleeve (20 included in the scope of delivery)	165593	ASI-KT-FK
Miscellaneous			
	Addressing device for AS-interface stations	18959	ASI-PRG-ADR
	Addressing cable for addressing device	18960	KASI-ADR

02

Sensor boxes

03 Positioners

Digital electropneumatic positioner for single- or double-acting pneumatic quarter turn actuators and double-acting pneumatic linear actuators





CMSX ★

Positioners

- + Digital, electropneumatic
- + Positioner for pneumatic quarter turn and linear actuators
- + Predefinable safety position

➔ page 289

Contents

Positioners CMSX 289

Positioners

CMSX



Overview, configuration and ordering
→ www.festo.com/catalogue/cmsx



Additional information, support and user documentation
→ www.festo.com/sp/cmsx



Quick ordering of basic designs
→ page 299



- + No air consumption in the adjusted state
- + Power supply 24 VDC
- + Setpoint input 0/4...20 mA, 0...10 V
- + Position feedback 4 ... 20 mA
- + 1 digital input, 3 digital outputs
- + Standard nominal flow rate 50 l/min or 130 l/min
- + Integrated or remote position sensing
- + Safety position fail safe or fail in place

- + For single- and double-acting quarter turn actuators DFPD with size ≥ 40 , single-acting quarter turn actuators DAPS with size ≥ 53 , for double-acting quarter turn actuators DAPS with size ≥ 60 as well as double-acting linear actuators DFPI with size 100 ... 320 (piston diameter ≥ 63 mm)

Positioners CMSX

Key features

Function and application

The positioner CMSX is used to control the position of single- and double-acting pneumatic actuators and double-acting linear actuators in process automation systems. It is suitable for operation with actuators that have a swivel angle of approx. 90° and a mechanical interface in accordance with VDI/VDE Directive 3845. The CMSX enables simple and efficient position control based on the PID control algorithm. Positions are specified via a setpoint signal. The integrated

potentiometer senses the current position of the quarter turn actuator via the shaft and forwards the measured value to the internal regulator. The regulator compares the setpoint value specified by analogue means with the measured value and actuates the solenoid valves accordingly via pulse-width modulation (PWM).

Security

Several freely programmable safety positions in case of current failure, additional digital error signal for emergency shut-down.

Several freely configurable, analogue input signals for each task, for reliable monitoring of the actual position via the analogue feedback signal.

Economic efficiency

Via integrated, analogue feedback functions and the definable safety positions.

No air consumption if the actuator is not moving.

Variants

CMSX-...-A

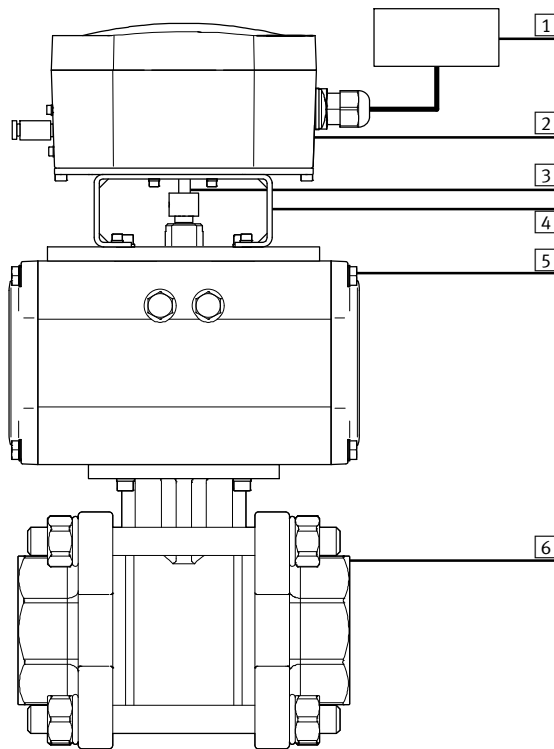
On this product variant, working port 4 is exhausted and working port 2 is pressurised. The process valve is opened or closed depending on the tubing connections between the CMSX-...-A and the quarter turn actuator.

CMSX-...-C

On the product variant CMSX-...-C, working ports 2 and 4 are pressurised to maintain the current position of the quarter turn actuator.

Key features

System structure

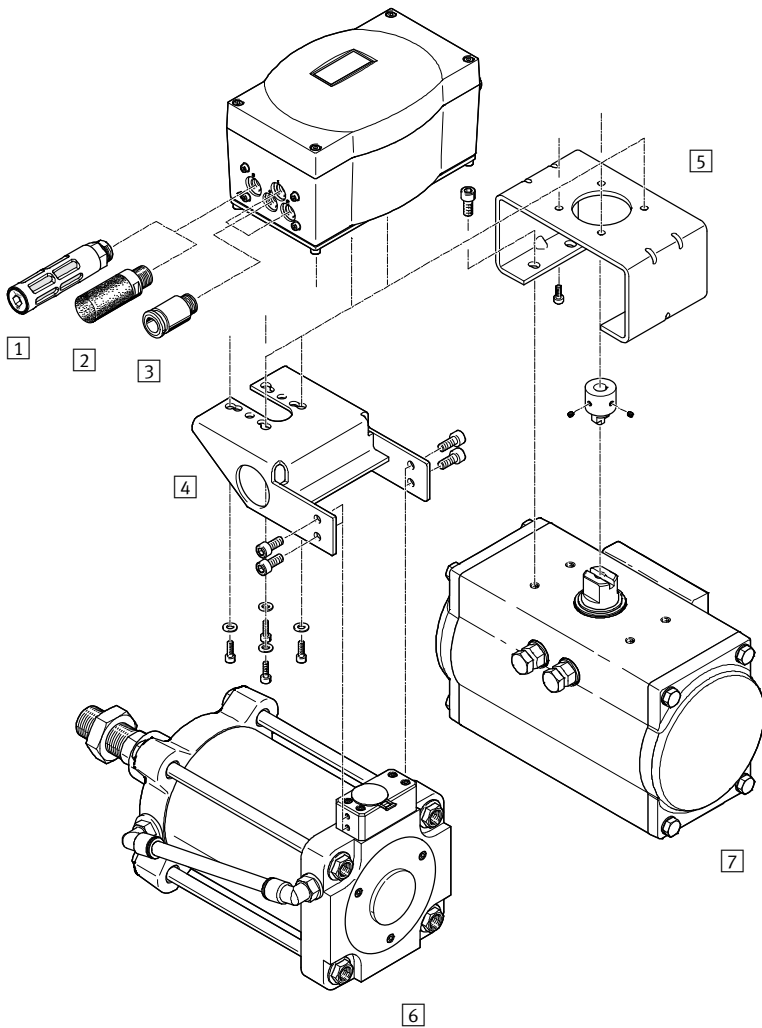


- 1 Higher-level system (PLC/IPC or external setpoint generator)
- 2 Positioner CMSX
- 3 Mechanical coupling
- 4 Mounting bridge DARQ
- 5 Quarter turn actuator (example: DFPD)
- 6 Process valve (example: VZBA)

Positioners	Semi-rotary drives DFPD → page 373		DAPS → page 413		Linear drives DFPI → page 317
	single-acting	double-acting	single-acting	double-acting	double-acting
	Sizes		Sizes		Piston Ø [mm]
CMSX-P...-C-U-F1-S-50-...	≥ 40	–	≥ 0060	–	–
CMSX-P...-C-U-F1-D-50-...	–	≥ 40	–	≥ 0060	–
CMSX-P...-C-U-F1-S-130-...	≥ 240	–	≥ 0240	–	≥ 100
CMSX-P...-C-U-F1-D-130-...	–	≥ 240	–	≥ 0240	≥ 100

Positioners CMSX

Peripherals overview



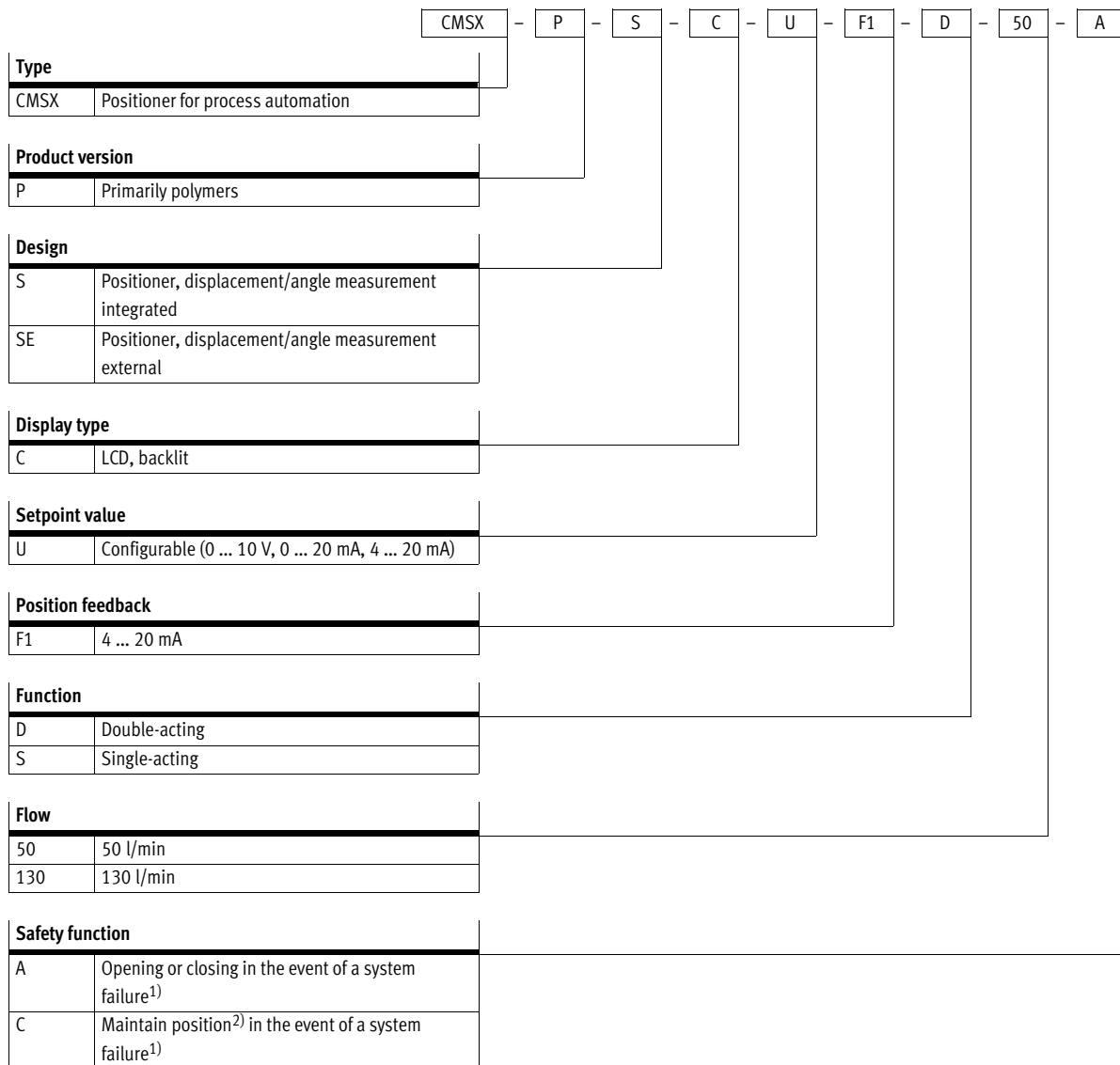
03

Positioners

Mounting components and accessories

	Brief description	→ Page/Internet
1 Silencer U	With polymer, male thread	u
2 Silencer U	For reducing noise at exhaust ports	uc
3 Push-in fittings QS	A secure solution for every connection	qs
4 Adapter kit DADG	For direct mounting of a positioner on the actuator	363
5 Mounting bridges DARQ	For connecting positioners and actuators for process automation	300
6 Linear actuator DFPI	Actuators for process automation with integrated displacement encoder	317
7 Quarter turn actuator DFPD	Actuators for process automation	373




Type codes

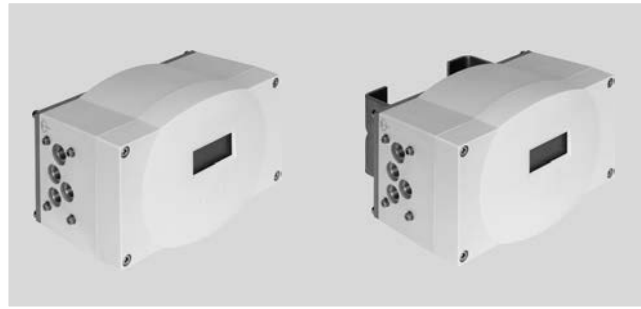


- 1) Cable fracture or failure of the power supply
- 2) Pressurise quarter turn actuator at both ends

Positioners CMSX

Technical data

-  Voltage
21.6 ... 26.4 V DC
-  Temperature range
-5 ... +60 °C
-  Flow rate
50 ... 130 l/min



General technical data

Pneumatic connection	G1/8
Conforms to standard	VDI/VDE 3845 (NAMUR)
Cable connector	M20x1.5
Type of mounting	On flange to ISO 5211, via accessories
Type of process valve characteristic curves	Freely adjustable over 21 support points Linear, equal percentage (1:25, 1:33, 1:50)
Leakproof characteristics	Automatic
	Adjustable
Control range adaptation	Adjustable
Active direction	Adjustable
	Rising, falling
UV resistance	Yes
Display type	Backlit LCD
Setting options	Via display and keys
Size of the dead zone	[%] 0.5 ... 10
Product weight	[g] 970

Electrical data

		Positioner, displacement/angle measurement integrated	Positioner, displacement/angle measurement external
Measuring principle displacement encoder		-	Potentiometer
Protection against short circuit		Yes	
Protection against incorrect polarity		For operating voltage connections	
		For setpoint value	
Operating voltage range DC	[V]	21.6 ... 26.4	
Setpoint value	[V]	0 ... 10	
	[mA]	0 ... 20	
	[mA]	4 ... 20	
Connection resistance	[kOhm]	-	≥ 20
Max. output current	[mA]	500	
Max. load resistance of current output	[Ohm]	500	
Max. current consumption	[A]	1	
Idle current	[mA]	90 ... 300	
Switching level	[V]	Signal 0 ≤ 5	
	[V]	Signal 1 ≥ 10	
Safety information			
For variant A		Safety position: In the case of a broken cable or a failure in the operating voltage, the regulating action is opening/closing	
For variant C		Safety position: In the case of a broken cable or a failure in the operating voltage, the regulating action is holding ¹⁾	

1) Pressurise quarter turn actuator at both ends

Technical data

Operating and environmental conditions		
Operating pressure	[bar]	3 ... 8
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Lubricated operation not possible
Ambient temperature	[°C]	-5 ... 60
Temperature of medium	[°C]	-5 ... 60
Storage temperature	[°C]	-20 ... 60
Corrosion resistance class CRC ¹⁾		2
CE marking (see declaration of conformity) ³⁾		To EU EMC Directive ²⁾
Approval certificate		RCM trademark
Protection class		IP65

- 1) Corrosion resistance class 2 according to Festo standard 940070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with the surrounding industrial environment or media such as coolants or lubricating agents.
- 2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.
- 3) Additional information www.festo.com/sp → Certificates.

Materials	
Housing	PC
Threaded coupling	High-alloy stainless steel
Adapter plate	Aluminium
Plate	Aluminium
Seals	NBR
Cable connection	PA
Note on materials	RoHS compliant

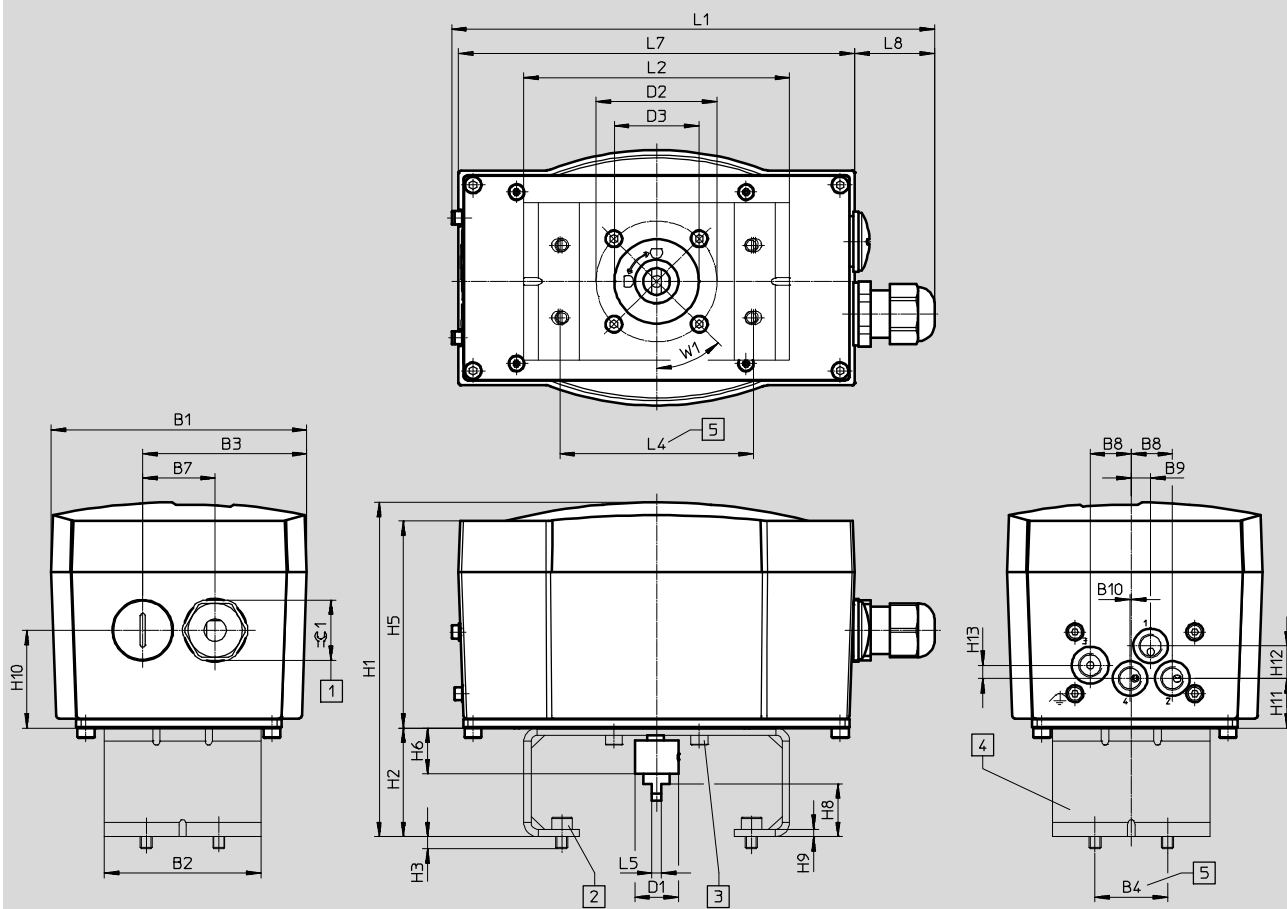
Positioners CMSX

Technical data

Dimensions

Download CAD data → www.festo.com

Displacement/angle measurement integrated



- 1 Cable connector M20x1.5
- 2 Screw DIN 912 M5x16 (4x)
- 3 Screw DIN 912 M4x12 (4x)
- 4 Mounting bridge DARQ
- 5 Flange hole pattern F05 to ISO 5211

Type	B1	B2	B3	B4	B7	B8	B9	B10	D1 ∅	D2 ∅	D3 ∅	H3	H5
CMSX-P-S-C-U-F1-D-130-...	105.8	65	67.9	30	30	17	8	0.5	18	50	35	5	85.8
CMSX-P-S-C-U-F1-D-50-...													
CMSX-P-S-C-U-F1-S-50-...													
CMSX-P-S-C-U-F1-S-130-...													

Type	H6	H9	H10	H11	H12	L1	L5	L7	L8	W1	≅ 1
CMSX-P-S-C-U-F1-D-130-...	19	40.5	20.5	13.5	5.5	200	4	164	32.5	45°	25
CMSX-P-S-C-U-F1-D-50-...											
CMSX-P-S-C-U-F1-S-50-...											
CMSX-P-S-C-U-F1-S-130-...											

Technical data

Positioner	Mounting bridge → page 300	H1	H2	H8	L2	L4 ±0.3
CMSX-P-S-C-U-F1-D-130-...	DARQ-K-P-A1-F05-20-R1	138.5	45	20	110	80
	DARQ-K-P-A1-F05-30-R1	148.5	55	30	110	80
	DARQ-K-P-A2-F05-30-R1	148.5	55	30	160	130
CMSX-P-S-C-U-F1-D-50-...	DARQ-K-P-A1-F05-20-R1	138.5	45	20	110	130
	DARQ-K-P-A1-F05-30-R1	148.5	55	30	110	80
	DARQ-K-P-A2-F05-30-R1	148.5	55	30	160	80
CMSX-P-S-C-U-F1-S-50-...	DARQ-K-P-A1-F05-20-R1	138.5	45	20	110	130
	DARQ-K-P-A1-F05-30-R1	148.5	55	30	110	130
	DARQ-K-P-A2-F05-30-R1	148.5	55	30	160	80
CMSX-P-S-C-U-F1-S-130-...	DARQ-K-P-A1-F05-20-R1	138.5	45	20	110	80
	DARQ-K-P-A1-F05-30-R1	148.5	55	30	110	130
	DARQ-K-P-A2-F05-30-R1	148.5	55	30	160	130

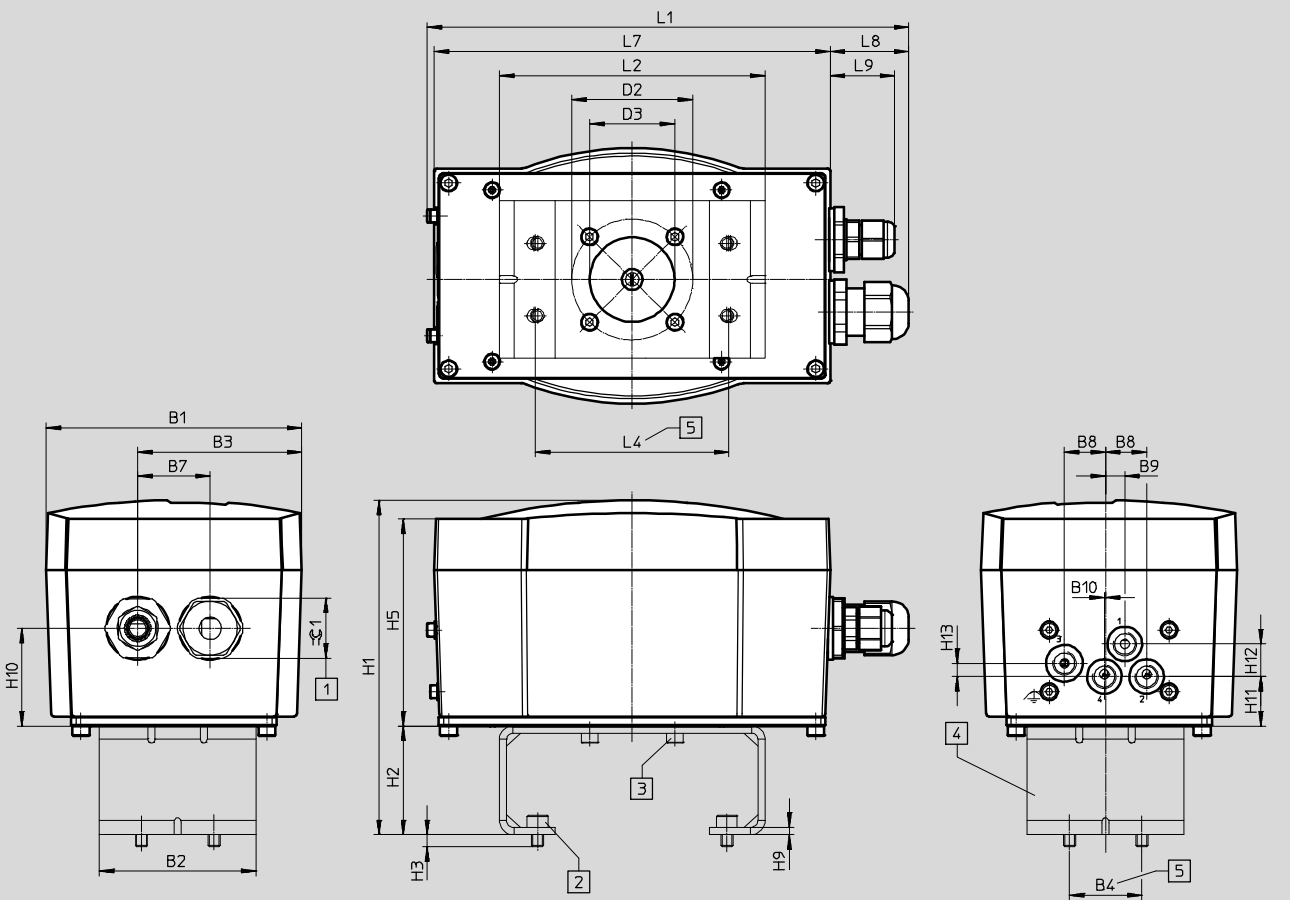
Positioners CMSX

Technical data

Dimensions

Download CAD data → www.festo.com

Displacement/angle measurement external



- 1 Cable connector M20x1.5
- 2 Screw DIN 912 M5x16 (4x)
- 3 Screw DIN 912 M4x12 (4x)
- 4 Mounting bridge DARQ
- 5 Flange hole pattern F05 to ISO 5211

Type	B1	B2	B3	B4	B7	B8	B9	B10	D2 ∅	D3 ∅	D4 ∅	H3
CMSX-P-SE-C-U-F1-D-...	105.8	65	67.9	30	30	17	8	0.5	50	35	5.4	5

Type	H5	H9	H10	H11	H12	H13	L1	L7	L8	L9	⊕ 1
CMSX-P-SE-C-U-F1-D-...	85.8	3	40.5	20.5	13.5	5.5	200	164	32.5	25.6	25



Positioner	Mounting bridge → page 300	H1	H2	L2	L4 ±0.3
CMSX-P-SE-C-U-F1-D-...	DARQ-K-P-A1-F05-20-R1	138.5	45	110	80
	DARQ-K-P-A1-F05-30-R1	148.5	55	110	80
	DARQ-K-P-A2-F05-30-R1	148.5	55	160	130




03

Positioners

Technical data

★ Core product range

Ordering data		Safety setting	Standard nominal flow rate [l/min]	Sensing range in degrees [deg]	Part No.	Type
Positioner, displacement/angle measurement integrated						
	Can be set to open or close in the event of a system failure ¹⁾	50	0 ... 100	★ 3929313	CMSX-P-S-C-U-F1-D-50-A	
		50			★ 3929370	CMSX-P-S-C-U-F1-S-50-A
Positioner, displacement/angle measurement external						
	Can be set to open or close in the event of a system failure ¹⁾	130	–	★ 3929539	CMSX-P-SE-C-U-F1-D-130-A	

Ordering data		Safety setting	Standard nominal flow rate [l/min]	Sensing range in degrees [deg]	Part No.	Type
Positioner, displacement/angle measurement integrated						
	Can be set to open or close in the event of a system failure ¹⁾	130	0 ... 100	3929312	CMSX-P-S-C-U-F1-D-130-A	
					3929369	CMSX-P-S-C-U-F1-S-130-A
	Maintain position in the event of a system failure ¹⁾	130	0 ... 100	3929314	CMSX-P-S-C-U-F1-D-130-C	
		50			3929315	CMSX-P-S-C-U-F1-D-50-C
Positioner, displacement/angle measurement external						
	Maintain position in the event of a system failure ¹⁾	130	–	3929540	CMSX-P-SE-C-U-F1-D-130-C	

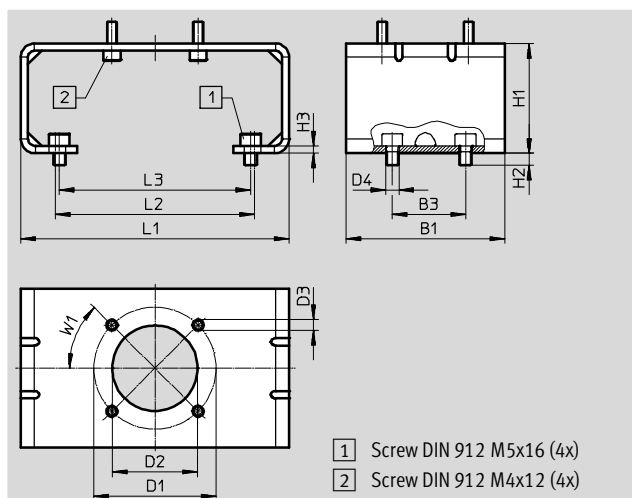
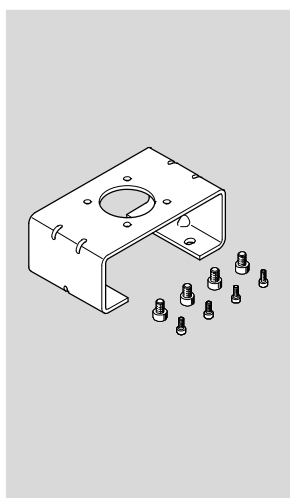
- 1) Cable fracture or failure of the power supply
2) Pressurise quarter turn actuator at both ends

Positioners CMSX

Accessories

Mounting bridge DARQ-K-P...

- Mounting bridge for mounting on standard actuators as per VDI/VDE 3845
- Mounting screws included in the scope of delivery
- Material: High-alloy stainless steel
- Contains paint-wetting impairment substances, RoHS compliant



- 1 Screw DIN 912 M5x16 (4x)
- 2 Screw DIN 912 M4x12 (4x)

Dimensions and ordering data

B1	B3	D1	D2	D3	D4	H1	H2	H3	L1	L2	L3	W1	CRC ¹⁾	Weight [g]	Part No.	Type
65	30	50	35	4.5	5.4	45	5	3	110	81.6	78.4	45°	2	350	★ 2197135	DARQ-K-P-A1-F05-20-R1
						55			380					★ 2197136	DARQ-K-P-A1-F05-30-R1	
						55			460					2197137	DARQ-K-P-A2-F05-30-R1	

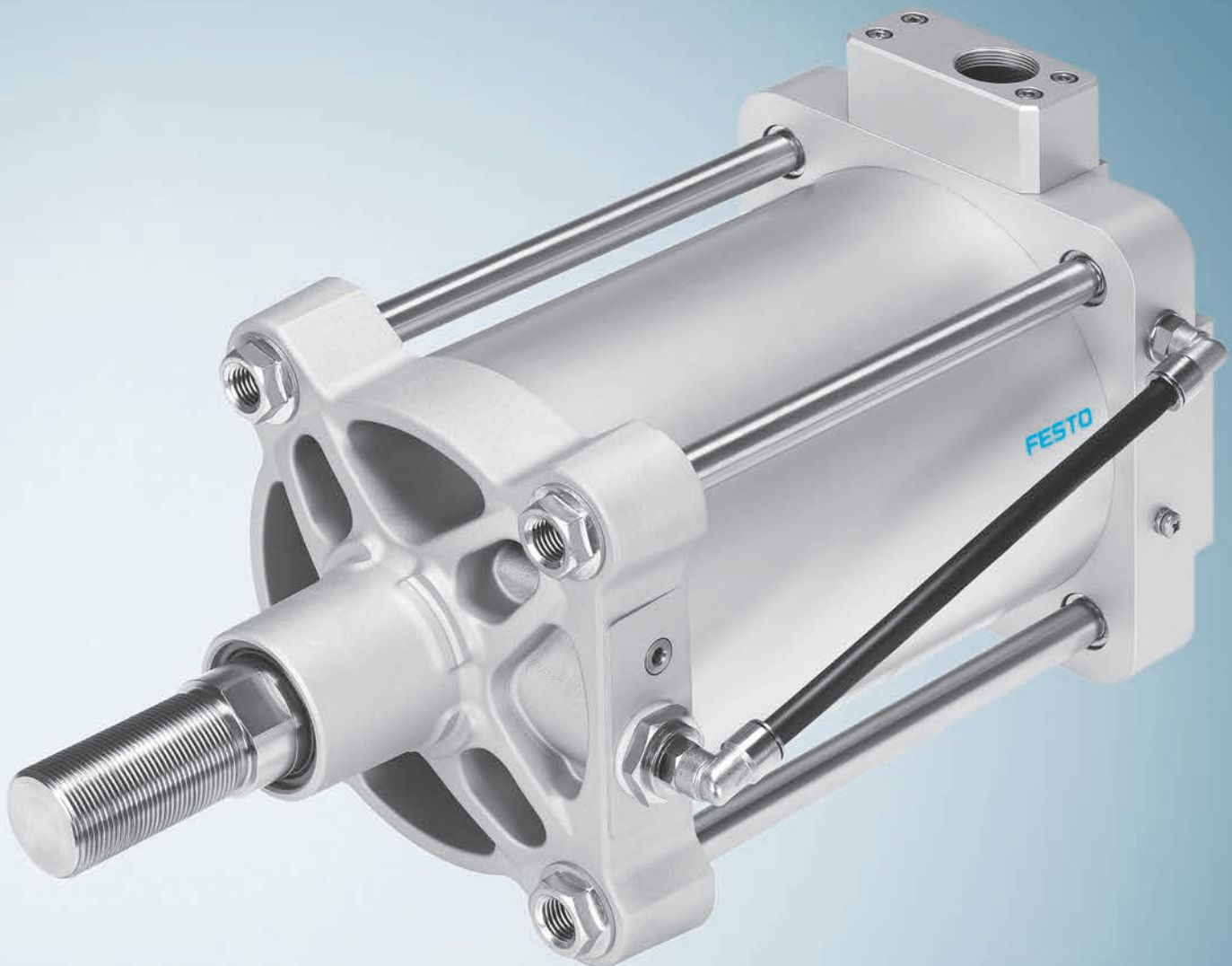
1) Corrosion resistance class 2 according to Festo standard 940070
 Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with the surrounding industrial environment or media such as coolants or lubricating agents.

03

Positioners

04 Linear drives

- + Pneumatic linear actuators for opening/closing and control applications



DLP



Linear actuators, Copac

- + For opening/closing applications
- + Mounting interface for process valve to DIN EN ISO 5210
- + NAMUR connection pattern for solenoid valves to VDI/VDE 3845

→ page 305

DFPI



Linear actuators, regulated

- + Optionally with integrated displacement encoder or integrated positioner
- + Mounting interface based on ISO 15552 or DIN EN ISO 5210
- + Different connection versions

→ page 317

Contents

Linear actuators, Copac DLP 305
 Linear actuators DFPI 317

Linear actuators, Copac DLP



Overview, configuration and ordering
→ www.festo.com/catalogue/dlp



Additional information, support and user documentation
→ www.festo.com/sp/dlp



Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/ex






- + Double-acting
- + Integrated T-slot for proximity sensor for position sensing
- + Integrated air duct
- + NAMUR connection pattern for solenoid valves to VDI/VDE 3845
- + Mounting interface for process valve to DIN EN ISO 5210

- + Diameter 80, 100, 125, 160, 200, 250, 320 mm
- + Force 2800 ... 48000 N
- + Stroke length 40 ... 600 mm

Linear actuators DLP, Copac

Key features and type codes

General

-  Diameter
80 ... 320 mm
-  Stroke length
40 ... 600 mm, additional stroke lengths upon request
-  Force
2800 ... 48000 N

Festo Copac linear valve actuators are ideally suited for use in water, sewage, industrial process water and silage technology, as well as the paper and bulk goods industry. A clean solution for shut-off, safety and control slide valves. The Copac linear actuator acts directly upon the slide plate and facilitates accurate advancing to various positions.

- Fast or slow valve actuation
- Position sensing
- Internal air channels eliminate protruding tubing and attachments, and thus also harmful accumulation of contaminants
- Suitable for manual on-site use, as well as automatic operation
- Opening and closing actuated via flange-mounted solenoid valve with port pattern to Namur, or via valve terminals with a choice of 30 different fieldbus protocols
- Sturdy and reliable, even in aggressive environments

- Highly corrosion resistant
- Mounting port pattern to DIN 3358/ISO 5210 for direct mounting
- Port pattern to Namur VDI/VDE 3845 for attaching solenoid valves



DLP – 100 – 125 – A

Type

DLP	Double-acting linear actuator
-----	-------------------------------

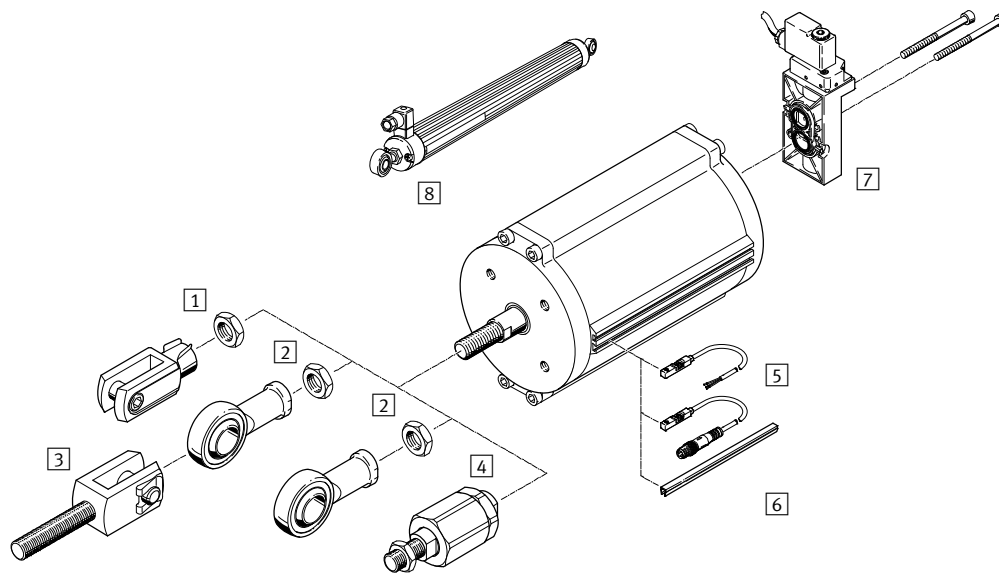
Piston Ø [mm]

Stroke [mm]

Position sensing

A	Via proximity sensor
---	----------------------

Peripherals overview

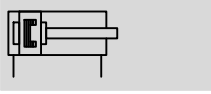


Mounting attachments and accessories		Brief description	DLP-80/100	DLP-125/160	DLP-200 ... 320	→ Page/Internet
1	Rod clevis SG	Enables simple connection between the piston rod and the slide plate	■	■	■	313
	Rod clevis, stainless steel CRSG		■	■	-	313
2	Rod eye SGS	With spherical bearing	■	■	■	313
	Rod eye, stainless steel CRSGS		■	■	-	313
3	Rod clevis SGA	With male thread	■	■	■	313
4	Self-aligning rod coupler FK/CRFK	For compensating radial and angular deviations	■	■	■	313
5	Proximity sensor SMT-8M-A	Magneto-resistive, 5 ... 30 V, to EU Explosion Protection Directive (ATEX)	■	■	■	314
	Proximity sensor CRSMT-8	Magneto-resistive, corrosion resistant, to EU Explosion Protection Directive (ATEX)	■	■	■	314
	Proximity sensor SDBT	Magneto-resistive, NAMUR, to EU Explosion Protection Directive (ATEX)	■	■	■	314
6	Slot cover ABP-5-S	To keep dirt away from the sensor cable and slots	■	■	■	315
7	Solenoid valve	Namur port pattern, not with 8	■	■	■	23, 85, 151
8	Displacement encoder MLO-POT	Conversion of linear movement to voltage signal. The maximum stroke is 700 mm	■	■	■	313

Linear actuators DLP, Copac

Technical data

Function



- Diameter
80 ... 320 mm

- Stroke length
40 ... 600 mm, additional
stroke lengths upon request

- Force
2800 ... 48000 N



General technical data

Piston Ø	80	100	125	160	200	250	320
Pneumatic connection	G1/4						
Based on standard	DIN 3358						
Valve connection conforms to	VDI/VDE 3845 (NAMUR)						
Design	Piston cylinder, double-acting						
Cushioning	None						
Stroke reserve [mm]	2					4	
Assembly position	Any						
Position sensing	Via proximity sensor						
Efficiency actuator [%]	95						

Operating and environmental conditions

Operating pressure ¹⁾ [bar]	2 ... 8
Nominal operating pressure [bar]	6
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)
Ambient temperature ²⁾³⁾ [°C]	-20 ... +80
Corrosion resistance class CRC ⁴⁾	3
CE marking (see declaration of conformity) → www.festo.com	To EU Explosion Protection Directive (ATEX)
ATEX category gas	II 2G
Ex-ignition protection type gas	c T4
ATEX category dust	II 2D
EX-ignition protection type dust	c 120°C
ATEX ambient temperature ³⁾	-20°C ≤ Ta ≤ +60°C

1) Depending upon the counter force of the valve slide, a higher minimum pressure may be required to actuate the overall system

2) Further temperature ranges upon request

3) Note operating range of proximity sensors

4) Corrosion resistance class CRC 3 to Festo standard FN 940070

High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

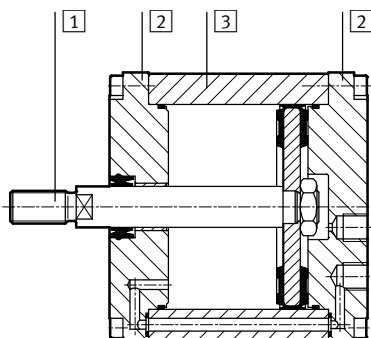
Technical data

Forces [N] and air consumption [NL]							
Piston \varnothing	80	100	125	160	200	250	320
Theoretical force at 6 bar, advancing	3016	4712	7363	12064	18850	29452	48255
Theoretical force at 6 bar, retracting	2827	4524	6881	11581	18080	28698	47501
Theoretical air consumption at 6 bar and 10 mm stroke, pushing	0.35	0.55	0.86	1.41	2.12	3.44	5.63
Theoretical air consumption at 6 bar and 10 mm stroke, pulling	0.33	0.53	0.80	1.35	2.11	3.35	5.54

Weights [g]							
Piston \varnothing	80	100	125	160	200	250	320
Basic weight with 0 mm stroke	1843	2801	4855	5854	12831	21117	33907
Additional weight per 10 mm stroke	68	80	145	159	187	325	399
Moving load with 0 mm stroke	624	997	1809	2183	4691	6650	11040
Additional moving load per 10 mm stroke	25	25	63	63	99	99	99

Materials

Sectional view



Linear actuator		
1	Piston rod	\varnothing 80 ... 320 High-alloy stainless steel
2	Cylinder cap	\varnothing 80 ... 160, 250, 320 Wrought aluminium alloy
		\varnothing 200 Cast aluminium
3	Cylinder barrel	\varnothing 80 ... 160, 320 Wrought aluminium alloy, smooth anodised
		\varnothing 200, 250 High alloy steel
-	Seals	\varnothing 80... 320 NBR
		\varnothing 80, 100, 320 NBR, TPE-U (PU)

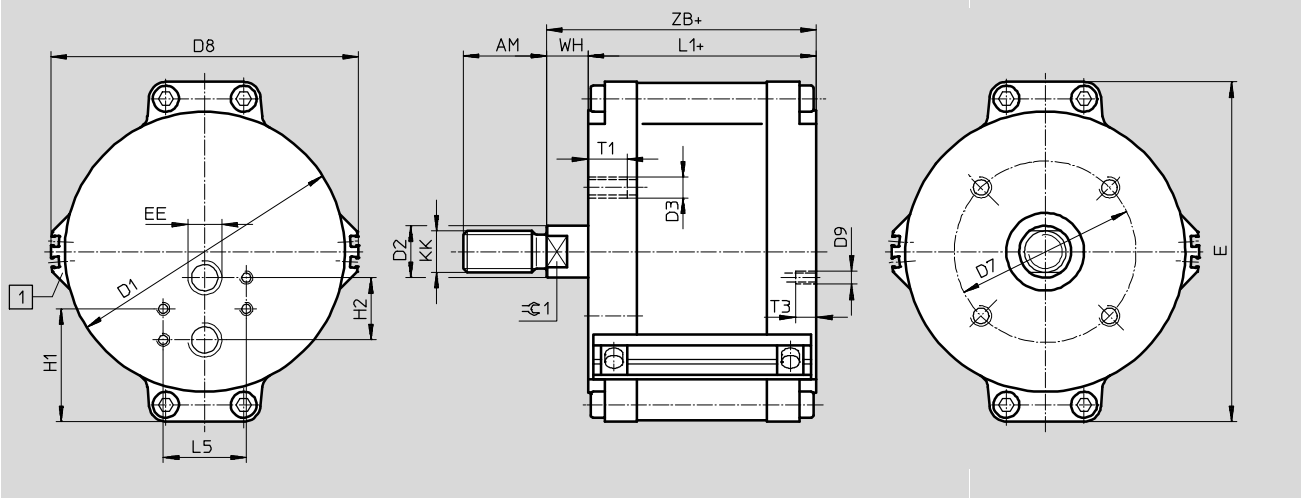
Linear actuators DLP, Copac

Technical data

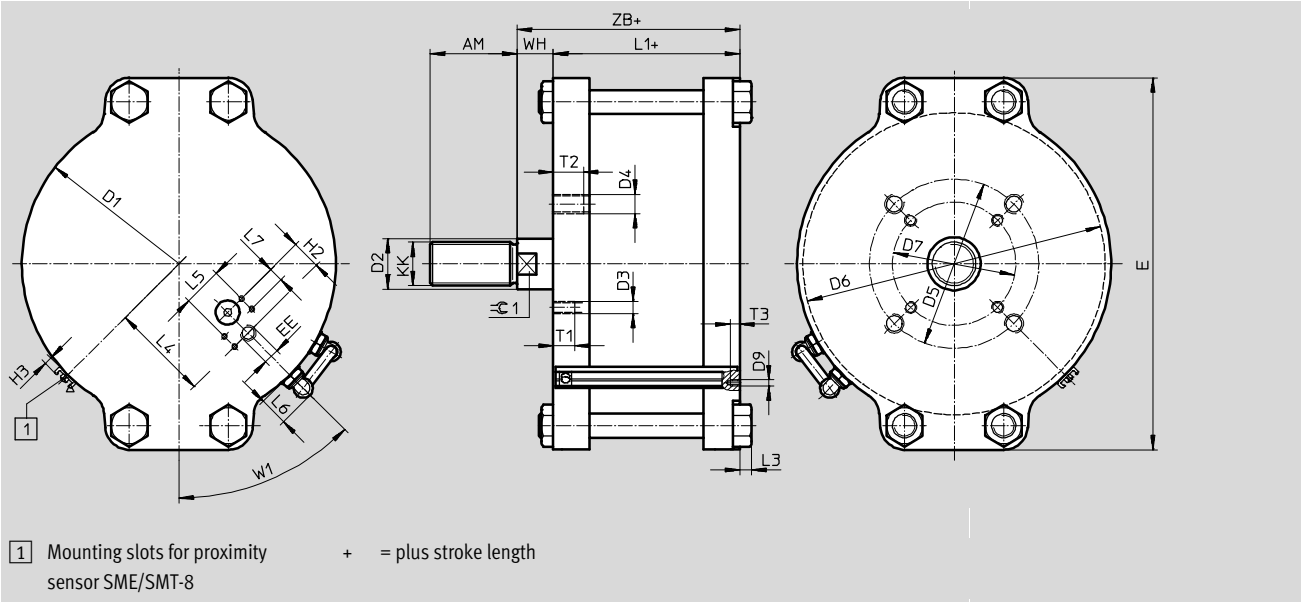
Dimensions

Ø 80 ... 160

Download CAD data → www.festo.com



Ø 200 ... 320



04

Linear drives


Technical data

∅	AM	D1 ∅	D2 ∅	D3 ∅	D4 ∅	D5 ∅	D6 ∅	D7 ∅	D8 ∅	D9 ∅	E	EE	H1	H2	H3
[mm]	-2														
DLP-80-...-A	32	87	20	M8	-	-	-	70	99	M5	108	G1/4	43.5	24	-
DLP-100-...-A	32	108	20	M8	-	-	-	70	119	M5	131	G1/4	43.5	24	-
DLP-125-...-A	54	135	32	M10	-	-	-	102	147	M5	163	G1/4	43.5	24	-
DLP-160-...-A	54	170	32	M10	-	-	-	102	182	M5	199	G1/4	43.5	24	-
DLP-200-...-A	72	216	40	M10	M16	140	210	102	-	M5	271	G1/4	43.5	24	4.5
DLP-250-...-A	72	260	40	M10	M16	140	244	102	-	M5	308	G1/4	43.5	24	4.5
DLP-320-...-A	72	332	40	M10	M16	140	324	102	-	M5	378	G1/4	43.5	24	4.5

∅	KK	L1	L3	L4	L5	L6	L7	T1	T2	T3	W1	WH	ZB	≈C1
[mm]														
DLP-80-...-A	M16x1.5	100 _{+1.4/-0.4}	-	-	32	-	-	15	-	8	45°	16 _{+0.6/-1.8}	116 _{+0.6/-0.8}	16
DLP-100-...-A	M16x1.5	104 _{+1.4/-0.4}	-	-	32	-	-	15	-	8	45°	16 _{+0.6/-1.8}	120 _{+0.6/-0.8}	16
DLP-125-...-A	M27x2	114 _{+1.6/-0.6}	-	-	32	-	-	18	-	8	45°	24 _{+0.8/-1.8}	138 _{+0.8/-1.0}	27
DLP-160-...-A	M27x2	114 _{+1.6/-0.6}	-	-	32	-	-	18	-	8	45°	24 _{+1.2/-1.8}	138 _{+1.2/-0.8}	27
DLP-200-...-A	M36x2	150 _{+0.8/-1.0}	10	81	32	24.5	12	20	24	8	45°	30 _{±1.4}	180 _{±1}	36
DLP-250-...-A	M36x2	152 _{+0.8/-1.4}	25	94	32	24.5	12	20	25	8	45°	30 _{+1.8/-1.4}	182 _{±1}	36
DLP-320-...-A	M36x2	159 _{+0.8/-1.4}	-	130	32	24.5	12	20	25	8	45°	30 _{+1.8/-1.6}	189 _{+0.8/-1.2}	36

Linear actuators DLP, Copac

Technical data

Ordering data				
Version	Piston \varnothing [mm]	Stroke [mm]	Part No.	Type
With position sensing				
	80	40 ... 500	187479	DLP-80-...-A
	100	50 ... 500	187480	DLP-100-...-A
	125	50 ... 500	187481	DLP-125-...-A
	160	100 ... 500	187482	DLP-160-...-A
	200	100 ... 600	542711	DLP-200-...-A
	250	100 ... 600	187483	DLP-250-...-A
	320	150 ... 600	187484	DLP-320-...-A





-  - Note




Stroke length of the actuator


Generally, the stroke length of the Copac linear actuator corresponds to the nominal diameter of the process valve. The system tolerances may lead to a greater stroke range than the specified nominal stroke range of the linear actuator. The zero point is


set with an adjustable rod clevis. This ensures that the end position of the valve slide is reached and the zero position of the system is fixed. Additional stroke lengths upon request

Accessories

Ordering data – Piston rod attachments				Technical data → Internet: piston rod attachment			
Designation	For Ø	Part No.	Type	Designation	For Ø	Part No.	Type
Rod eye SGS				Rod clevis SG			
	80, 100	9263	SGS-M16x1,5		80, 100	6146	SG-M16x1,5
	125, 160	10774	SGS-M27x2		125, 160	14987	SG-M27x2-B
	200, 250, 320	10775	SGS-M36x2		200, 250, 320	9581	SG-M36x2
Rod clevis SGA				Self-aligning rod coupler FK			
	80, 100	10768	SGA-M16x1,5		80, 100	6142	FK-M16x1,5
	125, 160	10770	SGA-M27x2		125, 160	10485	FK-M27x2
	200, 250, 320	10771	SGA-M36x2		200, 250, 320	10746	FK-M36x2

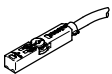
Ordering data – Piston rod attachments, corrosion-resistant				Technical data → Internet: piston rod attachment			
Designation	For Ø	Part No.	Type	Designation	For Ø	Part No.	Type
Rod eye CRSG				Rod clevis CRSGS			
	80, 100	13571	CRSG-M16x1,5		80, 100	195584	CRSGS-M16x1,5
	125, 160	185361	CRSG-M27x2		125, 160	195586	CRSGS-M27x2
Self-aligning rod coupler CRFK							
	80	2490673	CRFK-M16x1,5				
	100						

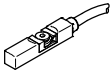
Ordering data – Displacement encoders		Technical data → Internet: mlo	
	Stroke [mm]	Part No.	Type
	100	192213	MLO-POT-100-LWG
	150	192214	MLO-POT-150-LWG
	225	152645	MLO-POT-225-LWG
	300	152646	MLO-POT-300-LWG
	360	152647	MLO-POT-360-LWG
	450	152648	MLO-POT-450-LWG
	600	152650	MLO-POT-600-LWG
	750	152651	MLO-POT-750-LWG

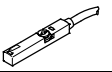
Ordering data – Plug socket for displacement encoder			Technical data → Internet: sd-4	
	Pin	Pin allocation	Part No.	Type
	1	Power supply	194332	SD-4-WD-7
	2	Signal		
	3	0 V		
	4	PE (yellow), screened		

Linear actuators DLP, Copac







Accessories

Ordering data – Proximity sensor for T-slot, magneto-resistive					Technical data → Internet: smt-8	
	Switching output	Electrical connection		Cable length [m]	Part No.	Type
		Cable	Plug M8x1			
N/O contact						
	Contactless	2-wire	–	5	574341	SMT-8M-A-ZS-24V-E-5,0-OE-EX2
	PNP	–	3-pin	0.3	574342	SMT-8M-A-PS-24V-E-0,3-M8D-EX2

Ordering data – Proximity sensor for T-slot, corrosion resistant					Technical data → Internet: crsmt	
	Switching output	Electrical connection		Cable length [m]	Part No.	Type
		Cable	Plug M8x1			
N/O contact						
	PNP	Cable, 3-wire	–	5	574380	CRSMT-8M-PS-24V-K-5,0-OE

Ordering data – Proximity sensor for T-slot, NAMUR					Technical data → Internet: sdbt	
	Switching output	Electrical connection		Cable length [m]	Part No.	Type
		Cable	Plug M8x1			
N/O contact						
	NAMUR	Cable, 2-wire	–	5	579071	SDBT-MS-20NL-ZN-E-5-LE-EX6
				10	579072	SDBT-MS-20NL-ZN-E-10-LE-EX6

Accessories

Ordering data – Connecting cable M8x1					Technical data → Internet: nebu	
	Electrical connection, left	Electrical connection, right	Switching output	Cable length [m]	Part No.	Type
Basic version						
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	–	2.5	541333	NEBU-M8G3-K-2.5-LE3
				5	541334	NEBU-M8G3-K-5-LE3
				10	541332	NEBU-M8G3-K-10-LE3
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	–	2.5	541338	NEBU-M8W3-K-2.5-LE3
				5	541341	NEBU-M8W3-K-5-LE3
				10	541335	NEBU-M8W3-K-10-LE3
With switching status display						
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	PNP	2.5	541337	NEBU-M8W5P-K-2.5-LE3
				5	541340	NEBU-M8W5P-K-5-LE3
			NPN	2.5	541336	NEBU-M8W5N-K-2.5-LE3
				5	541339	NEBU-M8W5N-K-5-LE3
Ordering data – Slot cover for T-slot						
	Assembly	Length [m]		Part No.	Type	
	Insertable from above	2x 0.5		151680	ABP-5-S	
Ordering data – Cable clip SMBK-8						
				Part No.	Type	
	For fixing the cable in the sensor slot			534254	SMBK-8	
Ordering data – Inscription labels						
	Material	Usage	Dimensions [mm]	Part No.	Type	PJ ¹⁾
	Polycarbonate	For insertion in the inscription label holder	23x4	541598	ASLR-L-423	34

1) Packaging unit per frame

Linear actuators

DFPI



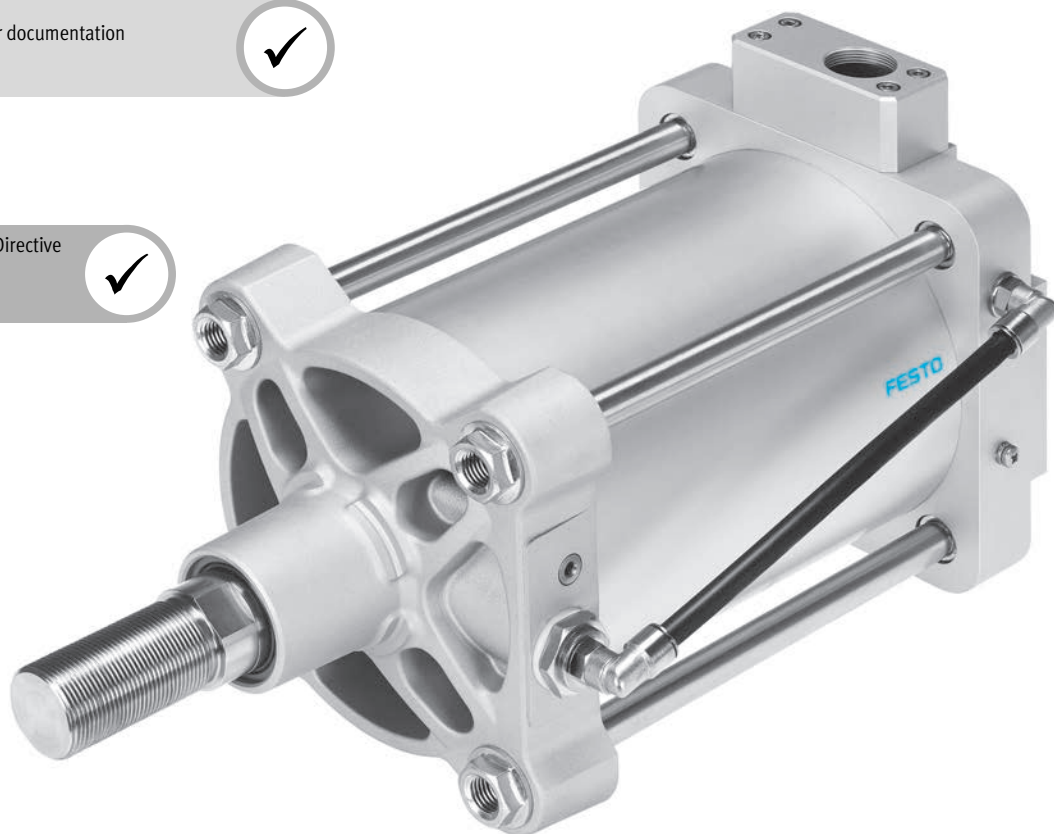
Overview, configuration and ordering
→ www.festo.com/catalogue/dfpi



Additional information, support and user documentation
→ www.festo.com/sp/dfpi



Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/ex



- + Double-acting
- + Integrated displacement encoder
- + Optionally with integrated positioner
- + Mounting interface based on ISO 15552 or DIN EN ISO 5210
- + Different connection versions

- + Diameter 100, 125, 160, 200, 250, 320 mm
- + Force 4712 ... 48255 N
- + Stroke length 40 ... 990 mm

Linear actuators DFPI

Key features

Function

DFPIs are closed-loop controlled linear actuators. They are available with integrated displacement encoder (DFPI-...-E-...) or fully integrated positioner (DFPI-...-C1V-...). In the version DFPI-...-E-..., the potentiometric displacement encoder supplies an analogue voltage signal proportional to the piston position. This can be

used for operation with an external positioner. In the version DFPI-...-C1V-..., the integrated positioner provides the positioning function. This actuator has a factory-defined safety position that is assumed if the operating voltage or the analogue setpoint value fails. The

position is preset via an analogue setpoint signal in the range of 4 ... 20 mA. The position feedback takes place via an analogue feedback signal in the range of 4 ... 20 mA. The feedback signal provides the user with greater reliability and easier diagnostics. The travel speed can be

adjusted using the integrated flow control screws. Variants with a mounting interface to ISO 15552 or DIN EN ISO 5210 are available. The sturdy corrosion-resistant design of the DFPI is ideal for use under harsh ambient conditions.

Innovative

- Ready-to-install, compact unit for easy installation
- Sturdy and corrosion-resistant, ideal for use under harsh ambient conditions

Flexible

- Wide range of accessories for virtually any installation situation
- Suitable for use in potentially explosive locations
- Additional contactless binary end-position sensing possible with proximity sensors
- Suitable for applications with closed-loop controlled linear and swivel motion

Design

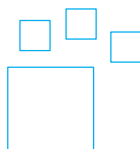
- Double-acting
- Optionally with integrated displacement encoder or fully integrated positioner
- Sizes Ø 100, Ø 125, Ø 160, Ø 200, Ø 250 and Ø 320
- Stroke lengths 40 to 990 mm
- Mounting interfaces to ISO 15552 or DIN EN ISO 5210

- IP65, IP67, IP69K, NEMA4
- ATEX certification

04

Linear drives

Ordering data – Product options



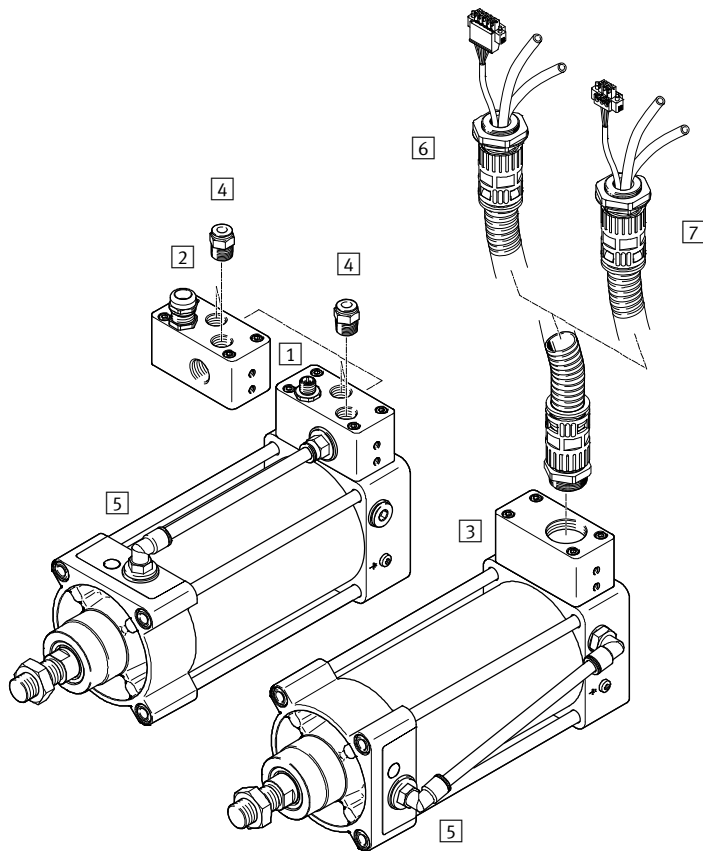
Configurable product
This product and all its product options can be ordered using the configurator.

The configurator can be found at
→ www.festo.com/catalogue/...

Part no.	Type
5078949	DFPI-100
5087658	DFPI-125
5091793	DFPI-160
5092508	DFPI-200
5099770	DFPI-250
5106115	DFPI-320

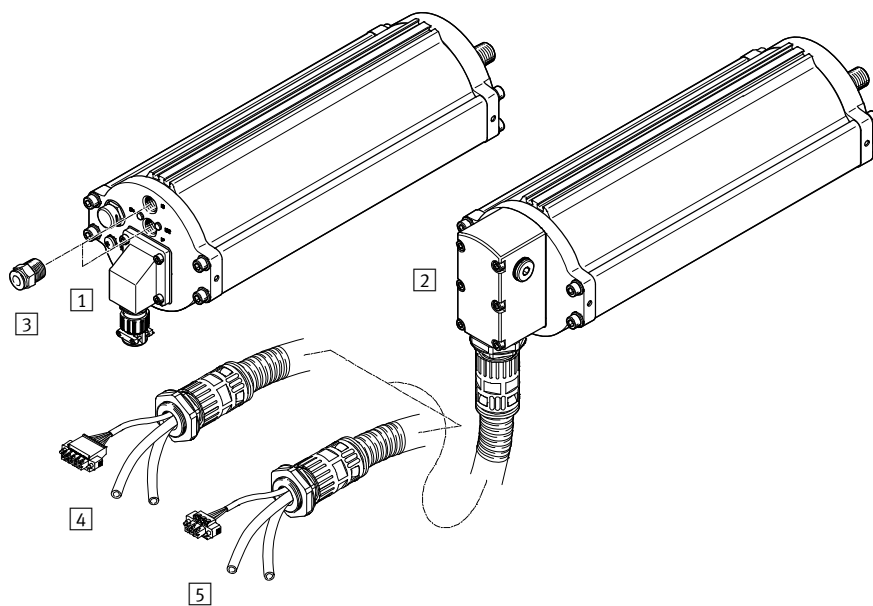
Key features

Product options for DFPI-...-NB3P... based on ISO 15552



- 1) M12x1 plug, 5-pin, A-coded
- 2) Cable connector M16x1.5
- 3) Metal flanged socket
- 4) Push-in fitting QS¹⁾
- 5) Air duct at the actuator, stainless steel pipe or plastic tubing
- 6) Connecting cable NHSB¹⁾, 5-wire, for DFPI-...-C1V-P-A
- 7) Connecting cable NHSB¹⁾, 3-wire, for DFPI-...-E-P

Product options for DFPI-...-E-... and DFPI-...-C1V-... based on DIN EN ISO 5210



- 1) Plastic flanged socket
- 2) Metal flanged socket
- 3) Push-in fitting QS¹⁾
- 4) Connecting cable NHSB¹⁾, 5-wire, for DFPI-...-C1V-P-A
- 5) Connecting cable NHSB¹⁾, 3-wire, for DFPI-...-E-P

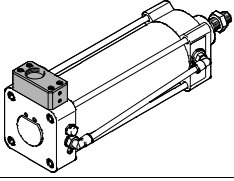
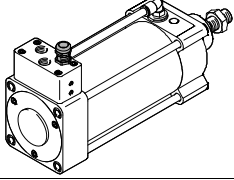
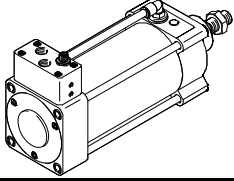
1) Can be ordered separately as an accessory

Linear actuators DFPI

Product range overview

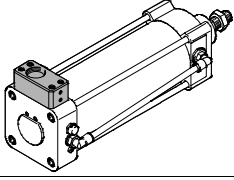
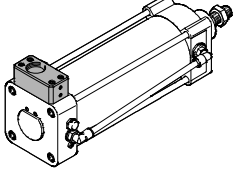
DFPI-...-E-NB3...

- For operation with an external positioner with analogue voltage input
- Potentiometric displacement encoder integrated into the actuator DFPI
- Sturdy tie rod design
- Double-acting
- Mounting interfaces to ISO 15552 on bearing and end caps

Version		Characteristics	→ Page
DFPI-...-E-NB3...	DFPI-...-E-NB3P-...	 <ul style="list-style-type: none"> • Electrical, pneumatic connection using metal flanged socket, pre-assembled connecting cable NHSB, see → page 352 • Air duct on the outside of the actuator via plastic tubing 	327
	DFPI-...-E-NB3P9B2-...	 <ul style="list-style-type: none"> • Electrical connection using cable connector M16x1.5, screw terminal • Pneumatic connection G3/8 • Air duct on the outside of the actuator, either using a stainless steel pipe for variant DFPI-...-E-NB3P9B2-M or plastic tubing for variant DFPI-...-E-NB3P9B2 	327
	DFPI-...-E-NB3M12B2-...	 <ul style="list-style-type: none"> • Electrical connection via M12x1 plug, 5-pin • Pneumatic connection G3/8 • Air duct on the outside of the actuator, either using a stainless steel pipe for variant DFPI-...-E-NB3M12B2-M or plastic tubing for variant DFPI-...-E-NB3M12B2 	327

DFPI-...-C1V-NB3...

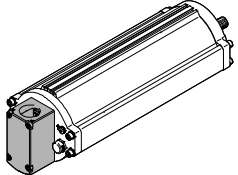
- Digital electropneumatic positioner integrated within the drive housing
- Setpoint input 4 ... 20 mA
- Position feedback 4 ... 20 mA
- Safety position either retracting or advancing piston rod depending on the product version
- Sturdy tie rod design
- Double-acting
- Mounting interfaces to ISO 15552 on bearing and end caps

Version		Characteristics	→ Page
DFPI-...-C1V-NB3	DFPI-...-C1V-NB3P-A	 <ul style="list-style-type: none"> • Electrical, pneumatic connection using metal flanged socket, pre-assembled connecting cable NHSB, see → page 352 • Air duct on the outside of the actuator via plastic tubing • Safety position if the operating voltage or setpoint signal fails: retracting piston rod 	333
	DFPI-...-C1V-NB3P-R-A	 <ul style="list-style-type: none"> • Electrical, pneumatic connection using metal flanged socket, pre-assembled connecting cable NHSB, see → page 352 • Air duct on the outside of the actuator via plastic tubing • Safety position if the operating voltage or setpoint signal fails: advancing piston rod 	333

Product range overview

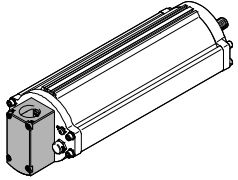
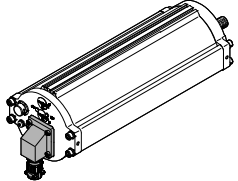
DFPI-...-E-...

- For operation with an external positioner with analogue voltage input
- Potentiometric displacement encoder integrated into the actuator
- Integrated air duct on the actuator
- Double-acting
- Mounting interfaces for process valves to DIN EN ISO 5210

Version		Characteristics	→ Page
DFPI-...-E-...	DFPI-...-E-P-G2	 <ul style="list-style-type: none"> • Electrical, pneumatic connection using metal flanged socket, pre-assembled connecting cable NHSB, → page 352 	340

DFPI-...-C1V-...

- Digital electropneumatic positioner integrated within the drive housing
- Setpoint input 4 ... 20 mA
- Position feedback 4 ... 20 mA
- Retracting piston rod safety position
- Integrated air duct on the actuator
- Double-acting
- Mounting interfaces for process valves to DIN EN ISO 5210

Version		Characteristics	→ Page
DFPI-...-C1V-...	DFPI-...-C1V-P-A	 <ul style="list-style-type: none"> • Electrical, pneumatic connection using metal flanged socket, pre-assembled connecting cable NHSB, → page 352 	346
	DFPI-...-C1V-A	 <ul style="list-style-type: none"> • Electrical connection using plastic flanged socket, screw terminal • Pneumatic connection G1/4 	346

Linear actuators DFPI

Type codes

DFPI - 100 - 200 - N D2 P - C1 - V -

Type	
DFPI	Closed-loop controlled actuator for process automation

Piston diameter	
100	100 mm
125	125 mm
160	160 mm
200	200 mm
250	250 mm
320	320 mm

Stroke	
	x length [40 ... 990 mm]

Cushioning	
N	No cushioning

Displacement encoder	
D2	Analogue

Method of measurement	
P	Potentiometer

Control unit	
-	None
C1	Closed-loop controller 1

Closed-loop controller attachment position	
-	Integrated
E	External

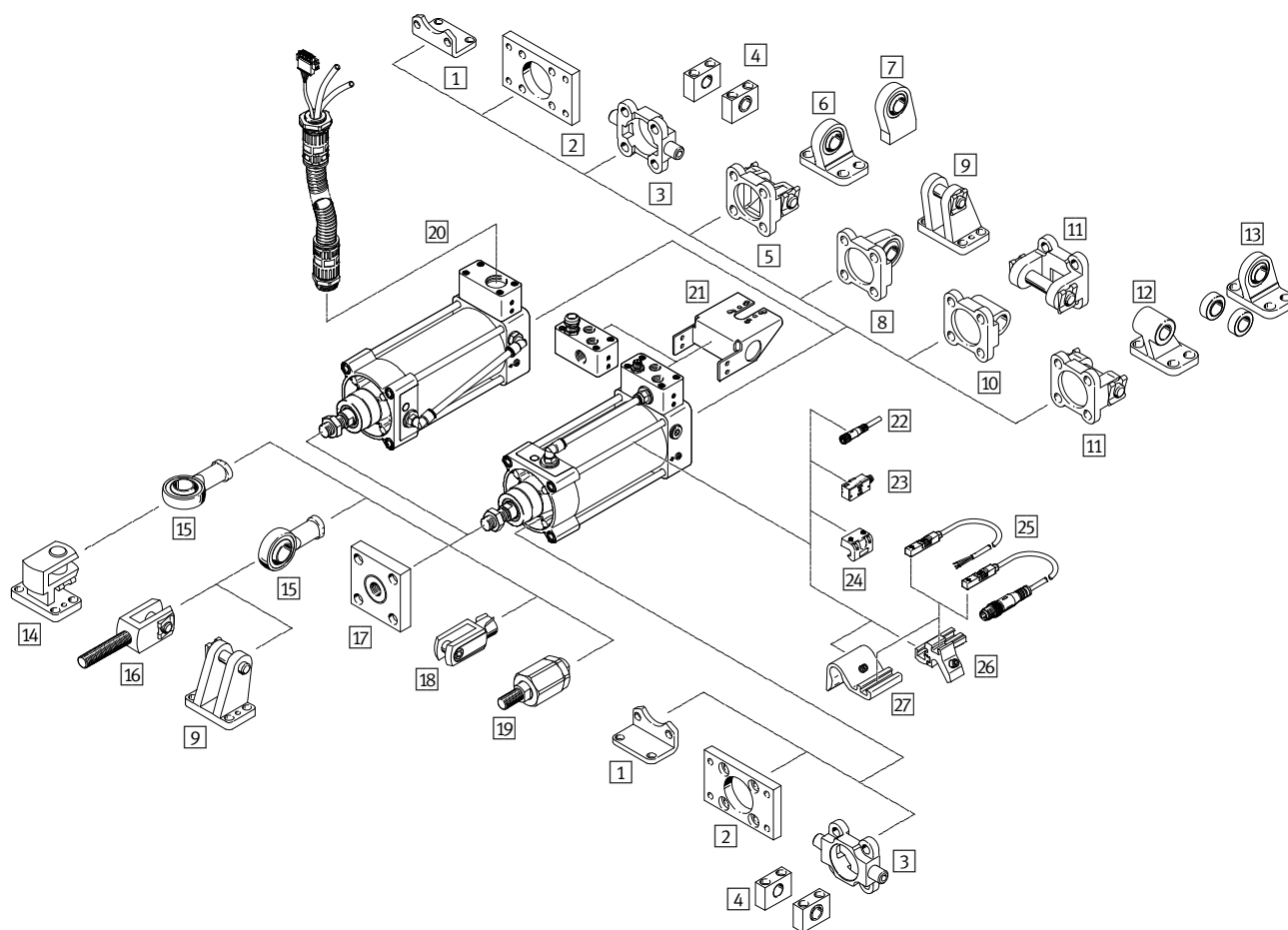
Directional control valve	
-	None
V	Integrated

Type codes

		NB3	P	-		-		-	A	-		-	
Standard													
-	Not according to standard												
NB3	Based on ISO 15552												
Connection type													
-	Standard												
P	Protected												
P9	Cable connector												
M12	Plug M12x1, A-coded												
Connection type material													
-	Standard												
B2	Brass, nickel-plated												
Safety position													
-	Advancing												
R	Retracting												
Additional function													
-	Standard												
A	Position feedback 4 ... 20 mA												
Tubing													
-	Standard												
M	Metal												
Generation													
-	First generation												
G2	Second generation												

Linear actuators DFPI-NB3...

Overview of peripherals for DFPI based on ISO 15552



Mounting components and accessories		Description	→ Page/Internet
1	Foot mounting HNC/CRHNC	For bearing or end caps	354
	Foot mounting HNG	For bearing or end caps, corresponds to MS1 to ISO 15552	354
2	Flange mounting FNC/CRFNG	For bearing or end caps	356
	Flange mounting FNG	For bearing or end cap, corresponds to MF1/MF2 to ISO 15552	356
3	Trunnion flange ZNCF/CRZNG	For bearing or end caps	357
4	Trunnion support LNZG/CRLNZG	For trunnion flange ZNCF/CRZNG	358
5	Swivel flange SNC	For end caps	359
	Swivel flange SNG	For end caps	359
6	Clevis foot LSNG	With spherical bearing	365

04

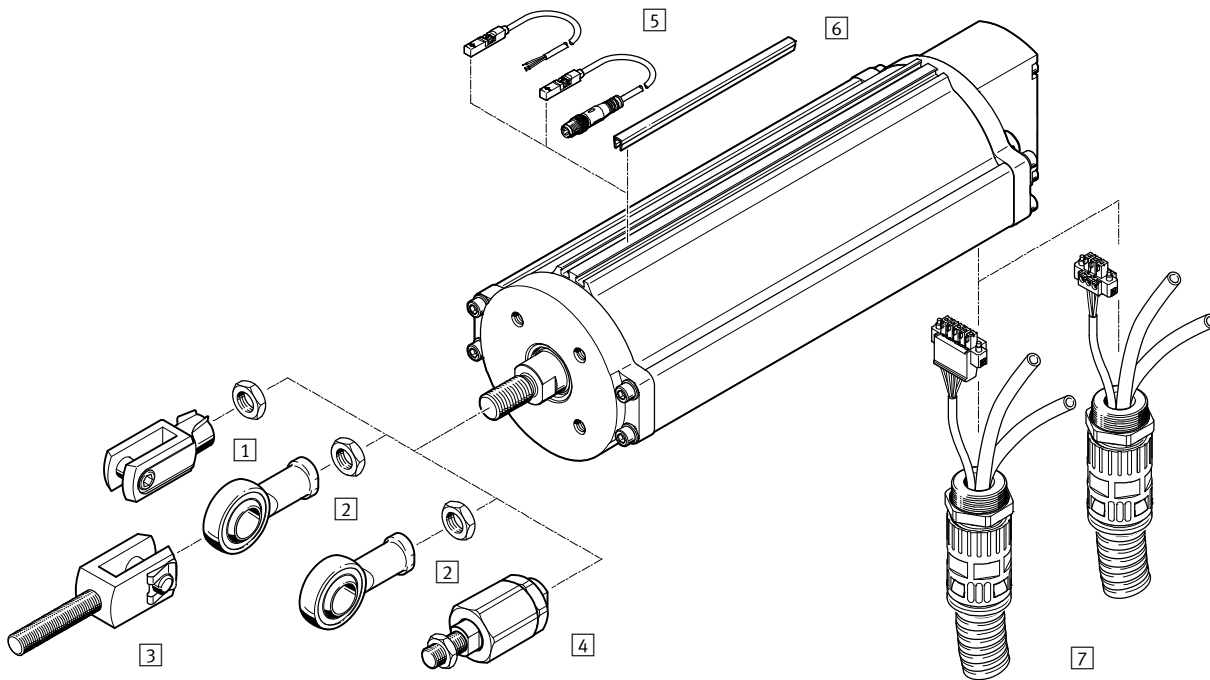
Linear drives

Overview of peripherals for DFPI based on ISO 15552

Mounting components and accessories		Description	→ Page/Internet
7	Clevis foot LSNSG	Weld-on, with spherical bearing	365
8	Swivel flange SNCS	With spherical bearing for end caps	361
9	Clevis foot LBG	For swivel flange SNCS	365
10	Swivel flange SNCL	For end caps	362
	Swivel flange SNGL	For end caps, corresponds to MP2 to ISO 15552	362
11	Swivel flange SNCB/SNCB-...-R3	For end caps	360
	Swivel flange SNGB	For end caps, corresponds to MP2 to ISO 15552	360
12	Clevis foot LNG/CRLNG	For swivel flange SNCB	365
	Clevis foot LN/LNG	For swivel flange SNGB	365
13	Clevis foot LSN	With spherical bearing	365
14	Right-angle clevis foot LQG	For rod eye SGS	365
15	Rod eye SGS/CRSGS	With spherical bearing	366
16	Rod clevis SGA	With male thread	366
17	Coupling piece KSG	To compensate for radial deviations	366
18	Rod clevis SG/CRSG	Permits a swivel motion of the cylinder in one plane	366
19	Self-aligning rod coupler FK/CRFK	To compensate for radial and angular deviations	366
20	Connecting cable NHSB	For electrical and pneumatic connection of linear actuator DFPI-...-P-... <ul style="list-style-type: none"> • 3-wire, for DFPI-...-E-P • 5-wire, for DFPI-...-C1V-P-A 	352
21	DADG-AK-F6-A2	Mounting bracket for mounting a positioner with interface according to VDI/VDE 3845 or mounting with a hole spacing of 150 mm	363
22	Connecting cable NEBU	For proximity sensor	368
23	Proximity sensor SMPO-1-H-B	For sensing the piston position	368
24	Mounting kit SMBS	For proximity sensor SMPO-1-H-B 41	368
25	Proximity sensor SMT-8M-A	Magneto-resistive, 5 ... 30 V DC, to EU Explosion Protection Directive (ATEX)	367
	Proximity sensor CRSMT-8	Magneto-resistive, corrosion-resistant, to EU Explosion Protection Directive (ATEX)	367
	Proximity sensor SDBT	Magneto-resistive, NAMUR, to EU Explosion Protection Directive (ATEX)	367
26	Mounting kit SMBZ-8- ...	For proximity sensor SME/SMT-8M, for piston diameter 100	367
27	Sensor bracket DASP-M4- ...	For proximity sensor SME/SMT-8M, for piston diameters 125, 160, 200, 250, 320	367

Linear actuators DFPI-...-E-... and DFPI-...-C1V-...

Overview of peripherals for DFPI based on DIN EN ISO 5210



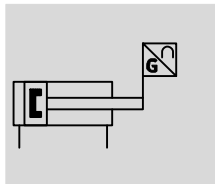
Mounting components and accessories




	Description	→ Page/Internet
1	Rod clevis SG	366
	Rod clevis, stainless steel CRSG	366
2	Rod eye SGS	366
	Rod eye, stainless steel CRSGS	366
3	Rod clevis SGA	366
4	Self-aligning rod coupler FK	366
5	Proximity sensor SMT-8M-A	367
	Proximity sensor CRSMT-8	367
	Proximity sensor SDBT	367
6	Slot cover ABP-5-S	367
7	Connecting cable NHSB	352

Linear drives

Technical data

Function



-  Piston diameter
100 ... 320 mm
-  Stroke
40 ... 990 mm
-  Force
4417 ... 46385 N



General technical data

Stroke	[mm]	40 ... 990
Mode of operation		Double-acting
Based on standard		ISO 15552
Cushioning		No cushioning
Mounting position		Any
Design		Piston
		Piston rod
		Tie rod
		Cylinder barrel
Position sensing		With integrated displacement encoder
Measuring principle of displacement encoder		Potentiometer
Pneumatic connection		
DFPI-...-E-NB3P...		With specific accessories, for tubing O.D. of 8 mm
DFPI-...-E-NB3M12B2		G3/8
DFPI-...-E-NB3P9B2		G3/8
Electrical connection		
DFPI-...-E-NB3P...		With specific accessories, 3-pin, straight plug, screw terminal
DFPI-...-E-NB3M12B2		M12x1, 5-pin, straight plug, A-coded
DFPI-...-E-NB3P9B2		Cable connector M16x1.5, 3-pin, straight plug, screw terminal

General electrical data

Operating voltage range	[V DC]	0 ... 15
Resistance value of displacement encoder (on the TET) dependent on the stroke length ¹⁾		
≤ 290 mm	[kΩ]	5
> 290 ... 590 mm	[kΩ]	10
> 590 ... 990 mm	[kΩ]	20
Displacement encoder		
Recommended loop current	[μA]	< 0.1
Max. short-time loop current	[mA]	10
Independent linearity	[%]	±0.04
Repetition accuracy	[mm]	±0.12
Hysteresis	[mm]	0.33

1) TET = theoretical electrical travel

Linear actuators DFPI-...-E-NB3...

Technical data

Operating and environmental conditions	
Operating pressure [bar]	3 ... 8
Nominal operating pressure [bar]	6
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Storage temperature [°C]	-20 ... +80
Ambient temperature [°C]	-20 ... +80
Relative humidity [%]	5 ... 100, condensing
Degree of protection	IP65, IP67, IP69K, NEMA 4
Vibration resistance in accordance with DIN/IEC 68, Part 2-6	Tested to severity level 2
Continuous shock resistance in accordance with DIN/IEC 68, Part 2-82	Tested to severity level 2
CE marking (see declaration of conformity) ¹⁾	To EU Explosion Protection Directive (ATEX)

1) Additional information www.festo.com/sp → Certificates.

ATEX	
ATEX category for gas	II 2G
Type of ignition protection for gas	c T4
ATEX category for dust	II 2D
Type of ignition protection for dust	c 120°C
Explosion-proof ambient temperature rating	-20 °C ≤ Ta ≤ +60 °C

Forces [N] and impact energy [J]						
Piston diameter	100	125	160	200	250	320
Theoretical force at 6 bar, advancing	4712	7363	12064	18850	29452	48255
Theoretical force at 6 bar, retracting	4417	6881	11581	18080	28274	46385
Max. impact energy in the end positions	1.3	1.0	1.4	1.0	1.9	2.4

Permissible impact velocity:

$$v_{perm.} = \sqrt{\frac{2 \times E_{perm.}}{m_{intrinsic} + m_{Load}}}$$

Maximum permissible load:

$$m_{Load} = \frac{2 \times E_{perm.}}{v^2} - m_{intrinsic}$$

$v_{perm.}$ Permissible impact velocity
 $E_{perm.}$ Maximum impact energy
 $m_{intrinsic}$ Moving mass (actuator)
 m_{Load} Moving payload

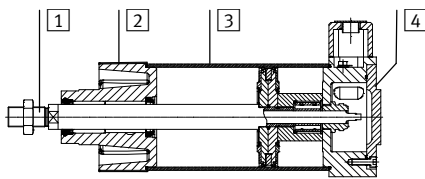
Air consumption [l]						
Piston diameter	100	125	160	200	250	320
Air consumption, advancing, per 10 mm stroke	0.549	0.859	1.407	2.119	3.436	5.63
Air consumption, retracting, per 10 mm stroke	0.515	0.803	1.351	2.111	3.299	5.412

Technical data

Weights [g]						
Piston diameter	100	125	160	200	250	320
Basic weight with 0 mm stroke	4900	7500	12800	18100	31100	57700
Additional weight per 10 mm stroke	90	134	200	238	358	582
Moving mass at 0 mm stroke	1060	1900	3700	4800	9300	16500
Additional moving mass per 10 mm stroke	28	53	89	89	134	227

Materials

Sectional view



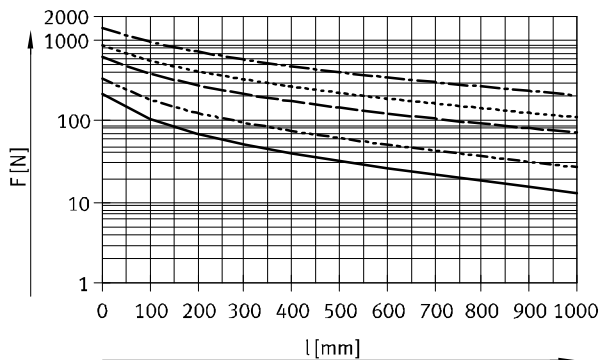
	Piston diameter	
1 Piston rod	100 ... 320	High-alloy stainless steel
2 Bottom cover	100 ... 320	Coated die-cast aluminium
3 Cylinder barrel	100 ... 320	Smooth anodised wrought aluminium alloy
4 End cap	100 ... 320	Coated wrought aluminium alloy
- Tie rod	100 ... 320	High-alloy stainless steel
- Screws	100 ... 320	Coated steel High-alloy stainless steel
- Piston rod wiper seal	100 125 ... 320	TPE-U (PU) NBR
- M12 plug DFPI-...-E-NB3M12B2	100 ... 320	Brass, nickel-plated
- Cable connector DFPI-...-E-NB3P9B2	100 ... 320	Brass, nickel-plated
- Air duct for characteristic value M	100 ... 320	Stainless steel pipe or plastic tubing
- Static seals	100 ... 320	NBR
- Note on materials	100 ... 320	RoHS-compliant Contains PWIS (paint-wetting impairment substances)

Max. lateral force as a function of stroke length l

The maximum lateral force (horizontal/vertical) applies to the static application. In closed-loop operation, the maximum lateral force needs to be adjusted to the

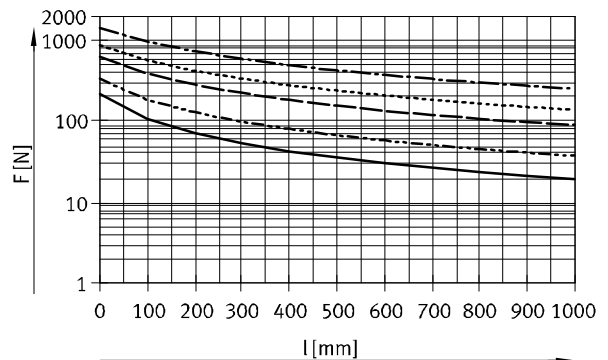
type of control. If necessary, the piston rod must be guided to avoid system vibration.

Horizontal lateral force



- Ø 100
- - - - Ø 125
- · - · Ø 160, 200
- · · · · Ø 250
- · · · · - - - - Ø 320

Vertical lateral force



- Ø 100
- - - - Ø 125
- · - · Ø 160, 200
- · · · · Ø 250
- · · · · - - - - Ø 320

04 Linear drives

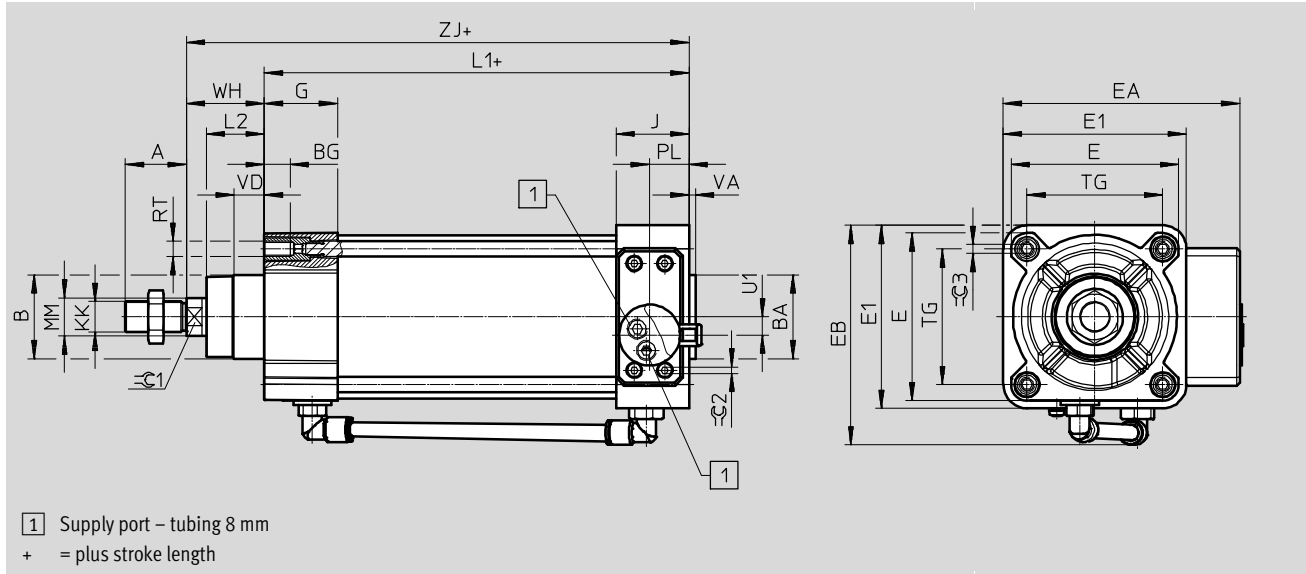
Linear actuators DFPI-...-E-NB3...

Technical data

Dimensions

Piston diameters 100, 125

Download CAD data → www.festo.com



Piston diameter [mm]	A	B ∅	BA ∅ d11	BG	E	E1	EA	EB	G	J	KK	L1
DFPI-100	40	55	55	17	110	120	155	146	48	48	M20x1.5	179
DFPI-125	54	60	60	20	136	145	180	173	44.7		M27x2	200

Piston diameter [mm]	L2	MM ∅	PL	RT	TG	U1	VD	VA -1	WH	ZJ	∅C1	∅C2	∅C3
DFPI-100	38	25	26	M10	89	12	19.2	4	51±1.8	229.7	22	4	6
DFPI-125	45.5	32		M12	110	22	20.5	6	65±2.2	264.7	27		8

04

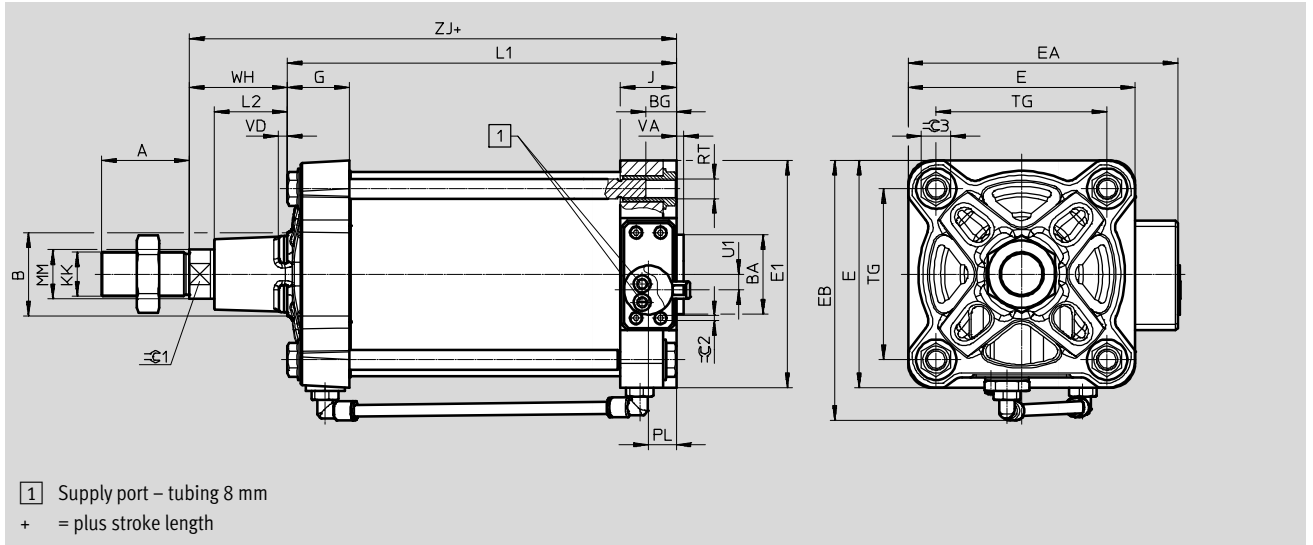
Linear drives

Technical data

Dimensions

Download CAD data → www.festo.com

Piston diameters 160, 200, 250, 320



Piston diameter [mm]	A	B ∅	BA ∅ d11	BG	E	E1	EA	EB	G	J	KK	L1
DFPI-160	72	65	65	24	186	186	221	212	51	46	M36x2	219
DFPI-200		75	75		230	230	265	256	47.2			225
DFPI-250	84	90	90	25	284	270	312	312	52	51.5	M42x2	254
DFPI-320	96	110	110	28	347	342	378.5	379	56	58	M48x2	281.2

Piston diameter [mm]	L2	MM ∅	PL	RT	TG	U1	VD	VA	WH	ZJ	⌀1	⌀2	⌀3
DFPI-160	60	40	23	M16	140	13	7.5	6	80	298.6	36	4	24
DFPI-200	70				175	32			95	320			
DFPI-250	80	50	29.5	M20	220	47	13.7	10	105	359	46		42
DFPI-320	90	63	36	M24	270	62	10.7	10	120	401.2	55		50

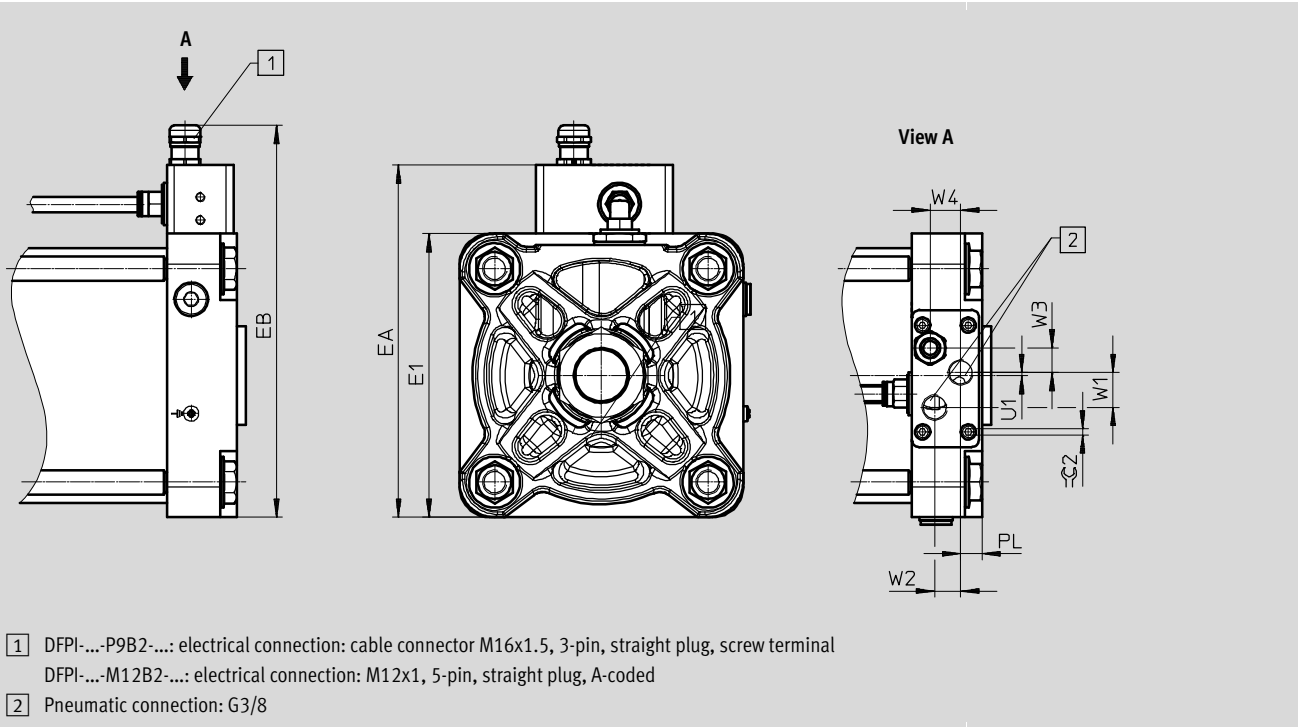
Linear actuators DFPI-...-E-NB3...

Technical data

Dimensions

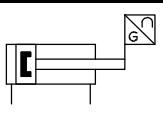
Download CAD data → www.festo.com

Variants DFPI-...-E-NB3P9B2-... and DFPI-...-E-NB3M12B2-...



Type	E1	EA	EB	PL	U1	W1	W2	W3	W4	≈ 2
DFPI-100-...-P9	110	157	183.5	16	4	23	17	16	20	4
DFPI-100-...-M12			170							
DFPI-125-...-P9	136	183	209.5	14	6	23	17	16	20	4
DFPI-125-...-M12			196							
DFPI-160-...-P9	186	231	275.5	14	2	23	17	16	20	4
DFPI-160-...-M12			244							
DFPI-200-...-P9	230	272	298.5	19.5	11	23	17	16	20	4
DFPI-200-...-M12			285							
DFPI-250-...-P9	270	322.6	349.1	26	11	23	17	16	20	4
DFPI-250-...-M12			335.6							
DFPI-320-...-P9	340	393.5	420	26	11	23	17	16	20	4
DFPI-320-...-M12			406.5							

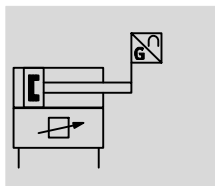
Ordering data




 <ul style="list-style-type: none"> Linear actuators with integrated displacement encoder Based on ISO 15552 	Piston diameter [mm]	Part no.	Type
		100	2185733
125		2207685	DFPI-125- ... -ND2P-E-NB3P
160		2208573	DFPI-160- ... -ND2P-E-NB3P
200		2209613	DFPI-200- ... -ND2P-E-NB3P
250		2210666	DFPI-250- ... -ND2P-E-NB3P
320		2186271	DFPI-320- ... -ND2P-E-NB3P

04 Linear drives

Technical data

Function



-  - Piston diameter
100 ... 320 mm
-  - Stroke
40 ... 990 mm
-  - Force
4417 ... 46385 N



General technical data

Stroke	[mm]	40 ... 990
Mode of operation		Double-acting
Based on standard		ISO 15552
Cushioning		No cushioning
Mounting position		Any
Design		Piston
		Piston rod
		Tie rod
		Cylinder barrel
Position sensing		With integrated displacement encoder
Measuring principle of displacement encoder		Potentiometer
Pneumatic connection		With specific accessories
		For tubing O.D. 8 mm
		For tubing O.D. 10 mm
Electrical connection		With specific accessories
		5-pin
		Straight plug
		Screw terminal

General electrical data

Operating voltage range	[V DC]	21.6 ... 26.4
Nominal operating voltage	[V DC]	24
Setpoint input	[mA]	4 ... 20
Analogue output	[mA]	4 ... 20
Accuracy of analogue output	[%FS]	1
Max. current consumption	[mA]	220
Reverse polarity protection		For operating voltage
		For setpoint value
		Initialisation connection
Positioning accuracy	[%FS]	1
Repetition accuracy	[%FS]	±1
Size of dead space	[%FS]	1
Hysteresis	[%FS]	±1

Linear actuators DFPI-...-C1V-NB3...

Technical data

Operating and environmental conditions		
Operating pressure	[bar]	3 ... 8
Nominal operating pressure	[bar]	6
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)
Temperature of medium	[°C]	-5 ... +40
Ambient temperature	[°C]	-5 ... +50
Storage temperature	[°C]	-5 ... +50
Relative humidity	[%]	5 ... 100, condensing
Degree of protection		IP65, IP67, IP69K, NEMA 4
Vibration resistance in accordance with DIN/IEC 68, Part 2-6		Tested to severity level 2
Continuous shock resistance in accordance with DIN/IEC 68, Part 2-82		Tested to severity level 2
Certification		RCM compliance mark
CE marking (see declaration of conformity) ¹⁾		To EU EMC Directive
		To EU Explosion Protection Directive (ATEX)

1) Additional information www.festo.com/sp → Certificates.

ATEX	
ATEX category for gas	II 3G
Type of ignition protection for gas	Ex nA IIC T4 Gc
ATEX category for dust	II 3D
Type of ignition protection for dust	Ex tc IIIC T120°C Dc
Explosion-proof ambient temperature rating	-5°C ≤ Ta ≤ +50°C

Technical data

Forces [N]						
Piston diameter	100	125	160	200	250	320
Theoretical force at 6 bar, advancing	4712	7363	12064	18850	29452	48255
Theoretical force at 6 bar, retracting	4417	6881	11581	18080	28274	46385

Maximum permissible load:
$$m_{\text{Load}} = \frac{2 \times E_{\text{perm.}}}{v^2} - m_{\text{Intrinsic}}$$

$m_{\text{Intrinsic}}$ Moving mass (actuator)
 m_{Load} Moving payload

Air consumption [l]						
Piston diameter	100	125	160	200	250	320
Air consumption, advancing, per 10 mm stroke	0.549	0.859	1.407	2.199	3.436	5.63
Air consumption, retracting, per 10 mm stroke	0.515	0.803	1.351	2.111	3.299	5.412

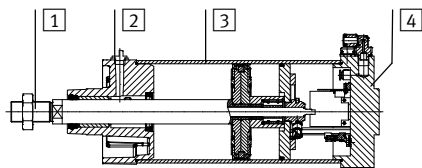
Weights [g]						
Piston diameter	100	125	160	200	250	320
Basic weight with 0 mm stroke	5280	7950	14330	20410	35370	57550
Additional weight per 10 mm stroke	90	134	200	238	358	582
Moving mass with 0 mm stroke	1060	1900	3700	4800	9300	16500
Additional moving mass per 10 mm stroke	28	53	89	89	134	227

Linear actuators DFPI-...-C1V-NB3...

Technical data

Materials

Sectional view

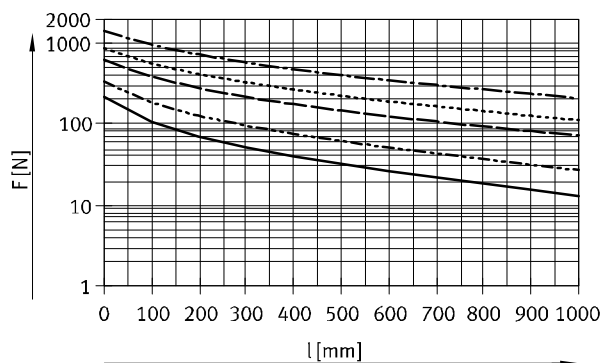


	Piston diameter	
1	Piston rod	100 ... 320 High-alloy stainless steel
2	Bottom cover	100 ... 320 Coated die-cast aluminium
3	Cylinder barrel	100 ... 320 Smooth anodised wrought aluminium alloy
4	End cap	100 ... 320 Coated wrought aluminium alloy
-	Tie rod	100 ... 200 High-alloy stainless steel
-	Screws	100 ... 320 Coated steel High-alloy stainless steel
-	Piston rod wiper seal	100 TPE-U (PU) 125 ... 320 NBR
-	Static seals	100 ... 320 NBR
-	Note on materials	100 ... 320 RoHS-compliant Contains PWIS (paint-wetting impairment substances)

Max. lateral force as a function of stroke length l

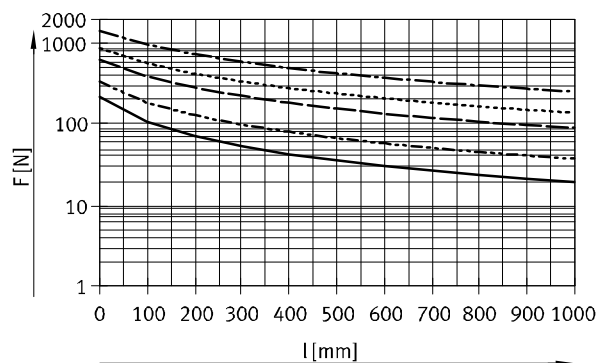
The maximum lateral force (horizontal/vertical) applies to the static application. In closed-loop operation, the maximum lateral force needs to be adjusted to the type of control. If necessary, the piston rod must be guided to avoid system vibration.

Horizontal lateral force



- Ø 100
- - - Ø 125
- — — Ø 160, 200
- · - · - Ø 250
- · - · - · - Ø 320

Vertical lateral force



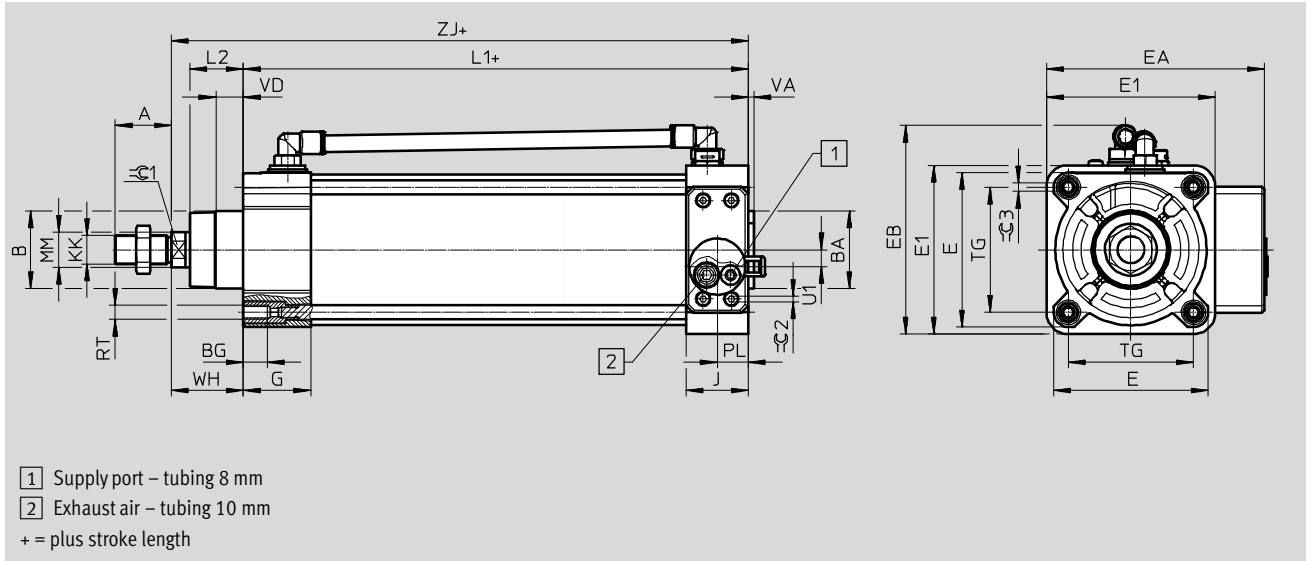
- Ø 100
- - - Ø 125
- — — Ø 160, 200
- · - · - Ø 250
- · - · - · - Ø 320

Technical data

Dimensions

Download CAD data → www.festo.com

Piston diameters 100, 125



Piston diameter [mm]	A	B ∅	BA ∅ d11	BG	E	E1	EA	EB	G	J	KK	L1
DFPI-100	40	55	55	17	110	120	155	146	48	44	M20x1.5	258.9
DFPI-125	54	60	60	20	136	145	180	173	44.7		M27x2	254.4

Piston diameter [mm]	L2	MM ∅	PL	RT	TG	U1	VD	VA -1	WH	ZJ	⊖C1	⊖C2	⊖C3
DFPI-100	38	25	22	M10	89	12	19.2	4	51±1.8	309.9	22	4	6
DFPI-125	45.5	32		M12	110	2	20.5	6	65±2.2	319.4	27		8

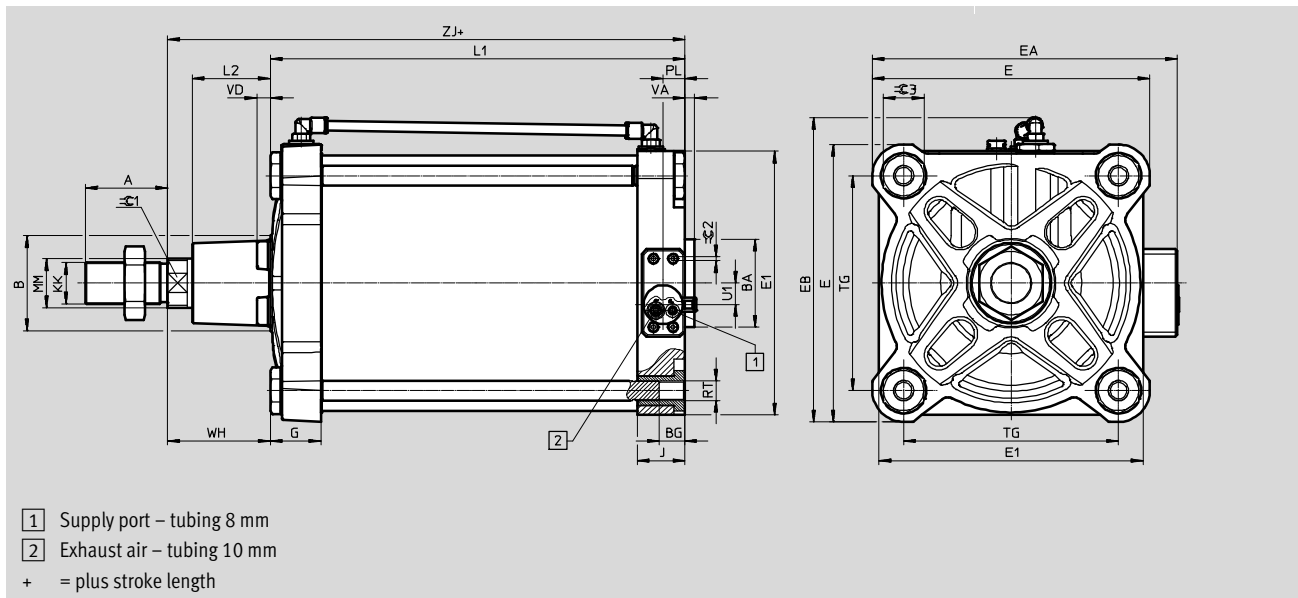
Linear actuators DFPI-...-C1V-NB3...

Technical data

Dimensions

Piston diameters 160, 200, 250, 320

Download CAD data → www.festo.com



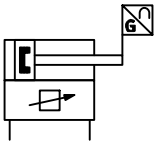
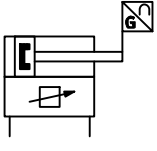
Piston diameter [mm]	A	B	BA	BG	E	E1	EA	EB	G	J	KK	L1
DFPI-160	72	65	65	24	186	186	221	212	51	46	M36x2	291.8
DFPI-200		75	75		230	230	265	256	47.2			297
DFPI-250	84	90	90	25	284	270	312	312	52	48.5	M42x2	324.4
DFPI-320	96	110	110	28	347	342	378.5	379	56	46	M48x2	351.4

Piston diameter [mm]	L2	MM	PL	RT	TG	U1	VD	VA	WH	ZJ	≡C1	≡C2	≡C3
DFPI-160	60	40	22	M16	140	12	7.5	6	80	371.8	36	4	24
DFPI-200	70				175	32							
DFPI-250	80	50	M20	220	22	13.7	10	105	429.2	46	42		
DFPI-320	90	63	M24	270	52	10.7		120	471.4	55	50		

04

Linear drives

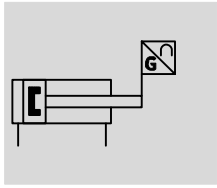
Technical data




Ordering data		Piston diameter [mm]	Part no.	Type
Safety position advancing				
	<ul style="list-style-type: none"> Linear actuators with integrated positioner Based on ISO 15552 	100	2184841	DFPI-100-...-ND2P-C1V-NB3P-A
		125	2180905	DFPI-125-...-ND2P-C1V-NB3P-A
		160	2201101	DFPI-160-...-ND2P-C1V-NB3P-A
		200	2206373	DFPI-200-...-ND2P-C1V-NB3P-A
		250	2200311	DFPI-250-...-ND2P-C1V-NB3P-A
		320	2185309	DFPI-320-...-ND2P-C1V-NB3P-A
Safety position retracting				
	<ul style="list-style-type: none"> Linear actuators with integrated positioner Based on ISO 15552 	100	4588304	DFPI-100-...-ND2P-C1V-NB3P-R-A
		125	4588636	DFPI-125-...-ND2P-C1V-NB3P-R-A
		160	4588972	DFPI-160-...-ND2P-C1V-NB3P-R-A
		200	4587974	DFPI-200-...-ND2P-C1V-NB3P-R-A
		250	4591209	DFPI-250-...-ND2P-C1V-NB3P-R-A
		320	4591205	DFPI-320-...-ND2P-C1V-NB3P-R-A

Linear actuators DFPI-...-E...-G2

Technical data

Function



-  - Piston diameter
100 ... 320 mm
-  - Stroke
40 ... 990 mm
-  - Force
4417 ... 48255 N



General technical data

Piston diameter	100	125	160	200	250	320
Stroke [mm]	40 ... 990					
Stroke reserve [mm]	3			4		
Mode of operation	Double-acting					
Connection to process valve to standard	DIN EN ISO 5210					
Flange hole pattern	F07	F10	F10, F14			
Cushioning	No cushioning					
Mounting position	Any					
Design	Piston					
	Piston rod					
	Profile barrel			Tie rod, cylinder barrel		
Position sensing	With integrated displacement encoder					
Measuring principle of displacement encoder	Potentiometer					
Pneumatic connection	With specific accessories					
	For tubing O.D. of 8 mm					
Electrical connection	With specific accessories					
	3-pin					
	Straight plug					
	Screw terminal					

General electrical data

Operating voltage range [V DC]	0 ... 15	
Resistance value of displacement encoder (on the TET) dependent on the stroke length ¹⁾		
≤ 290 mm [kΩ]	5	
> 290 ... 590 mm [kΩ]	10	
> 590 ... 990 mm [kΩ]	20	
Displacement encoder		
Recommended loop current [μA]	< 0.1	
Max. short-time loop current [mA]	10	
Independent linearity [%]	±0.04	
Repetition accuracy [mm]	±0.12	
Hysteresis [mm]	0.33	

1) TET = theoretical electrical travel

Technical data

Operating and environmental conditions		
Operating pressure	[bar]	3 ... 8
Nominal operating pressure	[bar]	6
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)
Ambient temperature	[°C]	-20 ... +60
Storage temperature	[°C]	-20 ... +60
Relative humidity	[%]	5 ... 100, condensing
Degree of protection		IP65, IP67, IP69K, NEMA 4
Continuous shock resistance to DIN/IEC 68 Part 2-82		Tested to severity level 2
Vibration resistance to DIN/IEC 68 Part 2-6		Tested to severity level 2
CE marking (see declaration of conformity) ¹⁾		To EU Explosion Protection Directive (ATEX)

1) Additional information www.festo.com/sp → Certificates.

ATEX	
ATEX category for gas	II 2G
Type of ignition protection for gas	c T4 X
ATEX category for dust	II 2D
Type of ignition protection for dust	c 120°C X
Explosion-proof ambient temperature rating	-20 °C ≤ Ta ≤ +60 °C

Linear actuators DFPI-...-E-...-G2

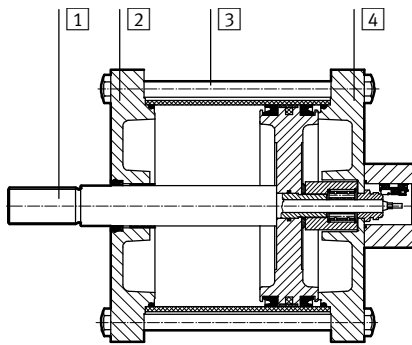
Technical data

Forces [N] and air consumption [l]						
Piston diameter	100	125	160	200	250	320
Theoretical force at 6 bar, advancing	4712	7363	12064	18850	29452	48255
Theoretical force at 6 bar, retracting	4417	6881	11581	18080	28698	47501
Air consumption, advancing, per 10 mm stroke	0.5498	0.859	1.4074	2.119	3.4361	5.6297
Air consumption, retracting, per 10 mm stroke	0.5153	0.8027	1.3511	2.111	3.3482	5.5418

Weights						
Piston diameter	100	125	160	200	250	320
Basic weight with 0 mm stroke [g]	3476	5530	6529	13946	22569	35359
Additional moving mass per 10 mm stroke [g]	27	52	52	87	87	87
Moving mass with 0 mm stroke [g]	1228	1944	2250	4722	7059	11417
Additional weight per 10 mm stroke [g]	80	145	159	187	325	399
Additional weight of displacement encoder per 10 mm [g]	2					

Materials

Sectional view



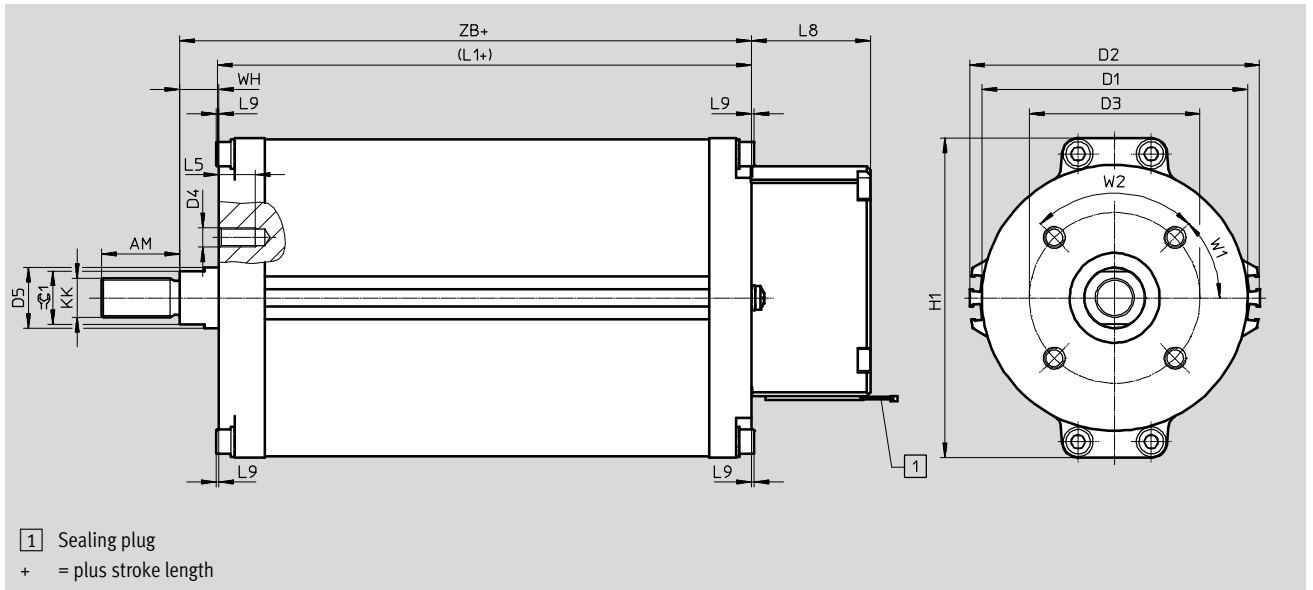
	Piston diameter	
1 Piston rod	100 ... 320	High-alloy stainless steel
2 Bottom cover	100, 125, 250, 320	Anodised wrought aluminium alloy
	160, 200	Coated die-cast aluminium
3 Cylinder barrel	100 ... 200	Smooth anodised wrought aluminium alloy
	250 ... 320	High-alloy stainless steel
4 End cap	100, 125, 250, 320	Anodised wrought aluminium alloy
	160, 200	Coated die-cast aluminium
- Tie rod	200 ... 320	High-alloy stainless steel
- Screws	100 ... 320	High-alloy stainless steel
- Piston rod wiper seal	100	TPE-U (PU)
	125 ... 320	NBR
- Static seals	100 ... 320	NBR
- Note on materials	100 ... 320	RoHS-compliant
		Contains PWIS (paint-wetting impairment substances)

Technical data

Dimensions

Download CAD data → www.festo.com

Piston diameter 100 ... 160



Piston diameter [mm]	AM	D1	D2	D3	D4	D5	H1	KK	L1+
DFPI-100	32	109	119	70	M8	25	131	M16x1.5	118.5
DFPI-125	54	135	147	102	M10	32	163	M27x2	119
DFPI-160		170	182				199		126.5

Piston diameter [mm]	L5	L8	L9	W1	W2	WH	ZB+	∓C1
DFPI-100	15	48.8	1	45°	90°	16	134.5	22
DFPI-125	18	48.8	-	45°	90°	24	143	27
DFPI-160							150.5	

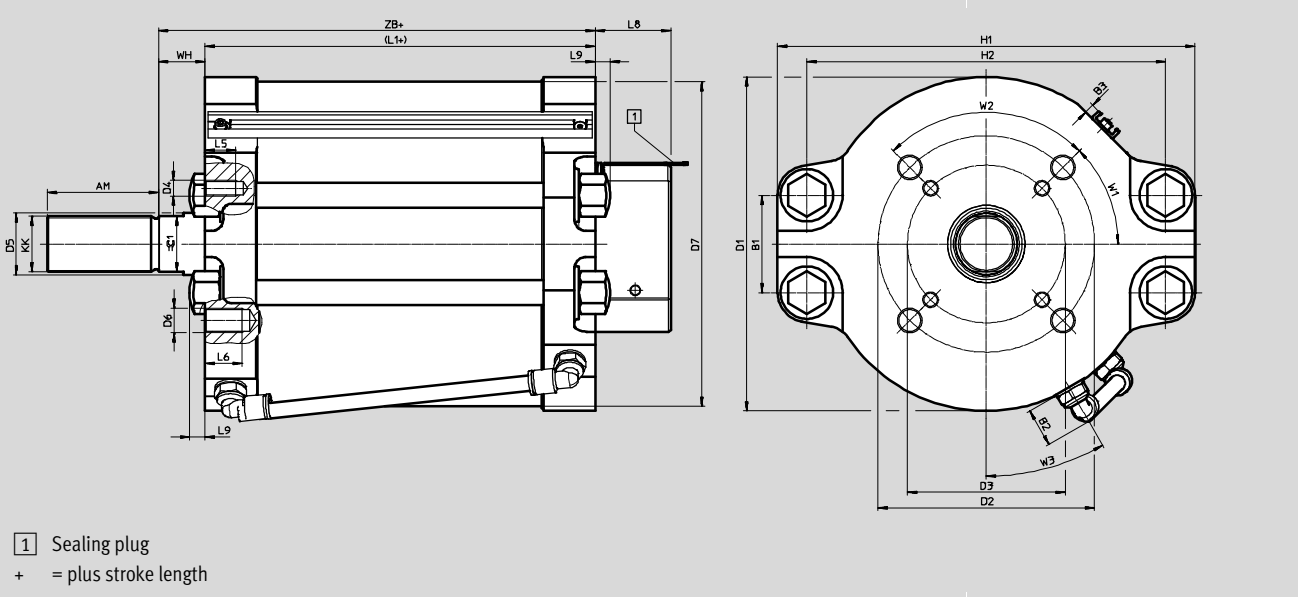
Linear actuators DFPI-...-E-...-G2

Technical data

Dimensions

Download CAD data → www.festo.com

Piston diameter 200 ... 320



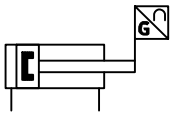
Piston diameter [mm]	AM	B1	B2	B3	D1 ∅	D2 ∅	D3 ∅	D4	D5 ∅	D6	D7 ∅ min.	H1	H2
DFPI-200	72	63	25.6	6.5	216	140	102	M10	40	M16	210	270	232
DFPI-250	72	82	25.6	6.5	260	140	102	M10	40	M16	254	308	268
DFPI-320		126			332						325		

Piston diameter [mm]	KK	L1+	L5	L6 min.	L8	L9	WH	W1	W2	W3	ZB+	∅C1
DFPI-200	M36x2	152.5	20	24	48.8	10	30	45	90	30	182.5	36
DFPI-250	M36x2	152.2	20	25	48.8	25	30	45	90	30	182.2	36
DFPI-320		160		24							190	

04

Linear drives

Technical data

Ordering data		Piston diameter [mm]	Part no.	Type
	<ul style="list-style-type: none"> Linear actuators with integrated displacement encoder Based on DIN EN ISO 5210 	100	1808236	DFPI-100-...-ND2P-E-P-G2
		125	1808239	DFPI-125-...-ND2P-E-P-G2
		160	1808242	DFPI-160-...-ND2P-E-P-G2
		200	1808245	DFPI-200-...-ND2P-E-P-G2
		250	1808253	DFPI-250-...-ND2P-E-P-G2
		320	1808263	DFPI-320-...-ND2P-E-P-G2

-  - Note

Stroke length of the actuator

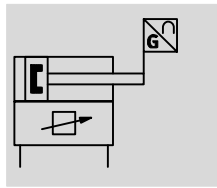
The stroke length of the actuator should generally at least correspond to the nominal diameter of the process valve so that the process valve can be fully opened and closed. The system tolerances can lead to a




greater stroke range than the specified nominal stroke range of the linear actuator. The adjustable rod clevis enables adjustment of the system.

Linear actuators DFPI-...-C1V-...

Technical data

Function



-  - Piston diameter
100 ... 320 mm
-  - Stroke
40 ... 990 mm
-  - Force
4417 ... 48255 N



General technical data							
Piston diameter		100	125	160	200	250	320
Stroke	[mm]	40 ... 990					
Stroke reserve	[mm]	3			4		
Mode of operation	Double-acting						
Connection to process valve to standard	DIN EN ISO 5210						
Flange hole pattern		F07	F10	F10, F14			
Cushioning	No cushioning						
Mounting position	Any						
Design	Piston						
	Piston rod						
	Profile barrel			Tie rod, cylinder barrel			
Position sensing	With integrated displacement encoder						
Measuring principle of displacement encoder	Potentiometer						
Pneumatic connection							
DFPI-...-...-ND2P-C1V-A	G1/4						
DFPI-...-...-ND2P-C1V-P-A	With specific accessories, for tubing O.D. of 8 mm and 10 mm						
Electrical connection							
	5-pin						
	Straight plug						
	Screw terminal						
DFPI-...-...-ND2P-C1V-A	G1/4						
DFPI-...-...-ND2P-C1V-P-A	With specific accessories, for tubing O.D. of 8 mm and 10 mm						

General electrical data		
Operating voltage range	[V DC]	21.6 ... 26.4
Nominal operating voltage	[V DC]	24
Setpoint input	[mA]	4 ... 20
Analogue output	[mA]	4 ... 20
Accuracy of analogue output	[%FS]	1
Max. current consumption	[mA]	220
Reverse polarity protection	For operating voltage	
	For setpoint value	
	Initialisation connection	
Positioning accuracy	[%FS]	1
Repetition accuracy	[%FS]	±1
Size of dead space	[%FS]	1
Hysteresis	[%FS]	±1

Technical data

Operating and environmental conditions	
Operating pressure [bar]	3 ... 8
Nominal operating pressure [bar]	6
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Temperature of medium [°C]	-5 ... +40
Storage temperature [°C]	-5 ... +50
Ambient temperature [°C]	-5 ... +50
Relative humidity [%]	5 ... 100, condensing
Degree of protection	IP65, IP67, IP69K, NEMA 4
Continuous shock resistance to DIN/IEC 68 Part 2-82	Tested to severity level 2
Vibration resistance to DIN/IEC 68 Part 2-6	Tested to severity level 2
Certification	RCM compliance mark
CE marking (see declaration of conformity) ¹⁾	To EU EMC Directive ²⁾
	To EU Explosion Protection Directive (ATEX)

1) Additional information www.festo.com/sp → Certificates.

2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → Certificates.

If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

ATEX	
ATEX category for gas	II 3G
Type of ignition protection for gas	Ex nA IIC T4 X Gc
ATEX category for dust	II 3D
Type of ignition protection for dust	Ex tc IIIC T120°C X Dc
Explosion-proof ambient temperature rating	-5°C ≤ Ta ≤ +50°C

Forces [N] and air consumption [l]						
Piston diameter	100	125	160	200	250	320
Theoretical force at 6 bar, advancing	4712	7363	12064	18850	29452	48255
Theoretical force at 6 bar, retracting	4417	6881	11581	18080	28698	47501
Air consumption, retracting, per 10 mm stroke	0.5153	0.8027	1.3511	2.111	3.3482	5.5418
Air consumption, advancing, per 10 mm stroke	0.5498	0.859	1.4074	2.119	3.4361	5.6297

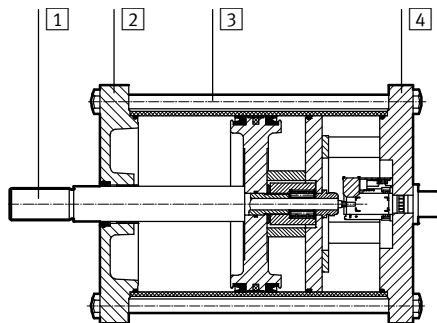
Linear actuators DFPI-...-C1V-...

Technical data

Weights							
Piston diameter		100	125	160	200	250	320
Basic weight with 0 mm stroke							
DFPI-...-ND2P-C1V-A	[g]	4671	7693	9099	18358	29956	45200
DFPI-...-ND2P-C1V-P-A	[g]	5237	8259	9665	18924	30522	45766
Moving mass with 0 mm stroke	[g]	1228	1944	2250	4722	7059	11417
Additional weight per 10 mm stroke	[g]	80	145	159	187	325	399
Additional weight of moving mass per 10 mm stroke	[g]	27	52		87		
Additional weight of displacement encoder per 10 mm	[g]	2					

Materials

Sectional view



	Piston diameter	
1 Piston rod	100 ... 320	High-alloy stainless steel
2 Bottom cover	100, 125, 250, 320	Anodised wrought aluminium alloy
	160, 200	Coated die-cast aluminium
3 Cylinder barrel	100 ... 200	Smooth anodised wrought aluminium alloy
	250 ... 320	High-alloy stainless steel
4 End cap	100 ... 320	Anodised wrought aluminium alloy
- Tie rod	200 ... 320	High-alloy stainless steel
- Screws	100 ... 320	High-alloy stainless steel
- Piston rod wiper seal	100	TPE-U (PU)
	125 ... 320	NBR
- Static seals	100 ... 320	NBR
- Note on materials	100 ... 320	RoHS-compliant
		Contains PWIS (paint-wetting impairment substances)

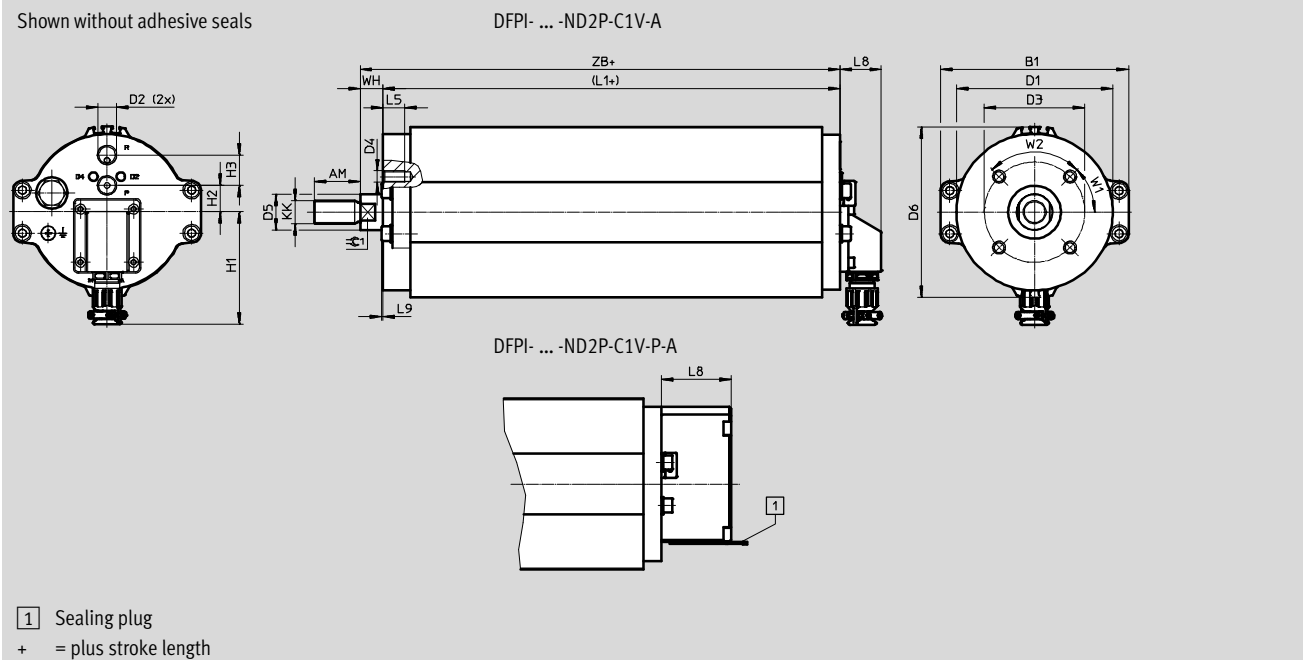
Technical data

Dimensions

Download CAD data → www.festo.com

Piston diameter 100 ... 160

Shown without adhesive seals



Piston diameter [mm]	AM -2	B1	D1 Ø	D2 Ø	D3 Ø	D4	D5 Ø	D6 Ø	H1 ±2	H2
DFPI-100- ... -C1V-A	32	131	109	G1/4	70	M8	25	119	79	18.3
DFPI-125- ... -C1V-A	54	163	135	G1/4	102	M10	32	147	79	18.3
DFPI-160- ... -C1V-A		199	170					182		

Piston diameter [mm]	H3	KK	L1+	L5	L8	L9	WH	ZB+	≈±1
DFPI-100- ... -C1V-A	21.2	M16x1.5	218.5	15	28.8	1	16	234.5	22
DFPI-125- ... -C1V-A	21.2	M27x2	221	18	28.8	-	24	245	27
DFPI-160- ... -C1V-A			227.5					251.5	

Piston diameter [mm]	AM -2	B1	D1 Ø	D2 Ø	D3 Ø	D4	D5 Ø	D6 Ø	H1	H2
DFPI-100- ... -C1V-P-A	32	131	109	G1/4	70	M8	25	119	-	18.3
DFPI-125- ... -C1V-P-A	54	163	135	G1/4	102	M10	32	147	-	18.3
DFPI-160- ... -C1V-P-A		199	170					182		

Piston diameter [mm]	H3	KK	L1+	L5	L8	L9	WH	ZB+	≈±1
DFPI-100- ... -C1V-P-A	21.2	M16x1.5	218.5	15	48.8	1	16	234.5	22
DFPI-125- ... -C1V-P-A	21.2	M27x2	221	18	48.8	-	24	245	27
DFPI-160- ... -C1V-P-A			227.5					251.5	

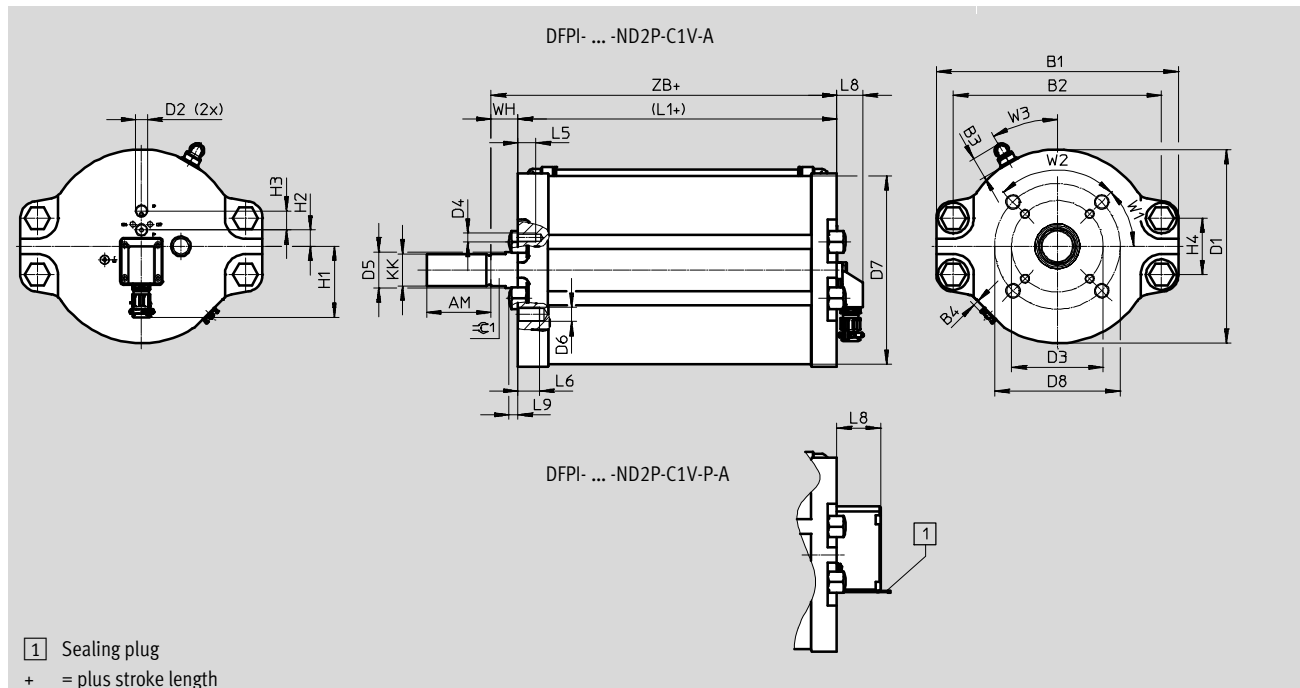
Linear actuators DFPI-...-C1V-...

Technical data

Dimensions

Piston diameter 200 ... 320

Download CAD data → www.festo.com



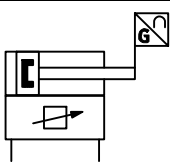
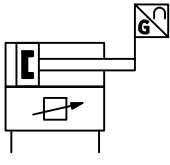
Piston diameter [mm]	AM -2	B1	B2	B3	B4	D1 ∅	D2	D3 ∅	D4	D5 ∅	D6	D7 ∅ min.	D8 ∅	H1 ±2	H2
DFPI-200- ... -C1V-A	72	270	232	24.5	6.5	216	G1/4	102	M10	40	M16	210	140	79	18.3
DFPI-250- ... -C1V-A	72	308	268	24.5	6.5	260	G1/4	102	M10	40	M16	254	140	79	18.3
DFPI-320- ... -C1V-A		378	338			332						325			

Piston diameter [mm]	H3	H4	KK	L1+	L5	L6 min.	L8	L9	∓C1	WH	W1	W2	W3	ZB+
DFPI-200- ... -C1V-A	21.2	63	M36x2	255.5	20	24	28.8	10	36	30	45°	90°	30°	285.5
DFPI-250- ... -C1V-A	21.2	82	M36x2	255	20	25	28.8	25	36	30	45°	90°	30°	285
DFPI-320- ... -C1V-A		126		262				-						292

Piston diameter [mm]	AM -2	B1	B2	B3	B4	D1 ∅	D2	D3 ∅	D4	D5 ∅	D6	D7 ∅ min.	D8 ∅	H2	H3
DFPI-200- ... -C1V-P-A	72	270	232	24.5	6.5	216	G1/4	102	M10	40	M16	210	140	18.3	21.2
DFPI-250- ... -C1V-P-A	72	308	268	24.5	6.5	260	G1/4	102	M10	40	M16	254	140	18.3	21.2
DFPI-320- ... -C1V-P-A		378	338			332						325			

Piston diameter [mm]	H4	KK	L1+	L5	L6 min.	L8	L9	∓C1	WH	W1	W2	W3	ZB+
DFPI-200- ... -C1V-P-A	63	M36x2	255.5	20	24	48.8	10	36	30	45°	90°	30°	285.5
DFPI-250- ... -C1V-P-A	82	M36x2	255	20	25	48.8	25	36	30	45°	90°	30°	285
DFPI-320- ... -C1V-P-A	126		262				-						292

Technical data

Ordering data		Piston diameter [mm]	Part no.	Type
	<ul style="list-style-type: none"> Linear actuators with integrated positioner Based on DIN EN ISO 5210 	100	1548004	DFPI-100-...-ND2P-C1V-A
		125	1548020	DFPI-125-...-ND2P-C1V-A
		160	1548026	DFPI-160-...-ND2P-C1V-A
		200	1548030	DFPI-200-...-ND2P-C1V-A
		250	1548037	DFPI-250-...-ND2P-C1V-A
		320	1548041	DFPI-320-...-ND2P-C1V-A
Variant with protected pneumatic and electrical connections				
	<ul style="list-style-type: none"> Linear actuators with integrated positioner Based on DIN EN ISO 5210 	100	1548005	DFPI-100-...-ND2P-C1V-P-A
		125	1548021	DFPI-125-...-ND2P-C1V-P-A
		160	1548028	DFPI-160-...-ND2P-C1V-P-A
		200	1548032	DFPI-200-...-ND2P-C1V-P-A
		250	1548039	DFPI-250-...-ND2P-C1V-P-A
		320	1548044	DFPI-320-...-ND2P-C1V-P-A

-  - Note

Stroke length of the actuator

The stroke length of the actuator should generally at least correspond to the nominal diameter of the process valve so that the process valve can be fully opened and closed. The system tolerances can lead to a greater stroke range than the specified nominal stroke range

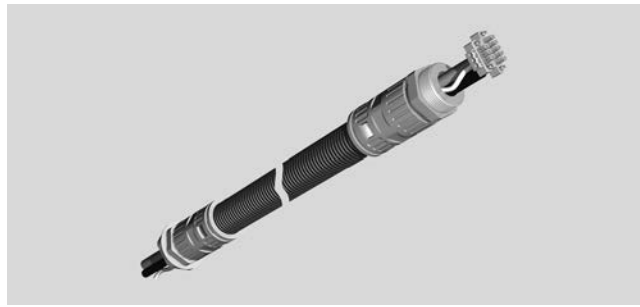
of the linear actuator. During initialisation, the integrated positioner learns the stroke length used and ensures that the slide gate moves to the required positions in a controlled way – at most to the end positions learned during initialisation.

Linear actuators DFPI

Accessories

Connecting cable NHSB

- Pre-assembled connecting cable
- Suitable for linear actuators DFPI-...-E-P-... and DFPI-...-C1V-P-...
- Cable lengths 5, 10 and 15 m



General technical data

Connecting cable	[mm²]	3x 0.75	5x 0.75
Mounting position		Any	
Electrical connection 1		Straight plug connector, 3-pin	Straight plug, 5-pin
Electrical connection 2		Open end, 3-wire	Open end, 5-wire
Min. cable bending radius	[mm]	100	
Pneumatic connection		For tubing O.D. 8 mm	
		-	For tubing O.D. 10 mm

Operating and environmental conditions

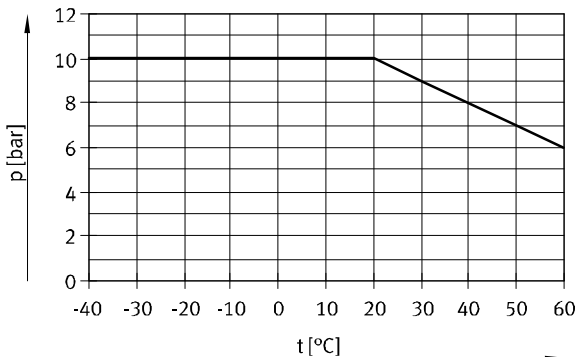
Ambient temperature	[°C]	-20 ... +60
Ambient temperature with flexible cable installation	[°C]	-5 ... +60
Operating voltage range	[V DC]	0 ... 30
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Lubricated operation possible
Degree of protection		IP65, IP67, IP69K, NEMA 4
Relative humidity	[%]	5 ... 100, condensing

Materials

Protective conduit	PA
Protective conduit fitting	PA
Cable sheath	PVC
Seals	TPE
Note on materials	RoHS-compliant

Operating pressure [bar] as a function of operating temperature [°C]

NHSB-A1...

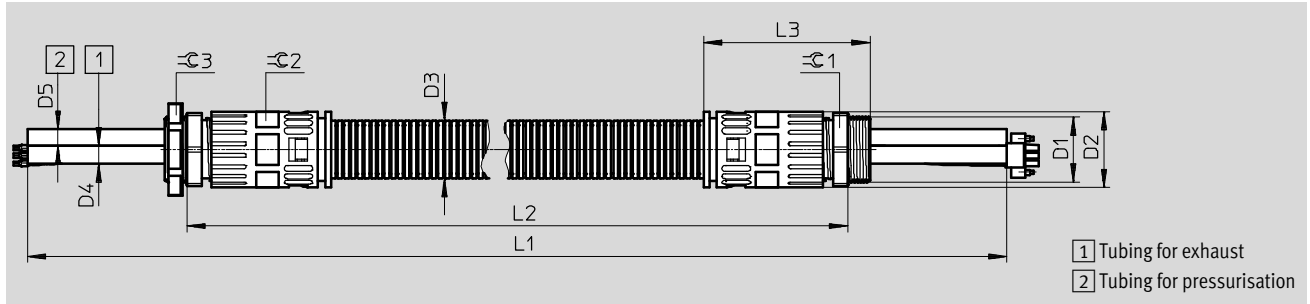


Accessories

Dimensions

Download CAD data → www.festo.com

3-wire

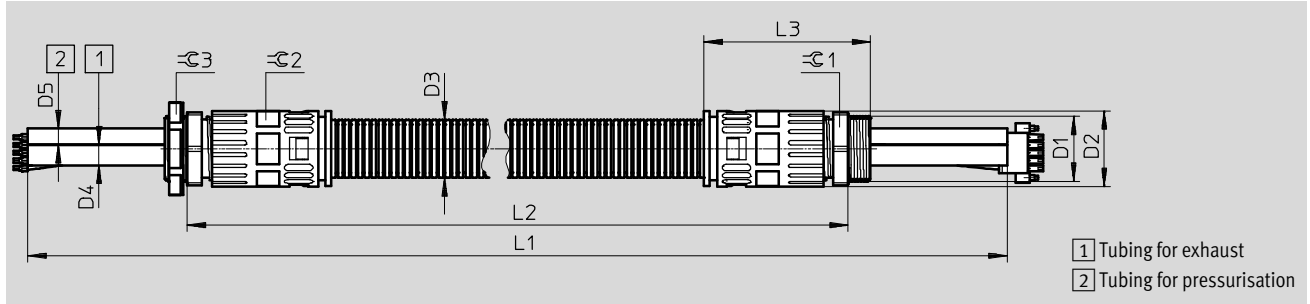


Type	D1	D2 Ø	D3 Ø	D4 Ø	D5 Ø	L1 ±25	L2 ±25	L3	∅ 1	∅ 2	∅ 3
NHSB-A1-06-BLG3-LE3-PU8-2xBB	M32x1.5	37	28.5	8	8	1400	600	82	36	34	41
NHSB-A1-5-BLG3-LE3-PU8-2xBB						6100	5000				
NHSB-A1-10-BLG3-LE3-PU8-2xBB						11100	10000				
NHSB-A1-15-BLG3-LE3-PU8-2xBB						16100	15000				

Dimensions

Download CAD data → www.festo.com

5-wire



Type	D1	D2 Ø	D3 Ø	D4 Ø	D5 Ø	L1 ±25	L2 ±25	L3	∅ 1	∅ 2	∅ 3
NHSB-A1-5-BLG5-LE5-PU8-2xBB	M32x1.5	37	28.5	10	8	6100	5000	82	36	34	41
NHSB-A1-10-BLG5-LE5-PU8-2xBB						11100	10000				
NHSB-A1-15-BLG5-LE5-PU8-2xBB						16100	15000				

Ordering data – Connecting cable

Technical data → Internet: nhsb

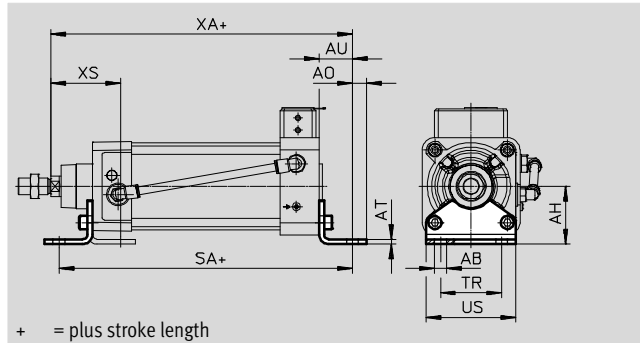
	Electrical connection 1	Electrical connection 2	Length [m]	Cable composition [mm ²]	Weight [g]	Part no.	Type
3-wire, for DFPI- ... -E-P-...							
	Straight plug, 3-pin	Open end, 3-wire	0.6	3x 0.75	280	3673475	NHSB-A1-0,6-BLG3-LE3-PU8-2XBB
			5		1250	1686608	NHSB-A1-5-BLG3-LE3-PU8-2XBB
			10		2500	1686609	NHSB-A1-10-BLG3-LE3-PU8-2XBB
			15		3750	1686610	NHSB-A1-15-BLG3-LE3-PU8-2XBB
5-wire, for DFPI- ... -C1V-P-...							
	Straight plug, 5-pin	Open end, 5-wire	5	5x 0.75	1250	1585793	NHSB-A1-5-BLG5-LE5-PU8-2XBB
			10		2500	1585794	NHSB-A1-10-BLG5-LE5-PU8-2XBB
			15		3750	1585795	NHSB-A1-15-BLG5-LE5-PU8-2XBB

Linear actuators DFPI

Accessories

Foot mounting HNC/CRHNC

Material:
 HNC: Galvanised steel
 CRHNC: High-alloy steel
 Free of copper and PTFE



Dimensions

For \varnothing	AB \varnothing	AH	AO	AT	AU	SA	TR	US	XA	XS
100	14.5	71	17.5	6	41	261	75	110	270.7	86
125	16.5	90	22	8	45	290	90	131	309.7	102

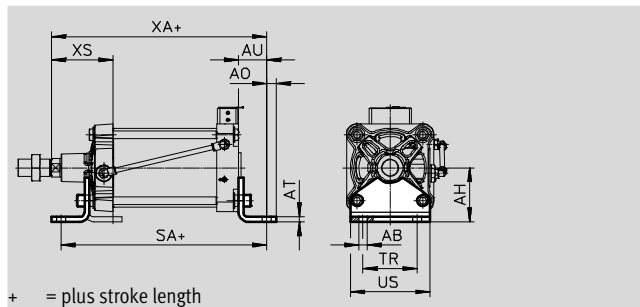
Ordering data

For \varnothing	Basic design				High corrosion protection			
	CRC ¹⁾	Weight [g]	Part no.	Type ²⁾	CRC ¹⁾	Weight [g]	Part no.	Type ²⁾
100	2	1009	174374	HNC-100	4	990	176942	CRHNC-100
125	2	1902	174375	HNC-125	4	1920	176943	CRHNC-125

- Corrosion resistance class CRC 2 to Festo standard FN 940070
 Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
 Corrosion resistance class CRC 4 to Festo standard FN 940070
 Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.
- Suitable for ATEX

Foot mounting HNG

Material:
 Galvanised steel
 Free of copper and PTFE



Dimensions and ordering data

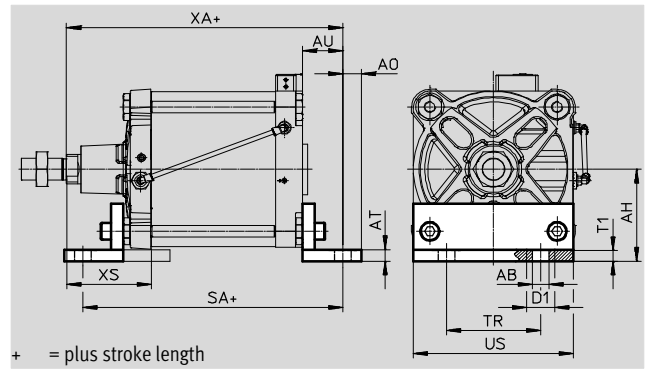
For \varnothing	AB \varnothing	AH	AO	AT	AU	SA	TR	US	XA	XS	CRC ¹⁾	Weight [g]	Part no.	Type
160	18.5	115	20	10	60	339	115	169	358.6	130	2	3931	34476	HNG-160
200	24	135	30	12	70	365	135	214	390	153	2	6896	34477	HNG-200

- Corrosion resistance class CRC 2 to Festo standard FN 940070
 Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Accessories

Foot mounting HNG

Material:
Galvanised steel
Free of copper and PTFE



Dimensions and ordering data

For Ø	AB Ø	AH	AO	AT	AU	D1 Ø	SA	T1	TR	US	XA	XS	CRC ¹⁾	Weight [g]	Part no.	Type
250	28	165	35	20	75	-	404	-	165	270	434	160	2	17084	157510	HNG-250
320	35	200	40	25	85	60	451.2	23	200	340	486.2	180	2	29968	157511	HNG-320

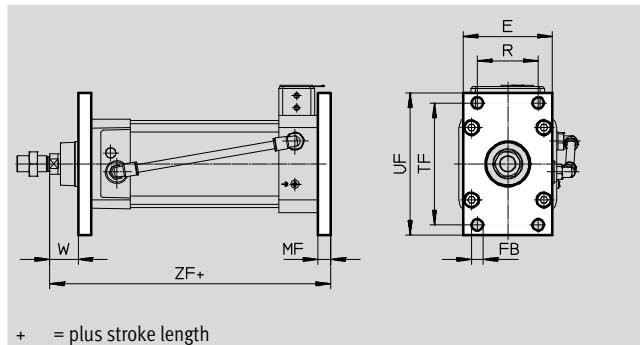
1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Linear actuators DFPI

Accessories

Flange mounting FNC/CRFNG

Material:
 FNC: Galvanised steel
 CRFNG: High-alloy steel
 Free of copper and PTFE
 RoHS-compliant



Dimensions

For \varnothing	E	FB \varnothing	MF	R	TF	UF	W	ZF
100	110	14	16	75	150	175	35	245.7
125	132	16	20	90	180	210	45	284.7

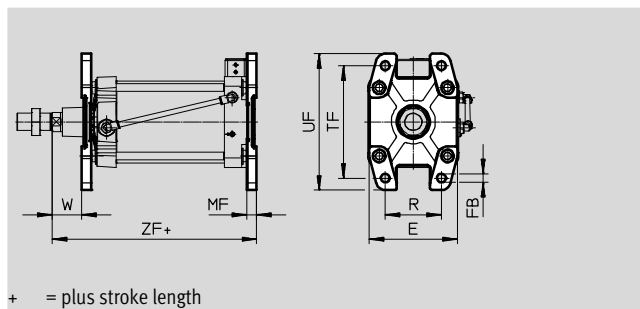
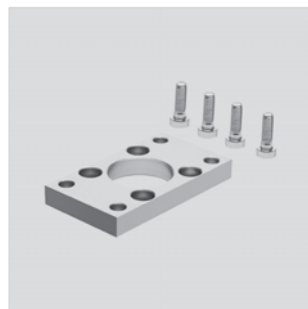
Ordering data

For \varnothing	Basic design				High corrosion protection			
	CRC ¹⁾	Weight [g]	Part no.	Type ²⁾	CRC ¹⁾	Weight [g]	Part no.	Type ²⁾
100	1	2041	174381	FNC-100	4	2054	161851	CRFNG-100
125	1	3775	174382	FNC-125	4	3787	185363	CRFNG-125

- Corrosion resistance class CRC 1 to Festo standard FN 940070
 Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
 Corrosion resistance class CRC 4 to Festo standard FN 940070
 Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.
- Suitable for ATEX

Flange mounting FNG

Material:
 Painted spheroidal graphite cast iron
 Free of copper and PTFE



Dimensions and ordering data

For \varnothing	E	FB \varnothing	MF	R	TF	UF	W	ZF	CRC ¹⁾	Weight [g]	Part no.	Type
160	180	18	20	115	230	280	60	318.6	1	3550	34478	FNG-160
200	220	22	25	135	270	320	70	345	1	5321	34479	FNG-200
250	270	26	25	165	330	390	80	384	1	8657	157508	FNG-250
320	340	33	30	200	400	470	90	431.2	1	15109	157509	FNG-320

- Corrosion resistance class CRC 1 to Festo standard FN 940070
 Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Accessories

Trunnion flange ZNCF/CRZNG

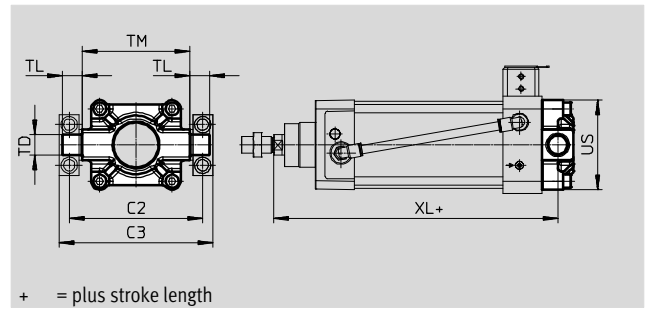
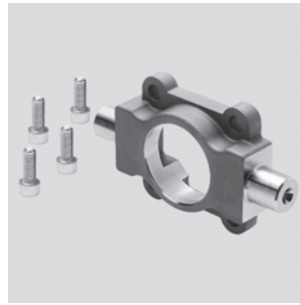
Material:

ZNCF: Stainless steel casting

CRZNG: Electropolished stainless steel casting

Free of copper and PTFE

RoHS-compliant



Dimensions

For Ø	C2	C3	TD Ø e9	TL	TM	US	XL
100	164	189	25	24.5	132	110	248.7
125	192	217			160	131	289.7

Ordering data

For Ø [mm]	Basic design				High corrosion protection			
	CRC ¹⁾	Weight [g]	Part no.	Type ²⁾	CRC ¹⁾	Weight [g]	Part no.	Type ²⁾
100	2	2254	174416	ZNCF-100	4	2254	161857	CRZNG-100
125	2	3484	174417	ZNCF-125	4	3484	185362	CRZNG-125

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Corrosion resistance class CRC 4 to Festo standard FN 940070

Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

2) Suitable for ATEX

Linear actuators DFPI

Accessories

Trunnion support LNZG

Mounting material:

Diameter 100, 125: Anodised wrought aluminium alloy

Diameter 160 ... 320: Galvanised steel

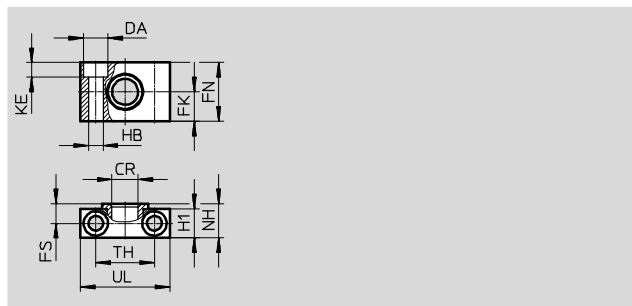
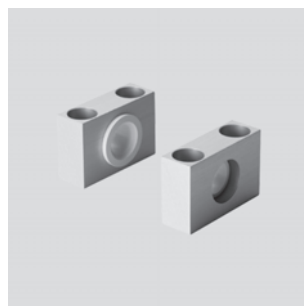
Material of bearing:

Diameter 100 ... 200: Plastic

Diameter 250, 320: Bronze

Free of copper and PTFE

RoHS-compliant



Dimensions and ordering data

For \varnothing [mm]	CR \varnothing	DA \varnothing H13	FK	FN	FS	H1	HB \varnothing H13	KE	NH	TH	UL	CRC ¹⁾	Weight [g]	Part no.	Type
100, 125	25D11	20	25 \pm 0.1	50	16	24.5	14	13	28.5	50 \pm 0.2	75	2	306	32962	LNZG-100/125
160, 200	32D11	26	30 \pm 0.2	60	22.5	36	18	17	40	60 \pm 0.3	92	2	659	35780	LNZG-160/200
250	40G7	33	35 \pm 0.2	70	27.5	45	22	21.5	50	90 \pm 0.3	140	2	2218	157516	LNZG-250
320	50G7	40	40 \pm 0.2	80	32.5	55	26	25.5	60	100 \pm 0.3	150	2	2934	157517	LNZG-320

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

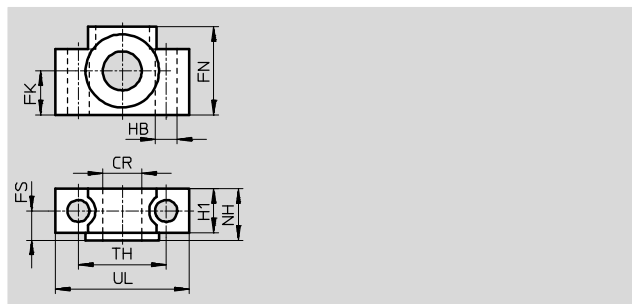
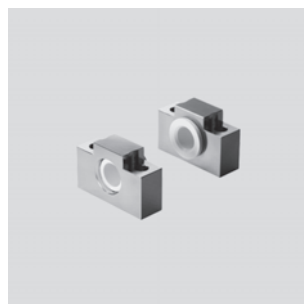
Trunnion support CRLNZG

Material:

High-alloy steel

Free of copper and PTFE

RoHS-compliant



Dimensions and ordering data

For \varnothing [mm]	CR \varnothing D11	FK \pm 0.1	FN	FS	H1	HB \varnothing H13	NH	TH \pm 0.2	UL	CRC ¹⁾	Weight [g]	Part no.	Type
100, 125	25	25	50	16	24.5	14	28.5	50	75	4	739	161877	CRLNZG-100/125

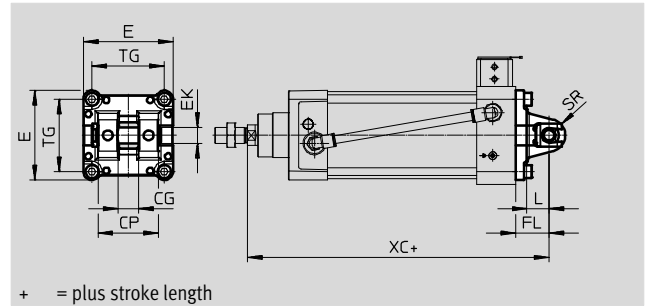
1) Corrosion resistance class CRC 4 to Festo standard FN 940070

Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (\rightarrow also FN 940082) using appropriate media.

Accessories

Swivel flange SNC

Material:
Die-cast aluminium
RoHS-compliant



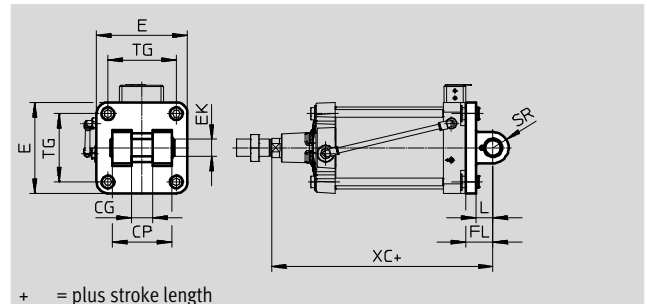
Dimensions and ordering data

For Ø	CG	CP	E	EK	FL	L	SR	TG	XC	CRC ¹⁾	Weight	Part no.	Type ²⁾
[mm]	H14	h14		Ø H9	±0.2						[g]		
100	25	75	110 ^{+0.3/-0.8}	20	41	27	20	89	270.7	1	895	174388	SNC-100
125	37	97	131 ^{-0.8}	30	50	30	25	110	334.7	1	1740	174389	SNC-125

- 1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
- 2) Suitable for ATEX

Swivel flange SNG

Material:
Die-cast aluminium
RoHS-compliant



Dimensions and ordering data

For Ø	CG	CP	E	EK	FL	L	SR	TG	XC	CRC ¹⁾	Weight	Part no.	Type ²⁾
[mm]	H14	d12	max.	Ø F7/h9	±0.2	min.	max.	±0.3			[g]		
160	43	122	186	35	55	35	32	140	353.6	2	3577	152597	SNG-160
200			230		60			175				380	2

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
- 2) Suitable for ATEX

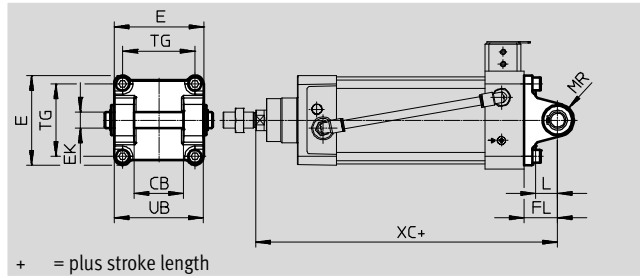
Linear actuators DFPI

Accessories

Swivel flange SNCB/SNCB-...-R3

Material:

SNCB: Die-cast aluminium
 SNCB-...-R3: Die-cast aluminium with protective coating, high corrosion protection
 Free of copper and PTFE
 RoHS-compliant



Dimensions

For \varnothing	CB	E	EK \varnothing	FL	L	MR	TG	UB	XC
[mm]	H14		H9/e8	± 0.2		-0.5			
100	60	110 $^{+0.3/-0.8}$	20	41	27	20	89	110	270.7
125	70	131 -0.8	25	50	30	25	110	130	314.7

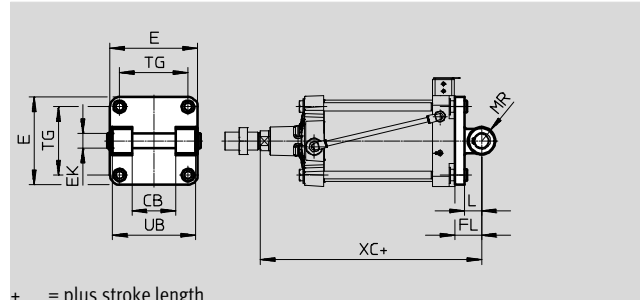
Ordering data

For \varnothing	Basic design				Variant R3 – High corrosion protection			
	CRC ¹⁾	Weight [g]	Part no.	Type	CRC ¹⁾	Weight [g]	Part no.	Type
100	1	1035	174395	SNCB-100	3	986	176949	SNCB-100-R3
125	1	1860	174396	SNCB-125	3	1776	176950	SNCB-125-R3

- 1) Corrosion resistance class CRC 1 to Festo standard FN 940070
 Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
 Corrosion resistance class CRC 3 to Festo standard FN 940070
 High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Swivel flange SNGB for clevis foot LN/LSN

Material:
 Die-cast aluminium



Dimensions and ordering data

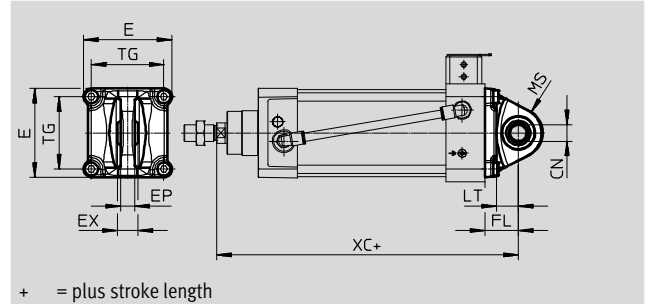
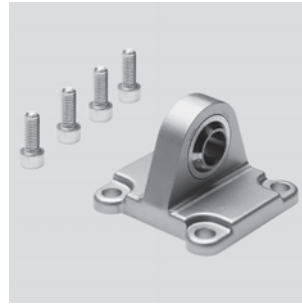
For \varnothing	CB	E	EK \varnothing	FL	L	MR	TG	UB	XC	CRC ¹⁾	Weight [g]	Part no.	Type
[mm]	H14			± 0.2			± 0.2	h14					
160	90	183.5	30 H9	55	37	30	140	170	353.6	2	3445	34547	SNGB-160
200		220		60	40	25	175		380	2	10020	562455	SNGB-200-B
250	110	268	40 E10	70	47	40	220	200	426	1	16141	157512	SNGB-250
320	120	338	45 H9	80	52	45	270	220	481.2	1	26636	157513	SNGB-320

- 1) Corrosion resistance class CRC 1 to Festo standard FN 940070
 Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
 Corrosion resistance class CRC 2 to Festo standard FN 940070
 Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Accessories

Swivel flange SNCS

Material:
Wrought aluminium alloy
Free of copper and PTFE
RoHS-compliant



+ = plus stroke length

Dimensions and ordering data

For Ø	CN	E	EP	EX	FL	LT	MS	TG	XC	CRC ¹⁾	Weight	Part no.	Type
[mm]	Ø	+1/-0.7	±0.2								[g]		
100	20	109	18	25	41	27	30	89	270.7	2	683	174402	SNCS-100
125	30	132	25	37	50	30	39	110	314.7	2	1369	174403	SNCS-125

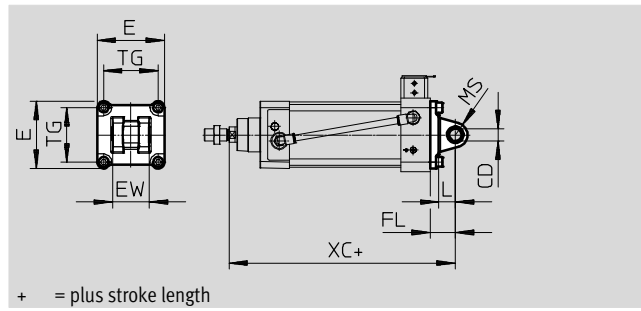
1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Linear actuators DFPI

Accessories

Swivel flange SNCL

Material:
Die-cast aluminium
Free of copper and PTFE
RoHS-compliant



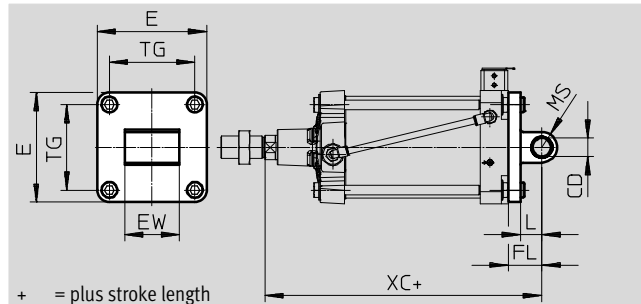
Dimensions and ordering data

For Ø	CD	E	EW	FL	L	MS	TG	XC	CRC ¹⁾	Weight	Part no.	Type
[mm]	Ø									[g]		
100	20	110 ^{+0.3/-0.8}	60	41	27	20	72	270.7	1	606	174409	SNCL-100
125	25	131 ^{-0.8}	70	50	30	25	89	314.7	1	1135	174410	SNCL-125

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Swivel flange SINGL

Material:
Die-cast aluminium
Free of copper and PTFE



Dimensions and ordering data

For Ø	CD	E	EW	FL	L	MS	TG	XC	CRC ¹⁾	Weight	Part no.	Type
[mm]	Ø									[g]		
160	30	179.5	90	55	35	25	140	353.6	2	2358	151534	SINGL-160
200		219.5		60			175	380	2	3713	151535	SINGL-200

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

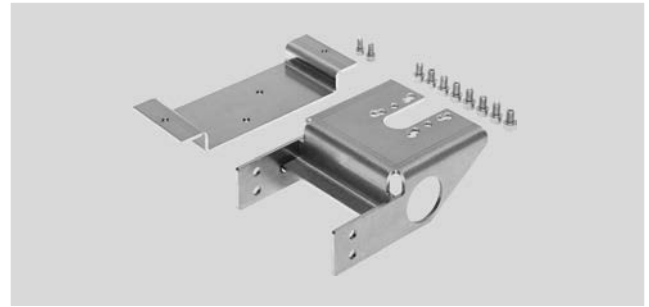
04

Linear drives

Accessories

Adapter kit DADG-AK-F6-A2

For direct mounting of a positioner on the linear actuator DFPI-ND2P-E-NB3P

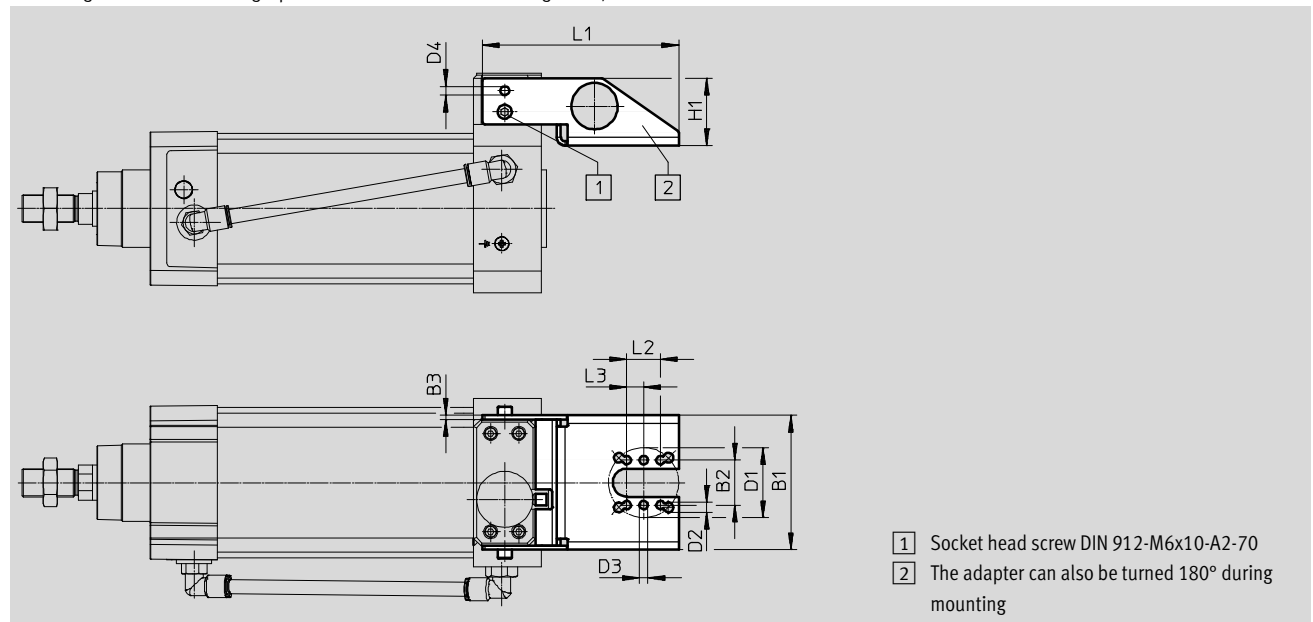


General technical data		
Ambient temperature ¹⁾	[°C]	-20 ... +80
Corrosion resistance class CRC ²⁾		3

- 1) Note operating range of proximity sensors and cylinder
- 2) Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Materials	
Mounting bracket	High-alloy stainless steel
Screws	High-alloy stainless steel
Note on materials	Contains PWIS (paint-wetting impairment substances) RoHS-compliant

Dimensions Download CAD data → www.festo.com
 Mounting bracket for mounting a positioner with interface according to VDI/VDE 3845 sheet 1:2010-09



Dimensions	B1	B2	B3	D1	D2	D3	D4	H1	L1	L2	L3
Type				∅	∅	∅	∅				
DADG-1	96	32	3	50	7	6	6.3	48	140	24	12

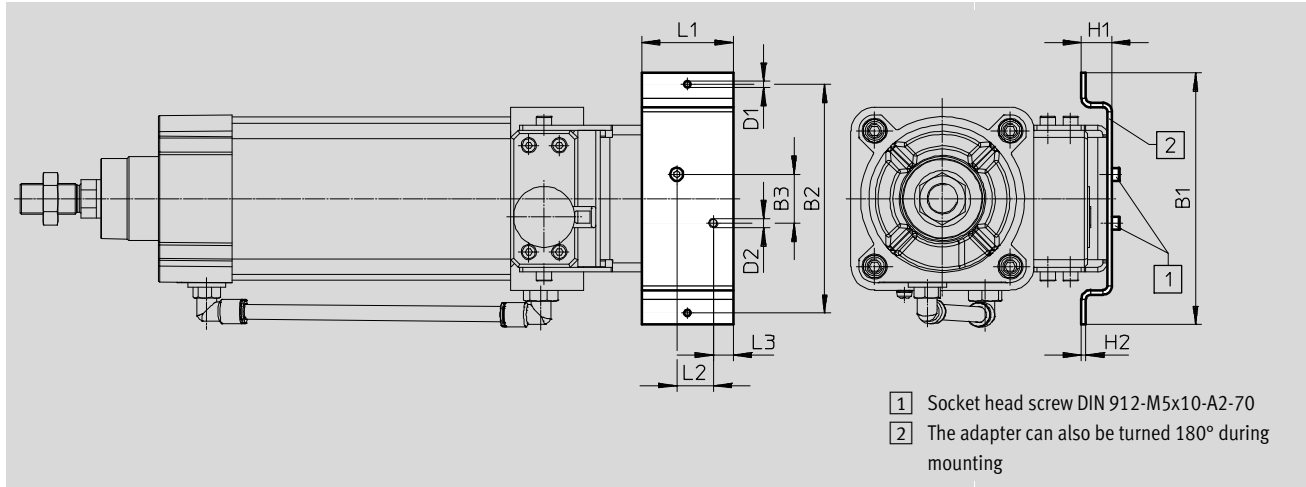
Linear actuators DFPI

Accessories

Dimensions

Mounting bracket for mounting a positioner with hole spacing of 150 mm

Download CAD data → www.festo.com



Dimensions

Type	B1	B2	B3	D1 Ø	D2 Ø	H1	H2	L1	L2	L3
DADG-2	165	150	32	M5	M6	20	3	60	24	13

Ordering data – Adapter kit

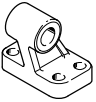
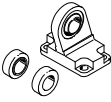


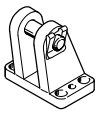
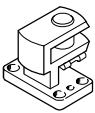
Technical data → Internet: smb.s

	For Ø	Description	Part no.	Type
	100 ... 320 mm	For direct mounting of an external positioner on the actuator	3179433	DADG-AK-F6-A2


04

Linear drives

Accessories

Ordering data – Mounting components				Technical data → Internet: clevis foot			
Designation	For Ø	Part no.	Type	Designation	For Ø	Part no.	Type
Clevis foot LN/LNG				Clevis foot LSN			
	100	33895	LNG-100		100	5566	LSN-100
	125	33896	LNG-125		125	6987	LSN-125
	160	9037	LN-160		160	6988	LSN-160
	200	33898	LNG-200		200	6989	LSN-200
	250	9039	LN-250		250	6990	LSN-250
	320	9040	LN-320		320	6991	LSN-320
Clevis foot LSNG				Clevis foot LSNSG			
	100	31745	LSNG-100		100	31752	LSNSG-100
	125	31746	LSNG-125		125	31753	LSNSG-125
	160	152599	LSNG-160				
	200	152600	LSNG-200				
Clevis foot LBG ¹⁾				Right-angle clevis foot LQG ¹⁾			
	100	31766	LBG-100		100	31773	LQG-100
	125	31767	LBG-125		125	31774	LQG-125



1) Suitable for ATEX

Ordering data – Mounting components, corrosion-resistant				Technical data → Internet: crlng	
Designation	For Ø	Part no.	Type		
Clevis foot CRLNG					
	100			161845	CRLNG-100
	125			176951	CRLNG-125



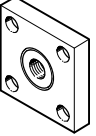
Linear actuators DFPI

Accessories

Ordering data – Piston-rod attachments



Designation	For Ø	Part no.	Type
Rod eye SGS			
	100	9264	SGS-M20x1,5
	125	10774	SGS-M27x2
	160, 200	10775	SGS-M36x2
	250	10776	SGS-M42x2
	320	10777	SGS-M48x2
Rod clevis SG¹⁾			
	100	6147	SG-M20x1,5
	125	14987	SG-M27x2-B
	160, 200	9581	SG-M36x2
	250	9582	SG-M42x2
	320	9583	SG-M48x2

Technical data → Internet: piston-rod attachment


Designation	For Ø	Part no.	Type
Rod clevis SGA¹⁾			
	100	10769	SGA-M20x1,5
	125	10770	SGA-M27x2
	160, 200	10771	SGA-M36x2
Self-aligning rod coupler FK¹⁾			
	100	6143	FK-M20x1,5
	125	10485	FK-M27x2
	160, 200	10746	FK-M36x2
Coupling piece KSG¹⁾			
	100	32966	KSG-M20x1,5
	125	32967	KSG-M27x2

1) Suitable for ATEX

Ordering data – Piston-rod attachments, corrosion-resistant

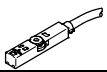
Designation	For Ø	Part no.	Type
Rod eye CRSGS			
	100	195585	CRSGS-M20x1,5
	125	195586	CRSGS-M27x2
Self-aligning rod coupler CRFK			
	100	2545677	CRFK-M20x1,5

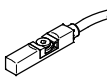
Technical data → Internet: piston-rod attachment

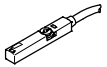
Designation	For Ø	Part no.	Type
Rod clevis CRSG¹⁾			
	100	13572	CRSG-M20x1,5
	125	185361	CRSG-M27x2

1) Suitable for ATEX



Accessories

Ordering data – Proximity sensor for T-slot, magnetoresistive					Technical data → Internet: smt-8	
	Switching output	Electrical connection		Cable length [m]	Part no.	Type
		Cable	Plug M8x1			
N/O contact						
	Contactless	2-wire	–	5	574341	SMT-8M-A-ZS-24V-E-5,0-OE-EX2
	PNP	–	3-pin	0.3	574342	SMT-8M-A-PS-24V-E-0,3-M8D-EX2

Ordering data – Proximity sensor for T-slot, corrosion-resistant					Technical data → Internet: crsmt	
	Switching output	Electrical connection		Cable length [m]	Part no.	Type
		Cable	Plug M8x1			
N/O contact						
	PNP	Cable, 3-wire	–	5	574380	CRSMT-8M-PS-24V-K-5,0-OE



Ordering data – Proximity sensor for T-slot, NAMUR					Technical data → Internet: sdbt	
	Switching output	Electrical connection		Cable length [m]	Part no.	Type
		Cable	Plug M8x1			
N/O contact						
	NAMUR	Cable, 2-wire	–	5	579071	SDBT-MS-20NL-ZN-E-5-LE-EX6
				10	579072	SDBT-MS-20NL-ZN-E-10-LE-EX6


Ordering data – Slot cover for T-slot				Technical data → Internet: abp	
	Assembly	Length [m]		Part no.	Type
		2x 0.5	–		
	Insertable	2x 0.5	–	151680	ABP-5-S

Ordering data – Mounting kits for proximity sensors SMT/CRSMT/SDBT				Technical data → Internet: smbz, dasp			
	For Ø	Materials		Part no.	Type		
		Rail	Screws				
	100	Rail: anodised wrought aluminium alloy	Screws: high-alloy stainless steel	537806	SMBZ-8-32/100		
	125	Free of copper and PTFE					
	160, 200					1451483	DASP-M4-125-A
	250					1553813	DASP-M4-160-A
	320					1456781	DASP-M4-250-A
				3015256	DASP-M4-320-A		

Linear actuators DFPI

Accessories

Ordering data – Connecting cables				Technical data → Internet: nebu	
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541333	NEBU-M8G3-K-2.5-LE3
			5	541334	NEBU-M8G3-K-5-LE3
	Straight socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	541363	NEBU-M12G5-K-2.5-LE3
			5	541364	NEBU-M12G5-K-5-LE3
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541338	NEBU-M8W3-K-2.5-LE3
			5	541341	NEBU-M8W3-K-5-LE3
	Angled socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	541367	NEBU-M12W5-K-2.5-LE3
			5	541370	NEBU-M12W5-K-5-LE3

Ordering data – Rectangular proximity sensor, pneumatic			Technical data → Internet: smpo	
	Assembly	Pneumatic connection	Part no.	Type
3/2-way valve, normally closed				
	With accessories	Barbed fitting for tubing I.D. 3 mm	31008	SMPO-1-H-B

Ordering data – Mounting kit for proximity sensor SMPO-1			Technical data → Internet: smbs	
	For Ø	Assembly	Part no.	Type
	32 ... 100 mm	On the cylinder barrel using clamping strap	151226	SMBS-2

05 Quarter turn actuators

Pneumatic quarter turn actuators according to the rack and pinion or Scotch yoke principle, in aluminium or stainless steel, for automating swivel valves such as butterfly valves and ball valves





DFPD

Quarter turn actuators

- + With rack and pinion kinematics
- + Flange hole pattern to ISO 5211
- + Mounting hole pattern to VDI/VDE 3845

→ page 373



DAPS

Quarter turn actuators

- + With Scotch yoke kinematics
- + Flange hole pattern to ISO 5211
- + Mounting hole pattern to VDI/VDE 3845

→ page 413

Contents

Quarter turn actuators DFPD	373
Quarter turn actuators DAPS	413

Quarter turn actuators

DFPD



Overview, configuration and ordering
→ www.festo.com/catalogue/dfpd



Additional information, support and user documentation
→ www.festo.com/sp/dfpd



Quick ordering of basic designs
→ page 390



Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/ex



- + Flange hole pattern to ISO 5211
- + NAMUR connection pattern for solenoid valves/sensor boxes to VDI/VDE 3845
- + With rack and pinion unit

- + Size 10 ... 2300
- + Torque 10 ... 2300 Nm
- + Swivel angle 0 ... 90°, 0 ... 180°

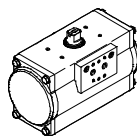
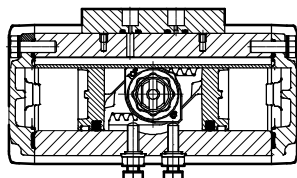
Quarter turn actuators DFPD

Key features

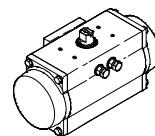
Function

The DFPD series features a rack and pinion combination with a constant torque characteristic across the entire swivel range. Sizes 10 to 2300 are available. The DFPD is suitable for the automation of butterfly valves, ball valves and air

dampers. It is also suitable for water/wastewater, beverage, pharmaceutical and process automation. The modular and compact design of the DFPD allows various spring configurations as a suitable solution for different applications.



DFPD-...-D
Double-acting



DFPD-...-S
Single-acting

Types of connection

- Port pattern to NAMUR VDI/VDE 3845 for mounting solenoid valves, position sensors and positioners
- Standards-base connection to ISO 5211

Variants

High temperature

DFPD-...-T4

- Seals made of FKM and plain bearings made of PPS
- For applications up to +150 °C
- II 2G c T3 X
II 2D c 175°CX
0 °C ≤ Ta ≤ +150 °C

Low temperature

DFPD-...-T6

- Seals made of FVMQ for applications down to -50 °C
- II 2G c T6 X
II 2D c 85°CX
-50 °C ≤ Ta ≤ +60 °C

Closes to the left and right

DFPD-...-R/L

- The modular system offers the option of closing to the left. This is done by turning the pistons

Spring configuration

DFPD-...-S

- The spring force can be adapted to the system's supply pressure in steps of 0.5 bar through free selection of the number of spring cartridges (4 to 12)

Epoxy coating

DFPD-...-EP

- Actuator with epoxy coating

Stainless steel shaft

DFPD-...-R3

- With stainless steel shaft

NPT version

DFPD-...-N

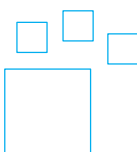
- Pneumatic connections with NPT threads

180° version

DFPD-...-180

- Sizes 40, 120, 240, 480 double-acting also available with 180° swivel angle

Ordering data – Product options



Configurable product
This product and all its product options can be ordered using the configurator.

The configurator can be found at
→ www.festo.com/catalogue/...

Part No.	Type code
8042184	DFPD-10
8042185	DFPD-20
8042186	DFPD-40
8042187	DFPD-80
8042188	DFPD-120
8042189	DFPD-160
8042190	DFPD-240
8042191	DFPD-300
8042192	DFPD-480
8042193	DFPD-700
8042194	DFPD-900
8042195	DFPD-1200
8042196	DFPD-2300

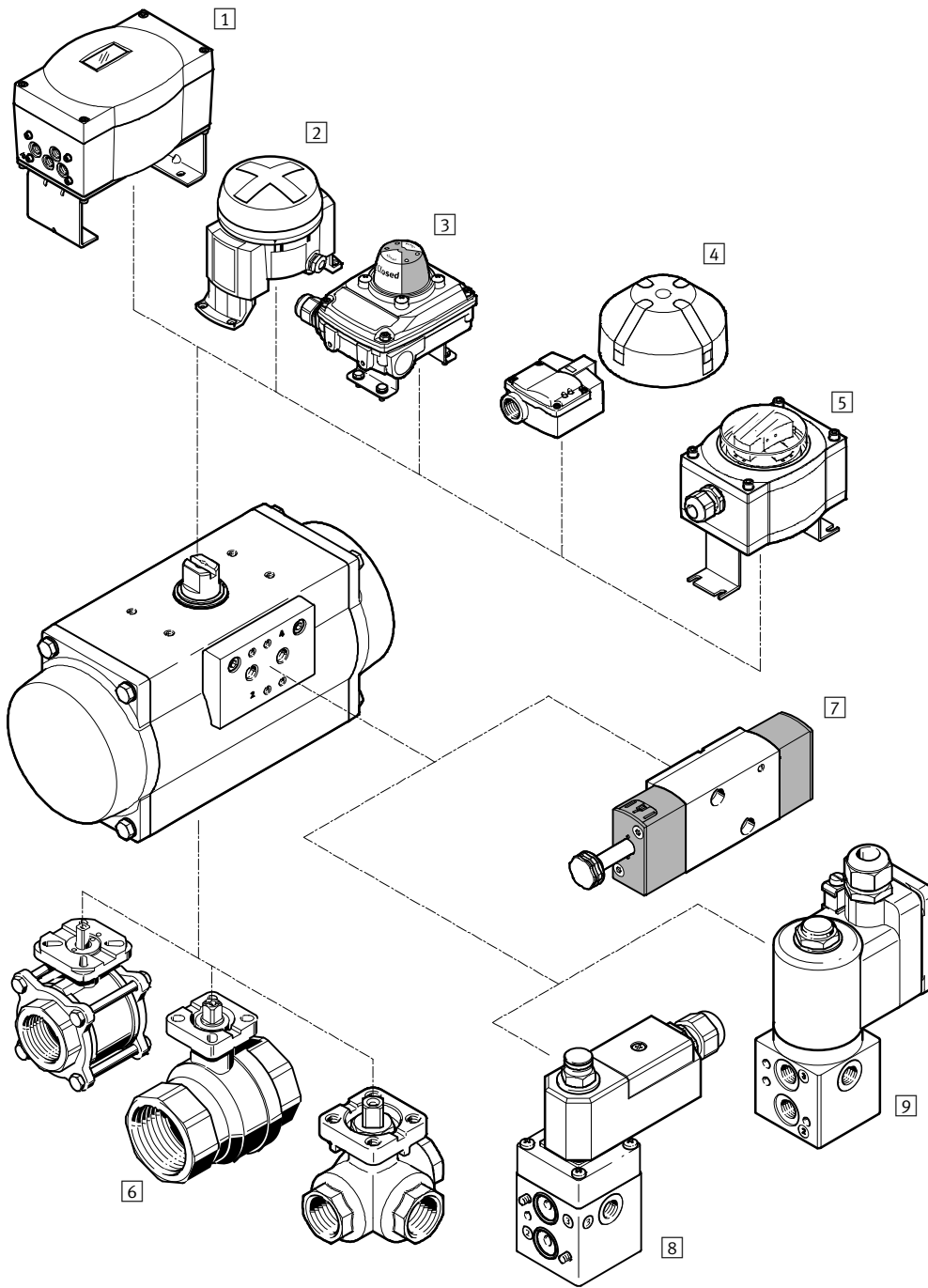
Quarter turn actuators DFPD

Key features

Size	Flange pattern	Shaft connection	Shaft connection depth [mm]	Pneumatic connection
10	F03	V9	10.7	G 1/8
	F04			1/8 NPT
20	F03	V9	10.7	G 1/8
	F04	V11	13.2	1/8 NPT
	F05			
40	F04	V11	13.2	G 1/8
	F05F07	V14	16.5	1/8 NPT
80	F05F07	V17	19.3	G 1/8
				1/8 NPT
120	F05F07	V17	19.3	G 1/4
				1/4 NPT
160	F07F10	V22	24.3	G 1/4
				1/4 NPT
240	F07F10	V22	24.3	G 1/4
				1/4 NPT
300	F07F10	V22	24.3	G 1/4
				1/4 NPT
480	F10F12	V27	29.5	G 1/4
				1/4 NPT
700	F10F12	V27	29.7	G 1/4
				1/4 NPT
900	F10F12	V27	30.2	G 1/4
	F14	V36	40.2	1/4 NPT
1200	F10F12	V27	31	G 1/4
	F14	V36	40	1/4 NPT
2300	F12F16	V46	50	G 1/4
	F14	V36	40	1/4 NPT

Quarter turn actuators DFPD

Peripherals overview



Peripherals overview

Mounting components and accessories			
	Description	→ Page/Internet	
1	Positioner CMSX	For controlling the position of quarter turn actuators in process automation systems	289
2	Limit switch attachment DAPZ	Round design, variant AR, electrical, inductive or inductive and explosion-proof sensing	279
3	Sensor box SRBC	For electrical position feedback and monitoring the position of process valves actuated using quarter turn actuators	217
4	Sensor box SRBG	For electrical position feedback and monitoring the position of process valves actuated using quarter turn actuators	235
5	Sensor box SRAP	Analogue sensor box continuously senses the entire swivel range and reports this back to the controller	269
6	Ball valve VAPB, VZBA	2-way brass or stainless steel, corrosion-resistant; 3-way stainless steel, corrosion-resistant	542, 495
7	Solenoid valve VSNC	For single- and double-acting quarter turn actuators with a port pattern to VDI/VDE 3845	23
8	Solenoid valve VOFC	Solenoid valve with solenoid coil, port pattern to Namur	85
9	Solenoid valve VOFD	Solenoid valve with solenoid coil, port pattern to Namur	151

Quarter turn actuators DFPD

Type codes

DFPD - [] - [] - [] - RP - [] - [] - [] - [] - []

Type

DFPD	Quarter turn actuator
------	-----------------------

System of units

-	Metric
N	Imperial

Version

-	Standard
---	----------

Size

10	10
20	20
40	40
80	80
120	120
160	160
240	240
300	300
480	480
700	700
900	900
1200	1200
2300	2300

Design

RP	Rack and pinion
----	-----------------

Yoke type

-	None
---	------

Swivel angle

90	90°
180	180°

Swivel direction

L	To the left
R	To the right

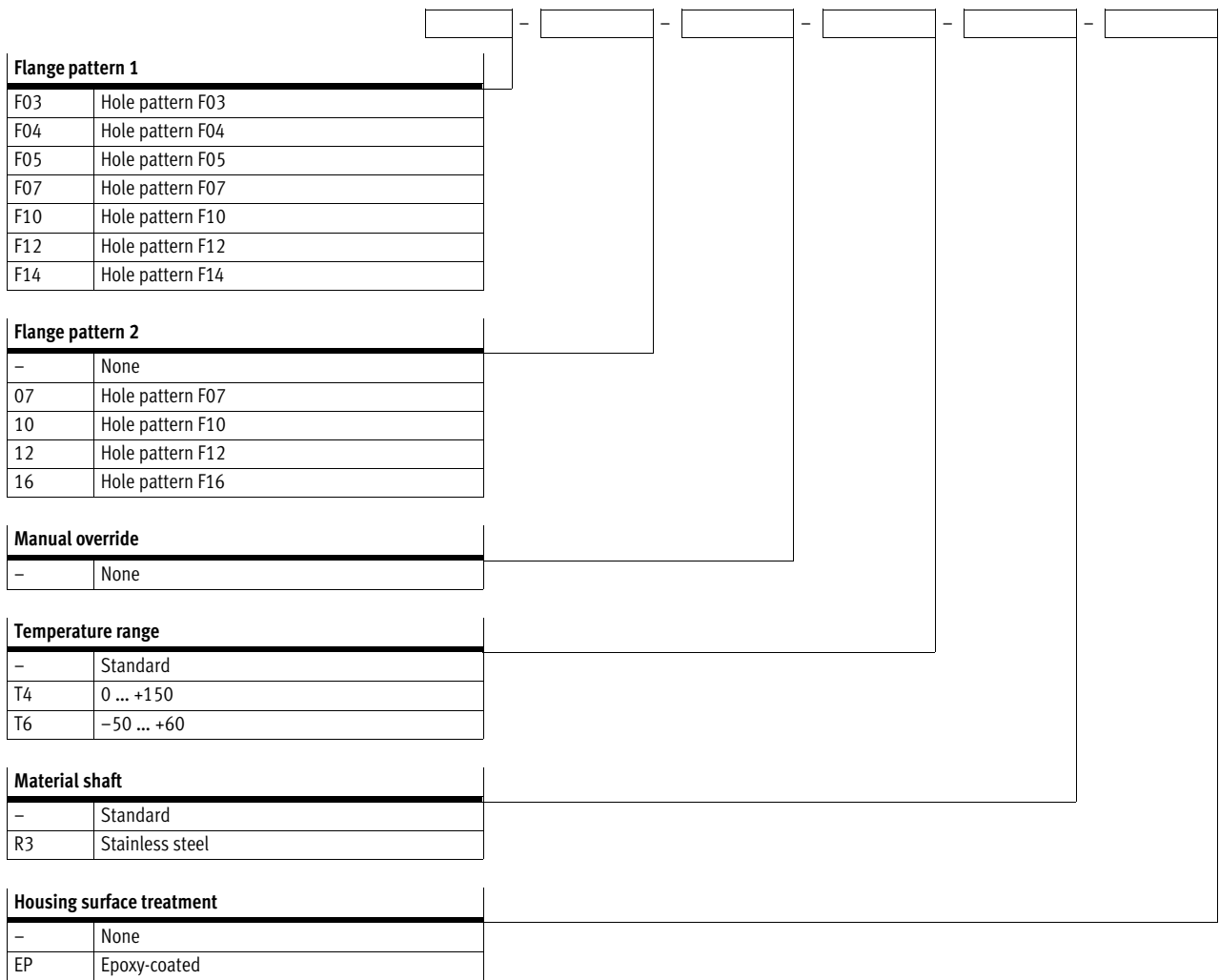
Function

D	Double-acting
S	Single-acting

Spring configuration

-	None
20	For connection pressure 2 bar
25	For connection pressure 2.5 bar
30	For connection pressure 3 bar
35	For connection pressure 3.5 bar
40	For connection pressure 4 bar
45	For connection pressure 4.5 bar
50	For connection pressure 5 bar
55	For connection pressure 5.5 bar
60	For connection pressure 6 bar

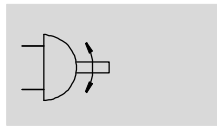
Type codes




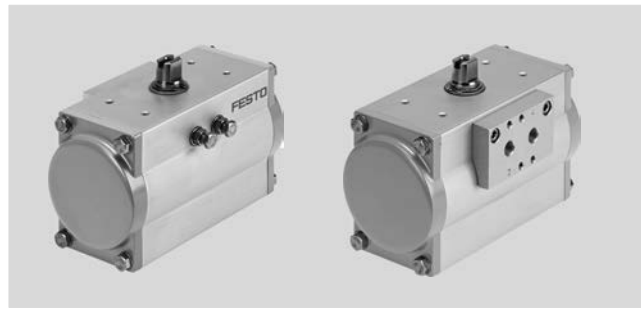
Quarter turn actuators DFPD, double-acting


Technical data

Function



 Swivel angle
0 ... 90°



 Size
10 ... 2300

General technical data											
Size	10		20		40		80		120		160
Mode of operation	Double-acting										
Design	Rack and pinion										
Cushioning	No cushioning										
Mounting position	Any										
Pneumatic connection	G 1/8								G 1/4		
	1/8 NPT								1/4 NPT		
Standards-based connection	ISO 5211										
Valve connection conforms to standard	VDI/VDE 3845 (NAMUR)										
Connection for positioner and position sensor conforms to standard	VDI/VDE 3845 (NAMUR)										
Safety Integrity Level (SIL)	Up to SIL 2 High Demand mode										
Size	AA 1										
Flange hole pattern 1	F03	F04	F03	F04	F05	F04	F05	F05	F05	F07	
Flange hole pattern 2	-	-	-	-	-	F07	F07	F07	F07	F10	
Swivel angle [°]	90										
	-							120	-	120	-
	-							135	-	135	-
	-							180	-	180	-
End-position adjusting range at 0° [°]	-5 ... +5										
End-position adjusting range at 90° [°]	-5 ... +5										
End-position adjusting range at 180° [°]	-						-5 ... +5	-	-5 ... +5	-	
Position sensing	Opto-electrical										
Closing direction	Closes to the right										

Quarter turn actuators DFPD, double-acting

Technical data

General technical data							
Size	240	300	480	700	900	1200	2300
Mode of operation	Double-acting						
Design	Rack and pinion						
Cushioning	No cushioning						
Mounting position	Any						
Pneumatic connection	G 1/4 1/4 NPT						
Standards-based connection	ISO 5211						
Valve connection conforms to standard	VDI/VDE 3845 (NAMUR)						
Connection for positioner and position sensor conforms to standard	VDI/VDE 3845 (NAMUR)						
Safety Integrity Level (SIL)	Up to SIL 2 High Demand mode						
Size	AA 2				AA 3		
Flange hole pattern 1	F07	F07	F10	F10	F10 F14	F10 F14	F12 F14
Flange hole pattern 2	F10	F10	F12	F12	F12	F12	F16
Swivel angle [°]	90						
	120	–	120	–			
	135	–	135	–			
	180	–	180	–			
End-position adjusting range at 0° [°]	–5 ... +5						
End-position adjusting range at 90° [°]	–5 ... +5						
End-position adjusting range at 180° [°]	–5 ... +5	–	–5 ... +5	–			
Position sensing	Opto-electrical						
Closing direction	Closes to the right						

Operating and environmental conditions

Operating pressure [bar]	2 ... 8
Nominal operating pressure [bar]	5.5
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium	Pressure dew point 10 °C below ambient temperature/temperature of medium Lubricated operation possible (in which case lubricated operation will always be required)
Ambient temperature [°C]	–20 ... +80

Quarter turn actuators DFPD, double-acting

Technical data

ATEX	
ATEX category for gas	II 2G
Type of ignition protection for gas	Ex h IIC T4 Gb X
ATEX category for dust	II 2D
Type of ignition protection for dust	Ex h IIIC T105°C Db X
Explosion-proof temperature rating [°C]	-20 ≤ Ta ≤ +80
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

Theoretical torque [Nm] as a function of operating pressure

Size	Operating pressure [bar]										
	2	2.5	3	3.5	4	4.5	5	5.5	6	7	8
10	3.7	4.7	5.6	6.6	7.5	8.4	9.4	10.3	11.2	13.1	15.0
20	7.3	9.1	11.0	12.8	14.6	16.4	18.3	20.1	21.9	25.6	29.2
40	13.9	17.4	20.9	24.4	27.9	31.3	34.8	38.3	41.8	48.7	55.7
80	30.0	37.5	44.9	52.4	59.9	67.4	74.9	82.4	89.9	104.9	119.9
120	42.7	53.4	64.0	74.7	85.4	96.1	106.7	117.4	128.1	149.4	170.8
160	58.5	73.2	87.8	102.5	117.1	131.7	146.4	161.0	175.6	204.9	234.2
240	85.2	106.5	127.8	149.1	170.4	191.7	213.0	234.3	255.6	298.2	340.8
300	109.8	137.2	164.7	192.1	219.6	247.0	274.5	301.9	329.3	384.2	439.1
480	172.4	215.5	258.5	301.6	344.7	387.8	430.9	474.0	517.1	603.3	689.5
700	241.2	301.5	361.8	422.1	482.4	542.7	603.0	663.3	723.6	844.2	964.8
900	306.2	382.7	459.3	535.8	612.4	688.9	765.4	842.0	918.5	1071.6	1224.7
1200	425.2	531.6	637.9	744.2	850.5	956.8	1063.1	1169.4	1275.7	1488.4	1701.0
2300	812.1	1015.1	1218.2	1421.2	1624.2	1827.2	2030.3	2233.3	2436.3	2842.4	3248.4

-  - Note

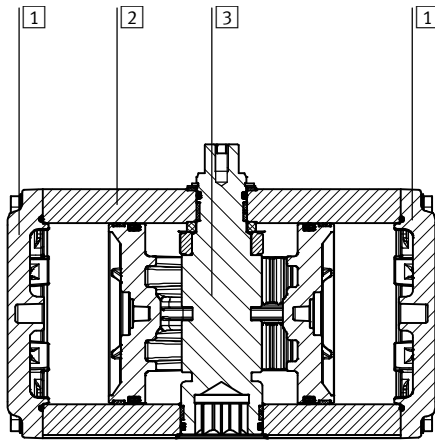
The operating torque of the actuator must not be greater than the maximum permissible torque listed in ISO 5211 in relation to the size of the mounting flange and of the coupling.

Quarter turn actuators DFPD, double-acting

Technical data

Materials

Sectional view



Quarter turn actuators		Material number
1	Cap	Coated die-cast aluminium EN AC-46100-D
2	Housing	Anodised wrought aluminium alloy EN AW-6063-T6
3	Shaft	Nickel-plated steel 1.0715
	R3	High-alloy stainless steel 1.4305
-	Mounting plate	Anodised wrought aluminium alloy EN AW-6063-T6
	Piston/piston rod	Die cast aluminium EN AC-46100-D
	Seals	NBR -
	Bearing	POM -
	Cam	Stainless steel casting (DFPD-10/20/40/80/120/160-90) 1.4308
		Steel (DFPD-240/300/480/700/900/1200/ 2300-90) 1.0765
	Screws	High-alloy stainless steel 1.4301
	Note on materials	RoHS-compliant -

Air consumption [l/cycle] at 6 bar

Type code	
DFPD-10-RP-90-D	1
DFPD-20-RP-90-D	1.8
DFPD-40-RP-90-D	3.4
DFPD-40-RP-180-D	5.2
DFPD-80-RP-90-D	7.4
DFPD-120-RP-90-D	10.4
DFPD-120-RP-180-D	12.8
DFPD-160-RP-90-D	14
DFPD-240-RP-90-D	20.3
DFPD-240-RP-180-D	25.7
DFPD-300-RP-90-D	26.4

Type code	
DFPD-480-RP-90-D	40.5
DFPD-480-RP-180-D	61.4
DFPD-700-RP-90-RD	58.8
DFPD-900-RP-90-RD	75.9
DFPD-1200-RP-90-RD	105
DFPD-2300-RP-90-RD	204

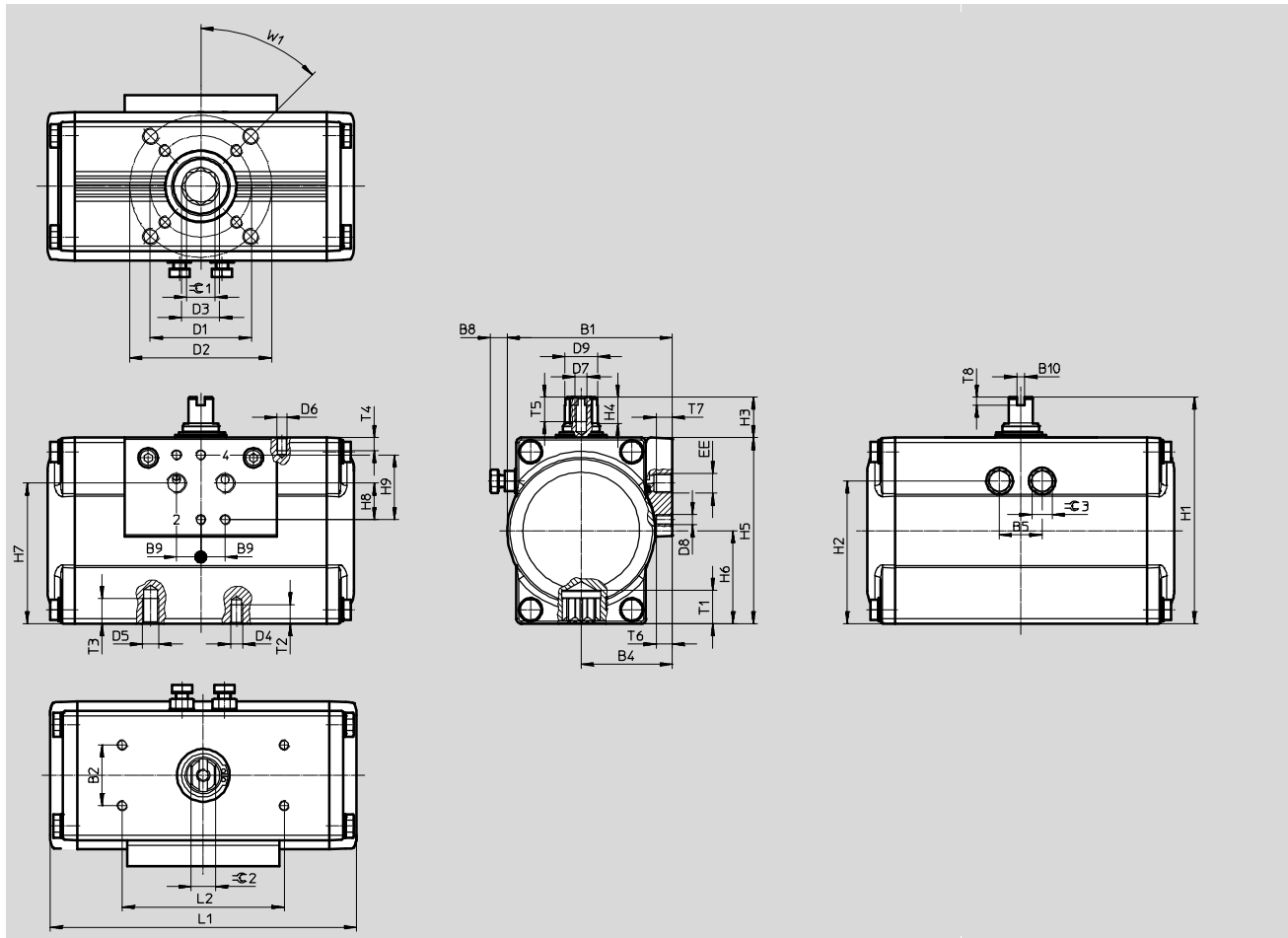
Quarter turn actuators DFPD, double-acting

Technical data

Dimensions

Size 10 ... 80

Download CAD data → www.festo.com



Quarter turn actuators DFPD, double-acting

Technical data

Type code	B1	B2 ±0.1	B4	B5	B8 max.	B9	B10	D1 ∅ ±0.1	D2 ∅ ±0.1	D3 ∅	D4	D5	D6
DFPD-10-F03	59.5	30	35	16	10.7	12	4	36	-	12	M5	-	M5
DFPD-10-F04								42					
DFPD-20-F04	68.5		38.5	19	9.2			-	14.6	M6	-		
DFPD-20-F05													
DFPD-40	81.5		45	21	8.2			70	18.7	M8			
DFPD-40-180													
DFPD-80	99	53	26	9	23.3	M6	M8						

Type code	D7	D8	D9 ∅ ±0.1	EE	H1	H2	H3 -0.5	H4 +0.1	H5	H6 ±0.2	H7 ±0.3	H8 ±0.1	H9
DFPD-10-F03	M6	M5	10.9	G 1/8 or 1/8 NPT	90	51	20	10	70	35	47	16	32
DFPD-10-F04			12.7		100	59.75		10	80	40	57.5		
DFPD-20-F04													
DFPD-20-F05			16.2		112	70.5		13	92	46	67.5		
DFPD-40													
DFPD-40-180			20.2		130	86		13	110	55	86.5		
DFPD-80													

Type code	L1	L2 ±0.1	T1 ±0.4	T2	T3	T4	T5	T6	T7	T8 +0.5	∠1 H11	∠2 h11	∠3	W1
DFPD-10-F03	124.7	80	10.7	8	-	8	12	8	8	4	9	9	10	45°
DFPD-10-F04														
DFPD-20-F04	133.3		13.2	8	-						11	9	10	
DFPD-20-F05				9										
DFPD-40	151.4		16.5	9	12						14	12	10	
DFPD-40-180	227													
DFPD-80	189.3	19.3	17	15	13									

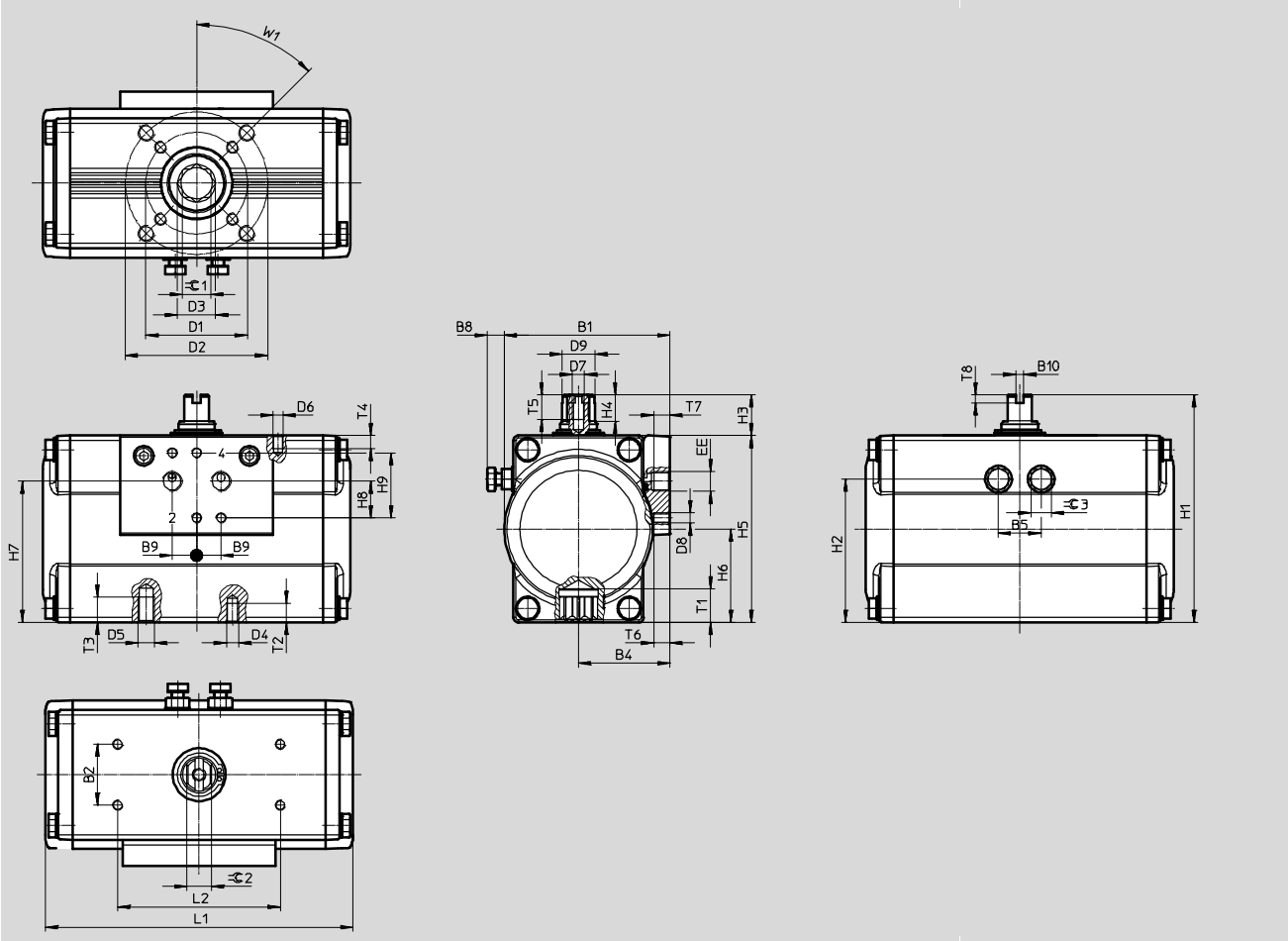
Quarter turn actuators DFPD, double-acting

Technical data

Dimensions

Size 120 ... 480

Download CAD data → www.festo.com



05

Quarter turn actuators

Quarter turn actuators DFPD, double-acting

Technical data

Type code	B1	B2 ±0.1	B4	B5	B8 max.	B9	B10	D1 ∅ ±0.1	D2 ∅ ±0.1	D3 ∅	D4	D5	D6
DFPD-120	111.5	30	60.5	32	12.3	12	4	50	70	23.3	M6	M8	M5
DFPD-120-180										23.2			
DFPD-160	120		63.5	36	13.4			70	102	23.2	M8	M10	
DFPD-240	135.5		71.5	41	18.5					30			
DFPD-240-180								30.3					
DFPD-300	144		74.5	46	17			30					
DFPD-480	163		83	52	19.3			102	125	37.4	M10	M12	
DFPD-480-180													

Type code	D7	D8	D9 ∅ ±0.1	EE	H1	H2	H3 -0.5	H4 +0.1	H5	H6	H7 ±0.3	H8 ±0.1	H9	
DFPD-120	M6	M5	22.5	G 1/4 or 1/4 NPT	143	97.75	20	13	123	61.5±0.2	98.4	16	32	
DFPD-120-180					154	106.25			134	67±0.2	109.4			
DFPD-160					25.5	180	120.5	30	19.5	150	75±0.2			120.2
DFPD-240					31.8	192	131			162	81±0.3			132.1
DFPD-240-180						214	149.5			184	92±0.4			152.5
DFPD-300					38									
DFPD-480														
DFPD-480-180														

Type code	L1	L2 ±0.1	T1 ±0.4	T2	T3	T4	T5	T6	T7	T8 +0.5	≈C 1 H11	≈C 2 h11	≈C 3	W1
DFPD-120	213.7	80	19.3	9	12	8	14	8	12	4	17	15	13	45°
DFPD-120-180	326.8										19	16		
DFPD-160	230.9		24.3	12	15						22	22	18	
DFPD-240	257										27	27	21	
DFPD-240-180	395.5		29.5	15	18									
DFPD-300	334.4													
DFPD-480	374.2													
DFPD-480-180	550.3													

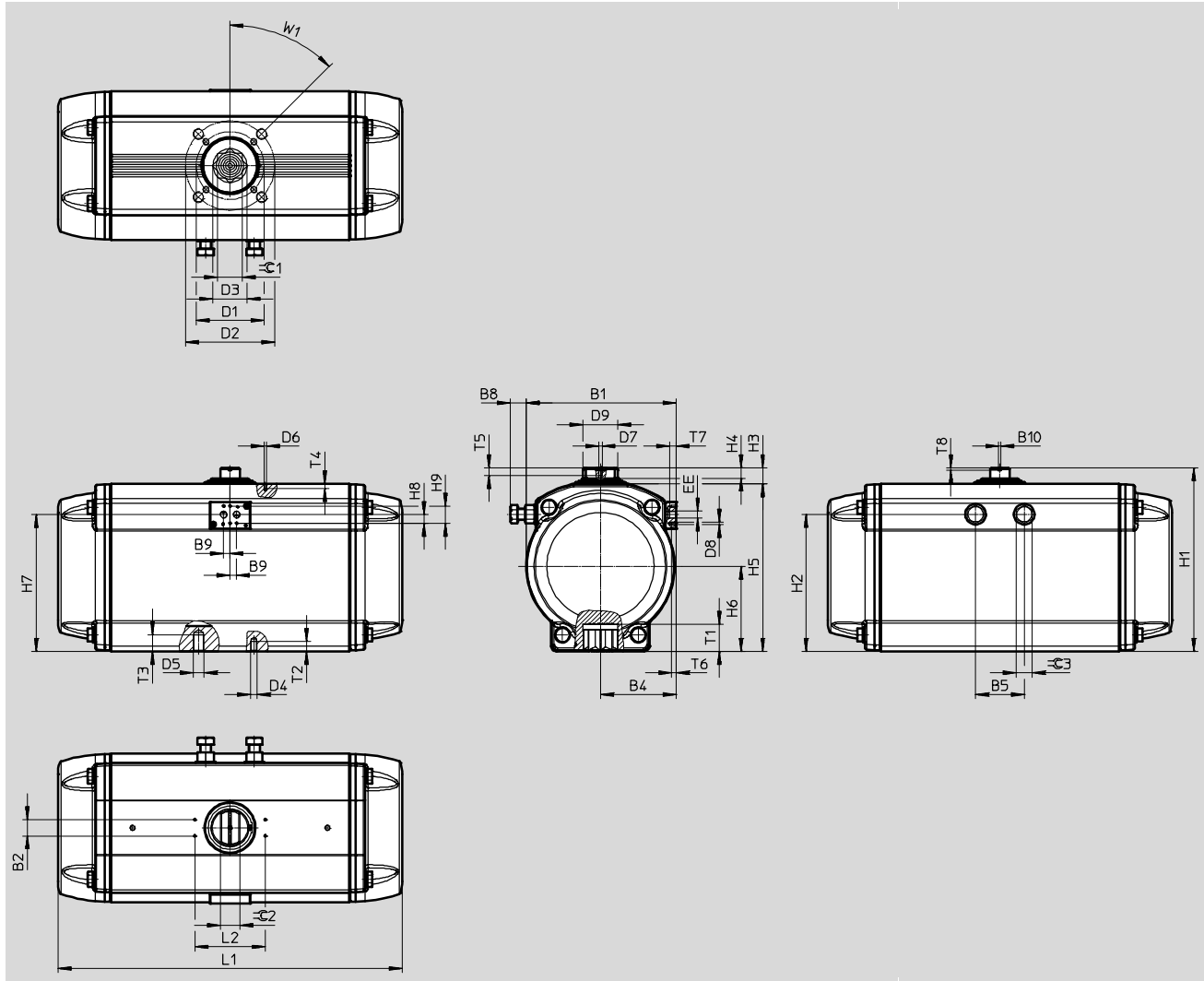
Quarter turn actuators DFPD, double-acting

Technical data

Dimensions

Size 700 ... 2300

Download CAD data → www.festo.com



Quarter turn actuators DFPD, double-acting

Technical data

Type code	B1	B2 ±0.1	B4	B5	B8 max.	B9	B10 ±0.1	D1 ∅	D2 ∅	D3 ∅	D4	D5	D6
DFPD-700- ... -F10/12	184	30	93	57.6	17.5	12	4	102	125	37.4	M10	M12	M5
DFPD-900- ... -F10/12	202		102	64.8	28.6			140	–	50.1	M16	–	
DFPD-900- ... -F14			102	125	37.4			M10	M12				
DFPD-1200- ... -F10/12	221.5		111.5	72	24			140	–	50.1	M16	–	
DFPD-1200- ... -F14			125	165	62.9			M12	M20				
DFPD-2300- ... -F12/16	277		139.8	90	33			140	–	50.1	M16	–	
DFPD-2300- ... -F14								140	–	50.1	M16	–	

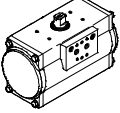
Type code	D7	D8	D9 ±0.1	EE	H1	H2	H3	H4	H5	H6	H7	H8 ±0.1	H9	
DFPD-700- ... -F10/12	M6	M5	41	G 1/4 or 1/4 NPT	232.7	168	29.7	21	203	103	164.9	16	32	
DFPD-900- ... -F10/12			44		252.7	182			223	113	178.3			
DFPD-900- ... -F14			50		275.7	204			246	125	199.6			
DFPD-1200- ... -F10/12			64		338.7	253			19	309	157			252.3
DFPD-1200- ... -F14														
DFPD-2300- ... -F12/16														
DFPD-2300- ... -F14														

Type code	L1	L2 ±0.1	T1 min.	T2	T3	T4	T5	T6	T7	T8 +0.5	≈ 1 H11	≈ 2 h11	≈ 3	W1
DFPD-700- ... -F10/12	428.2	80	29.7	15	18	8	14	8	12	4	27	30	21	45°
DFPD-900- ... -F10/12	469.6	130	30.2	15.5	18.5	36					32	24		
DFPD-900- ... -F14			40.2	24.5	–	36					36			
DFPD-1200- ... -F10/12	519.3		31	15.5	18.5	27						36	36	
DFPD-1200- ... -F14			40	24.5	–	36								
DFPD-2300- ... -F12/16	636		50	18.5	30	46					36	30		
DFPD-2300- ... -F14			40	24.5	–	36								

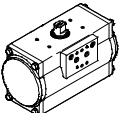
Quarter turn actuators DFPD, double-acting

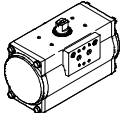
Technical data

★ Core product range

Ordering data				
Type code	Size	Product weight [g]	Part No.	Type code
	10	965	★ 8047613	DFPD-10-RP-90-RD-F03
	20	1275	★ 8047614	DFPD-20-RP-90-RD-F04
	40	1882	★ 8047615	DFPD-40-RP-90-RD-F0507
	80	3308	★ 8047616	DFPD-80-RP-90-RD-F0507
	120	4872	★ 8048123	DFPD-120-RP-90-RD-F0507

☆ Core product range

Ordering data				
Type code	Size	Product weight [g]	Part No.	Type code
	160	6082	☆ 8048124	DFPD-160-RP-90-RD-F0710
	240	8594	☆ 8048125	DFPD-240-RP-90-RD-F0710
	300	11224	☆ 8048126	DFPD-300-RP-90-RD-F0710
	480	16025	☆ 8048127	DFPD-480-RP-90-RD-F1012

Ordering data				
Type code	Size	Product weight [g]	Part No.	Type code
	10	965	8048010	DFPD-10-RP-90-RD-F04
	20	1275	8048011	DFPD-20-RP-90-RD-F05
	40	2608	8065336	DFPD-40-RP-180-RD-F0507
	40	2467	8065337	DFPD-40-RP-135-RD-F0507
	40	2419	8065338	DFPD-40-RP-120-RD-F0507
	120	7122	8065339	DFPD-120-RP-180-RD-F0507
	120	6363	8065340	DFPD-120-RP-135-RD-F0507
	120	6250	8065341	DFPD-120-RP-120-RD-F0507
	240	12549	8065342	DFPD-240-RP-180-RD-F0710
	240	11139	8065343	DFPD-240-RP-135-RD-F0710
	240	10939	8065344	DFPD-240-RP-120-RD-F0710
	480	23456	8065345	DFPD-480-RP-180-RD-F1012
	480	21013	8065346	DFPD-480-RP-135-RD-F1012
	480	20653	8065347	DFPD-480-RP-120-RD-F1012
	700	22464	8065261	DFPD-700-RP-90-RD-F1012
	900	25574	8065265	DFPD-900-RP-90-RD-F14
	1200	35834	8065269	DFPD-1200-RP-90-RD-F14
2300	64900	8065273	DFPD-2300-RP-90-RD-F1216	

05

Quarter turn actuators

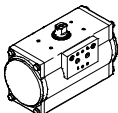
Festo core product range

★ Generally ready for shipping ex works in 24 hours

☆ Generally ready for shipping ex works in 5 days

Quarter turn actuators DFPD, double-acting

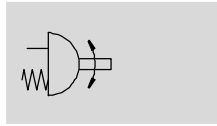
Technical data

Ordering data				
Type code	Size	Product weight [g]	Part No.	Type code
Version R3-EP, epoxy-coated				
	10	965	8047617	DFPD-10-RP-90-RD-F03-R3-EP
			8048012	DFPD-10-RP-90-RD-F04-R3-EP
	20	1275	8047618	DFPD-20-RP-90-RD-F04-R3-EP
			8048013	DFPD-20-RP-90-RD-F05-R3-EP
	40	1882	8047619	DFPD-40-RP-90-RD-F0507-R3-EP
	80	3308	8047620	DFPD-80-RP-90-RD-F0507-R3-EP
	120	4872	8048128	DFPD-120-RP-90-RD-F0507-R3-EP
	160	6082	8048129	DFPD-160-RP-90-RD-F0710-R3-EP
	240	8594	8048130	DFPD-240-RP-90-RD-F0710-R3-EP
	300	11224	8048131	DFPD-300-RP-90-RD-F0710-R3-EP
	480	16025	8048132	DFPD-480-RP-90-RD-F1012-R3-EP
	700	22464	8065263	DFPD-700-RP-90-RD-F1012-R3-EP
	900	25574	8065267	DFPD-900-RP-90-RD-F14-R3-EP
	1200	35834	8065271	DFPD-1200-RP-90-RD-F14-R3-EP
2300	64900	8065275	DFPD-2300-RP-90-RD-F1216-R3-EP	

Quarter turn actuators DFPD, single-acting

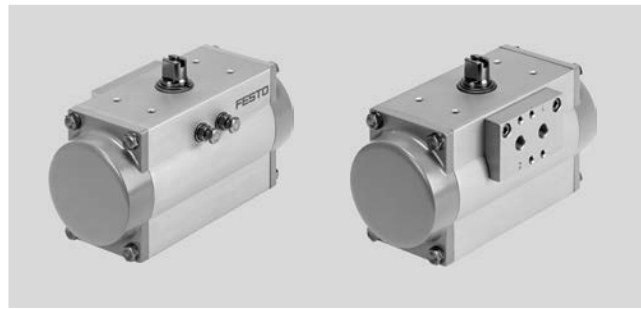
Technical data

Function



Swivel angle
0 ... 90°

Size
20 ... 2300



General technical data		20	40	80	120	160	240	300	480	700	900	1200	2300					
Mode of operation		Single-acting																
Design		Rack and pinion																
Cushioning		No cushioning																
Mounting position		Any																
Pneumatic connection		G 1/8						G 1/4										
		1/8 NPT						1/4 NPT										
Standards-based connection		ISO 5211																
Valve connection conforms to standard		VDI/VDE 3845 (NAMUR)																
Connection for positioner and position sensor conforms to standard		VDI/VDE 3845 (NAMUR)																
Safety Integrity Level (SIL)		Up to SIL 2 High Demand mode																
Size		AA 1						AA 2				AA 3						
Flange hole pattern 1		F03	F04	F05	F04	F05	F05	F05	F07	F07	F07	F10	F10	F10	F14	F14	F12	F14
Flange hole pattern 2		-	-	-	F07	F07	F07	F07	F10	F10	F10	F12	F12	F12	F12	F12	F16	F16
Swivel angle [°]		90																
End-position adjusting range at 0° [°]		-5 ... +5																
End-position adjusting range at 90° [°]		-5 ... +5																
Position sensing		Opto-electrical																
Closing direction		Closes to the right																

Operating and environmental conditions		RS30	RS60
Variant		RS30	RS60
Operating pressure [bar]		2 ... 8	
Nominal operating pressure [bar]		3	6
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium		Pressure dew point 10 °C below ambient temperature/temperature of medium	
		Lubricated operation possible (in which case lubricated operation will always be required)	
Ambient temperature [°C]		-20 ... +80	

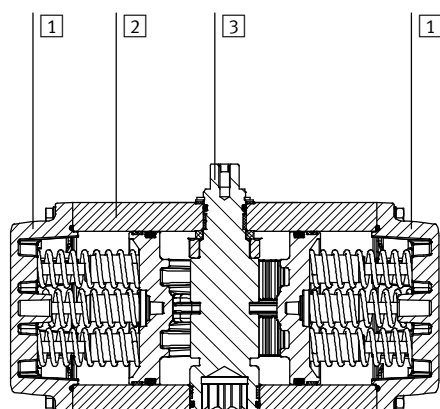
Quarter turn actuators DFPD, single-acting

Technical data

ATEX	
ATEX category for gas	II 2G
Type of ignition protection for gas	Ex h IIC T4 Gb X
ATEX category for dust	II 2D
Type of ignition protection for dust	Ex h IIIC T105°C Db X
Explosion-proof temperature rating [°C]	-20 ≤ Ta ≤ +80
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

Materials

Sectional view



Quarter turn actuators		Material number	
1	Cap	Coated die-cast aluminium EN AC-46100-D	
2	Housing	Anodised wrought aluminium alloy EN AW-6063-T6	
3	Shaft	Nickel-plated steel 1.0715	
	R3	High-alloy stainless steel 1.4305	
-	Mounting plate	Anodised wrought aluminium alloy EN AW-6063-T6	
	Piston rod	Die cast aluminium EN AC-46100-D	
	Seals	NBR -	
	Spring	Spring steel -	
	Bearing	POM -	
	Cam	Stainless steel casting (DFPD-20...160...-RS) Steel (DFPD-240 ... 2300...-RS)	1.4308 1.0765
	Screws	High-alloy stainless steel 1.4301	
	Note on materials	RoHS-compliant -	

Air consumption [l/cycle] at 6 bar

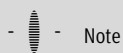
Type code	Air consumption [l/cycle] at 6 bar
DFPD-20-RP-90-S	0.60
DFPD-40-RP-90-S	1.80
DFPD-80-RP-90-S	3.60
DFPD-120-RP-90-S	5.40
DFPD-160-RP-90-S	7.20
DFPD-240-RP-90-S	10.20
DFPD-300-RP-90-S	13.20
DFPD-480-RP-90-S	21.00

Type code	Air consumption [l/cycle] at 6 bar
DFPD-700-RP-90-RS60	24.48
DFPD-900-RP-90-RS60	31.5
DFPD-1200-RP-90-RS60	43.44
DFPD-2300-RP-90-RS60	84.3

Quarter turn actuators DFPD, single-acting

Technical data

Theoretical torque [Nm] as a function of operating pressure [bar] and swivel angle [°]													
Spring configuration	Nominal swivel angle	Spring torque [Nm]	Operating pressure [bar]										
	[°]		2	2.5	3	3.5	4	4.5	5	5.5	6	7	8
Size DFPD-20													
20	0	2.4	4.9	6.7	8.6	10.4	12.2	14.0	15.9	17.7	19.5	23.2	26.8
	90	4.8	2.5	4.4	6.2	8.0	9.9	11.7	13.5	15.3	17.2	20.8	24.5
25	0	3.0	4.3	6.1	8.0	9.8	11.6	13.4	15.3	17.1	18.9	22.6	26.2
	90	6.0	1.4	3.2	5.0	6.8	8.7	10.5	12.3	14.2	16.0	19.6	23.3
30	0	3.6		5.5	7.4	9.2	11.0	12.8	14.7	16.5	18.3	22.0	25.6
	90	7.1		2.0	3.8	5.7	7.5	9.3	11.1	13.0	14.8	18.4	22.1
35	0	4.2			6.8	8.6	10.4	12.2	14.1	15.9	17.7	21.4	25.0
	90	8.3			2.6	4.5	6.3	8.1	9.9	11.8	13.6	17.3	20.9
40	0	4.8				8.0	9.8	11.6	13.5	15.3	17.1	20.8	24.4
	90	9.5				3.3	5.1	6.9	8.8	10.6	12.4	16.1	19.7
45	0	5.4					9.2	11.0	12.9	14.7	16.5	20.2	23.8
	90	10.7					3.9	5.7	7.6	9.4	11.2	14.9	18.5
50	0	6.0						10.4	12.3	14.1	15.9	19.6	23.2
	90	11.9						4.5	6.4	8.2	10.0	13.7	17.3
55	0	6.6							11.7	13.5	15.3	19.0	22.6
	90	13.1							5.2	7.0	8.8	12.5	16.1
60	0	7.2								12.9	14.7	18.4	22.0
	90	14.3								5.8	7.6	11.3	15.0
Size DFPD-40													
20	0	4.6	9.3	12.8	16.3	19.8	23.3	26.7	30.2	33.7	37.2	44.1	51.1
	90	9.1	4.8	8.3	11.8	15.3	18.8	22.3	25.7	29.2	32.7	39.7	46.6
25	0	5.8	8.2	11.7	15.1	18.6	22.1	25.6	29.1	32.6	36.0	43.0	50.0
	90	11.4	2.6	6.1	9.5	13.0	16.5	20.0	23.5	27.0	30.4	37.4	44.4
30	0	6.9		10.5	14.0	17.5	21.0	24.4	27.9	31.4	34.9	41.8	48.8
	90	13.6		3.8	7.3	10.8	14.2	17.7	21.2	24.7	28.2	35.1	42.1
35	0	8.1			12.8	16.3	19.8	23.3	26.8	30.3	33.7	40.7	47.7
	90	15.9			5.0	8.5	12.0	15.4	18.9	22.4	25.9	32.9	39.8
40	0	9.2				15.2	18.7	22.1	25.6	29.1	32.6	39.5	46.5
	90	18.2				6.2	9.7	13.2	16.7	20.1	23.6	30.6	37.5
45	0	10.4					17.5	21.0	24.5	28.0	31.4	38.4	45.4
	90	20.4					7.4	10.9	14.4	17.9	21.4	28.3	35.3
50	0	11.5						19.8	23.3	26.8	30.3	37.2	44.2
	90	22.7						8.6	12.1	15.6	19.1	26.0	33.0
55	0	12.7							22.2	25.7	29.1	36.1	43.1
	90	25.0							9.8	13.3	16.8	23.8	30.7
60	0	13.8								24.5	28.0	34.9	41.9
	90	27.2								11.1	14.5	21.5	28.5



Note
The operating torque of the actuator must not be greater than the maximum permissible torque listed in ISO 5211 in relation to the size of the mounting flange and of the coupling.

Quarter turn actuators DFPD, single-acting

Technical data

Theoretical torque [Nm] as a function of operating pressure [bar] and swivel angle [°]													
Spring configuration	Nominal swivel angle	Spring torque [Nm]	Operating pressure [bar]										
	[°]		2	2.5	3	3.5	4	4.5	5	5.5	6	7	8
Size DFPD-80													
20	0	9.9	20.1	27.6	35.1	42.6	50.0	57.5	65.0	72.5	80.0	95.0	110.0
	90	19.5	10.5	18.0	25.5	33.0	40.4	47.9	55.4	62.9	70.4	85.4	100.4
25	0	12.4	17.6	25.1	32.6	40.1	47.6	55.1	62.6	70.1	77.5	92.5	107.5
	90	24.4	5.6	13.1	20.6	28.1	35.6	43.1	50.6	58.1	65.5	80.5	95.5
30	0	14.8		22.6	30.1	37.6	45.1	52.6	60.1	67.6	75.1	90.1	105.0
	90	29.2		8.2	15.7	23.2	30.7	38.2	45.7	53.2	60.7	75.5	90.6
35	0	17.3			27.7	35.1	42.6	50.1	57.6	65.1	72.6	87.6	102.6
	90	34.1			10.9	18.3	25.8	33.3	40.8	48.3	55.8	70.8	85.8
40	0	19.8				32.7	40.2	47.7	55.1	62.6	70.1	85.1	100.1
	90	39.0				13.5	21.0	28.5	35.9	43.4	50.9	65.9	80.9
45	0	22.2					37.7	45.2	52.7	60.2	67.7	82.6	97.6
	90	43.8					16.1	23.6	31.1	38.6	46.1	61.0	76.0
50	0	24.7						42.7	50.2	57.7	65.2	80.2	95.2
	90	48.7						18.7	26.2	33.7	41.2	56.2	71.2
55	0	27.2							47.7	55.2	62.7	77.7	92.7
	90	53.6							21.3	28.8	36.3	51.3	66.3
60	0	29.6								52.8	60.3	75.2	90.2
	90	58.4								24.0	31.5	46.4	61.4
Size DFPD-120													
20	0	14.0	28.7	39.3	50.0	60.7	71.3	82.0	92.7	103.4	114.0	135.4	156.7
	90	27.8	14.9	25.6	36.3	46.9	57.6	68.3	79.0	89.6	100.3	121.7	143.0
25	0	17.6	25.1	35.8	46.5	57.2	67.8	78.5	89.2	99.9	110.5	131.9	153.2
	90	34.7	8.0	18.7	29.3	40.0	50.7	61.4	72.0	82.7	93.4	114.7	136.1
30	0	21.1		32.3	43.0	53.6	64.3	75.0	85.7	96.3	107.0	128.4	149.7
	90	41.6		11.7	22.4	33.1	43.7	54.4	65.1	75.8	86.4	107.8	129.1
35	0	24.6			39.5	50.1	60.8	71.5	82.2	92.8	103.5	124.8	146.2
	90	48.6			15.5	26.1	36.8	47.5	58.1	68.8	79.5	100.8	122.2
40	0	28.1				46.6	57.3	68.0	78.6	89.3	100.0	121.3	142.7
	90	55.5				19.2	29.9	40.5	51.2	61.9	72.6	93.9	115.2
45	0	31.6					53.8	64.5	75.1	85.8	96.5	117.8	139.2
	90	62.5					22.9	33.6	44.3	54.9	65.6	87.0	108.3
50	0	35.1						61.0	71.6	82.3	93.0	114.3	135.7
	90	69.4						26.7	37.3	48.0	58.7	80.0	101.4
55	0	38.6							68.1	78.8	89.5	110.8	132.2
	90	76.3							30.4	41.1	51.7	73.1	94.4
60	0	42.1								75.3	86.0	107.3	128.6
	90	83.3								34.1	44.8	66.1	87.5

-  - Note

The operating torque of the actuator must not be greater than the maximum permissible torque listed in ISO 5211 in relation to the size of the mounting flange and of the coupling.

Quarter turn actuators DFPD, single-acting

Technical data

Theoretical torque [Nm] as a function of operating pressure [bar] and swivel angle [°]													
Spring configuration	Nominal swivel angle	Spring torque	Operating pressure [bar]										
	[°]		[Nm]	2	2.5	3	3.5	4	4.5	5	5.5	6	7
Size DFPD-160													
20	0	19.2	39.3	53.9	68.6	83.2	97.9	112.5	127.1	141.8	156.4	185.7	214.9
	90	38.1	20.5	35.1	49.7	64.4	79.0	93.6	108.3	122.9	137.6	166.8	196.1
25	0	24.1	34.5	49.1	63.8	78.4	93.0	107.7	122.3	137.0	151.6	180.9	210.1
	90	47.6	37.6	25.6	40.2	54.9	69.5	84.1	98.8	113.4	128.0	157.3	186.6
30	0	28.9		44.3	59.0	73.6	88.2	102.9	117.5	132.1	146.8	176.0	205.3
	90	57.1		16.1	30.7	45.3	60.0	74.6	89.2	103.9	118.5	147.8	177.1
35	0	33.7			54.1	68.8	83.4	98.1	112.7	127.3	142.0	171.2	200.5
	90	66.6			21.2	35.8	50.4	65.1	79.7	94.4	109.0	138.3	167.5
40	0	38.5				64.0	78.6	93.2	107.9	122.5	137.2	166.4	195.7
	90	76.2				26.3	40.9	55.6	70.2	84.8	99.5	128.7	158.0
45	0	43.3					73.8	88.4	103.1	117.7	132.3	161.6	190.9
	90	85.7					31.4	46.0	60.7	75.3	90.0	119.2	148.5
50	0	48.1						83.6	98.3	112.9	127.5	156.8	186.1
	90	95.2						36.5	51.2	65.8	80.4	109.7	139.0
55	0	52.9							93.5	108.1	122.7	152.0	181.3
	90	104.7							41.6	56.3	70.9	100.2	129.5
60	0	57.7								103.3	117.9	147.2	176.5
	90	114.2								46.8	61.4	90.7	119.9
Size DFPD-240													
20	0	28.0	57.2	78.5	99.8	121.1	142.4	163.7	185.0	206.3	227.6	270.2	312.8
	90	55.4	29.8	51.1	72.4	93.7	115.0	136.3	157.6	178.9	200.2	242.8	285.4
25	0	35.0	50.2	71.5	92.8	114.1	135.4	156.7	178.0	199.3	220.6	263.2	305.8
	90	69.2	16.0	37.3	58.6	79.9	101.2	122.5	143.8	165.1	186.4	229.0	271.6
30	0	42.0		64.5	85.8	107.1	128.4	149.7	171.0	192.3	213.6	256.2	298.8
	90	83.0		23.5	44.8	66.1	87.4	108.7	130.0	151.3	172.6	215.2	257.8
35	0	49.0			78.8	100.1	121.4	142.7	164.0	185.3	206.6	249.2	291.8
	90	96.9			30.9	52.2	73.5	94.8	116.1	137.5	158.7	201.3	243.9
40	0	56.0				93.1	114.4	135.7	157.0	178.3	199.6	242.2	284.8
	90	110.7				38.4	59.7	81.0	102.3	123.6	144.9	187.5	230.1
45	0	63.0					107.4	128.7	150.0	171.3	192.6	235.2	277.8
	90	124.6					45.8	67.1	88.4	109.7	131.0	173.6	216.2
50	0	70.0						121.7	143.0	164.3	185.6	228.2	270.8
	90	138.4						53.3	74.6	95.9	117.2	159.8	202.4
55	0	77.0							136.0	157.3	178.6	221.2	263.8
	90	152.2							60.8	82.1	103.4	146.0	188.6
60	0	84.0								150.3	171.6	214.2	256.8
	90	166.1								68.2	89.5	132.1	174.7

-  - Note

The operating torque of the actuator must not be greater than the maximum permissible torque listed in ISO 5211 in relation to the size of the mounting flange and of the coupling.

Quarter turn actuators DFPD, single-acting

Technical data

Theoretical torque [Nm] as a function of operating pressure [bar] and swivel angle [°]													
Spring configuration	Nominal swivel angle [°]	Spring torque [Nm]	Operating pressure [bar]										
			2	2.5	3	3.5	4	4.5	5	5.5	6	7	8
Size DFPD-300													
20	0	36.1	73.7	101.1	128.6	156.0	183.4	210.9	238.3	265.8	293.2	348.1	403.0
	90	71.4	38.4	65.9	93.3	120.8	148.2	175.6	203.1	230.5	258.0	312.9	367.8
25	0	45.2	64.6	92.1	119.5	147.0	174.4	201.9	229.3	256.8	284.2	339.1	394.0
	90	89.2	20.6	48.0	75.5	102.9	130.4	157.8	185.3	212.7	240.1	295.0	349.9
30	0	54.2		83.0	110.5	137.9	165.4	192.8	220.3	247.7	275.2	330.1	384.9
	90	107.0		30.2	57.6	85.1	112.5	140.0	167.4	194.9	222.3	277.2	332.1
35	0	63.2			101.5	128.9	156.4	183.8	211.2	238.7	266.1	321.0	375.9
	90	124.9			39.8	67.2	94.7	122.1	149.6	177.0	204.5	259.4	314.2
40	0	72.2				119.9	147.3	174.8	202.2	229.7	257.1	312.0	366.9
	90	142.7				49.4	76.8	104.3	131.7	159.2	186.6	241.5	296.4
45	0	81.3					138.3	165.7	193.2	220.6	248.1	303.0	357.9
	90	160.6					59.0	86.4	113.9	141.3	168.8	223.7	278.6
50	0	90.3						156.7	184.2	211.6	239.0	293.9	348.8
	90	178.4						68.6	96.1	123.5	150.9	205.8	260.7
55	0	99.3							175.1	202.6	230.0	284.9	339.8
	90	196.2							78.2	105.7	133.1	188.0	242.9
60	0	108.4								193.5	221.0	275.9	330.8
	90	214.1								87.8	115.3	170.2	225.0
Size DFPD-480													
20	0	56.7	115.7	158.8	201.9	245.0	288.0	331.1	374.2	417.3	460.4	546.6	632.8
	90	112.0	60.3	103.4	146.5	189.6	232.7	275.8	318.9	362.0	405.1	491.2	577.4
25	0	70.9	101.5	144.6	187.7	230.8	273.9	317.0	360.1	403.2	446.2	532.4	618.6
	90	140.1	32.3	75.4	118.5	161.6	204.7	247.8	290.9	334.0	377.0	463.2	549.4
30	0	85.0		130.4	173.5	216.6	259.7	302.8	345.9	389.0	432.1	518.3	604.4
	90	168.1		47.4	90.5	133.6	176.7	219.8	262.8	305.9	349.0	435.2	521.4
35	0	99.2			159.4	202.4	245.5	288.6	331.7	374.8	417.9	504.1	590.3
	90	196.1			62.5	105.6	148.7	191.7	234.8	277.9	321.0	407.2	493.4
40	0	113.4				188.3	231.4	274.5	317.5	360.6	403.7	489.9	576.1
	90	224.1				77.6	120.6	163.7	206.8	249.9	293.0	379.2	465.4
45	0	127.5					217.2	260.3	303.4	346.5	389.6	475.7	561.9
	90	252.1					92.6	135.7	178.8	221.9	265.0	351.2	437.4
50	0	141.7						246.1	289.2	332.3	375.4	461.6	547.8
	90	280.1						107.1	150.8	193.9	237.0	323.2	409.4
55	0	155.9							275.0	318.1	361.2	447.4	533.6
	90	308.1							122.8	165.9	209.0	295.2	381.3
60	0	170.0								304.0	347.1	433.2	519.4
	90	336.1								137.9	181.0	267.2	353.3

-  - Note

The operating torque of the actuator must not be greater than the maximum permissible torque listed in ISO 5211 in relation to the size of the mounting flange and of the coupling.

Quarter turn actuators DFPD, single-acting

Technical data

Theoretical torque [Nm] as a function of operating pressure [bar] and swivel angle [°]														
Spring configuration	Nominal swivel angle	Spring torque [Nm]	Operating pressure [bar]											
	[°]		2	2.5	3	3.5	4	4.5	5	5.5	6	7	8	
Size DFPD-700														
20	0	78.8	162.4	222.7	283.0	343.3	403.6	463.9	524.2	584.5	644.8	705.1	765.4	825.7
	90	143.7	97.5	157.8	218.1	278.4	338.7	399.0	459.3	519.6	579.9	640.2	700.5	760.8
25	0	99.6	141.6	201.9	262.2	322.5	382.8	443.1	503.4	563.7	624.0	684.3	744.6	804.9
	90	181.7	59.5	119.8	180.1	240.4	300.7	361.0	421.3	481.6	541.9	602.2	662.5	722.8
30	0	120.9		180.6	240.9	301.2	361.5	421.8	482.1	542.4	602.7	663.0	723.3	783.6
	90	220.5		81.0	141.3	201.6	261.9	322.2	382.5	442.8	503.1	563.4	623.7	684.0
35	0	142.6			219.2	279.5	339.8	400.1	460.4	520.7	581.0	641.3	701.6	761.9
	90	260.1			101.6	161.9	222.2	282.5	342.8	403.1	463.4	523.7	584.0	644.3
40	0	164.8				257.3	317.6	377.9	438.2	498.5	558.8	619.1	679.4	739.7
	90	300.6				121.5	181.8	242.1	302.4	362.7	423.0	483.3	543.6	603.9
45	0	187.4					295.0	355.3	415.6	475.9	536.2	596.5	656.8	717.1
	90	341.9					140.5	200.8	261.1	321.4	381.7	442.0	502.3	562.6
50	0	210.5						332.2	392.5	452.8	513.1	573.4	633.7	694.0
	90	384.0						158.7	219.0	279.3	339.6	399.9	460.2	520.5
55	0	234.1							368.9	429.2	489.5	549.8	610.1	670.4
	90	427.0							176.0	236.3	296.6	356.9	417.2	477.5
60	0	258.1								405.2	465.5	525.8	586.1	646.4
	90	470.7								192.5	252.8	313.1	373.4	433.7
Size DFPD-900														
20	0	99.2	206.9	283.5	360.0	436.6	513.1	589.7	666.2	742.8	819.3	895.8	972.4	1048.9
	90	181.6	124.6	201.1	277.6	354.2	430.7	507.3	583.8	660.4	736.9	813.5	890.0	966.5
25	0	125.5	180.7	257.3	333.8	410.3	486.9	563.4	640.0	716.5	793.1	869.6	946.2	1022.7
	90	229.6	76.5	153.1	229.6	306.2	382.7	459.3	535.8	612.4	688.9	765.5	842.0	918.5
30	0	152.3		230.5	307.0	383.5	460.1	536.6	613.2	689.7	766.3	842.8	919.4	995.9
	90	278.7		104.0	180.6	257.1	333.7	410.2	486.8	563.3	639.8	716.4	792.9	869.4
35	0	179.6			279.6	356.2	432.7	509.3	585.8	662.3	738.9	815.4	891.9	968.4
	90	328.8			130.5	207.0	283.6	360.1	436.7	513.2	589.7	666.2	742.8	819.3
40	0	207.6				328.2	404.8	481.3	557.9	634.4	710.9	787.4	864.0	940.5
	90	379.9				155.9	232.4	309.0	385.5	462.1	538.6	615.1	691.7	768.2
45	0	236.1					376.2	452.8	529.3	605.9	682.4	758.9	835.5	912.0
	90	432.1					180.2	256.8	333.3	409.9	486.4	563.0	639.5	716.0
50	0	265.2						423.7	500.3	576.8	653.3	729.8	806.3	882.8
	90	485.4						203.5	280.1	356.6	433.2	509.7	586.2	662.7
55	0	294.8							470.6	547.1	623.7	700.2	776.7	853.2
	90	539.6							225.8	302.4	378.9	455.4	531.9	608.4
60	0	325.1								516.9	593.5	670.0	746.5	823.0
	90	595.0								247.0	323.6	400.1	477.2	554.3

05

Quarter turn actuators


 Note

The operating torque of the actuator must not be greater than the maximum permissible torque listed in ISO 5211 in relation to the size of the mounting flange and of the coupling.

Quarter turn actuators DFPD, single-acting

Technical data

Theoretical torque [Nm] as a function of operating pressure [bar] and swivel angle [°]													
Spring configuration	Nominal swivel angle [°]	Spring torque [Nm]	Operating pressure [bar]										
			2	2.5	3	3.5	4	4.5	5	5.5	6	7	8
Size DFPD-1200													
20	0	146.4	278.9	385.2	491.5	597.8	704.1	810.5	916.8	1023.1	1129.4	1342	1554
	90	243.8	181.5	287.8	394.1	500.4	606.7	713.0	819.3	925.7	1032.0	1244	1457
25	0	185.0	240.2	346.5	452.8	559.1	665.4	771.8	878.1	984.4	1090.7	1303	1515
	90	308.2	117.0	223.3	329.7	436.0	542.3	648.6	754.9	861.2	967.5	1180	1392
30	0	224.6		307.0	413.3	519.6	625.9	732.2	838.5	944.9	1051.2	1263	1476
	90	374.1		157.5	263.8	370.1	476.4	582.7	689.1	795.4	901.7	1114	1326
35	0	264.9			372.9	479.2	585.5	691.9	798.2	904.5	1010.8	1223	1436
	90	441.3			196.6	302.9	409.2	515.5	621.8	728.1	834.4	1047	1259
40	0	306.2				438.0	544.3	650.6	757.0	863.3	969.6	1182	1394
	90	510.0				234.2	340.5	446.8	553.2	659.5	765.8	978.4	1191
45	0	348.2					502.3	608.6	714.9	821.2	927.5	1140	1352
	90	580.0					270.5	376.8	483.1	589.4	695.7	908.4	1121
50	0	391.1						565.7	672.0	778.3	884.6	1097	1309
	90	651.5						305.3	411.7	518.0	624.3	836.9	1049
55	0	434.9							628.3	734.6	840.9	1053	1266
	90	724.3							338.8	445.1	551.4	764.1	976.7
60	0	479.4								690.0	796.3	1008	1221
	90	798.6								370.9	477.2	689.8	902.4
Size DFPD-2300													
20	0	278.8	533.3	736.3	939.4	1142	1345	1548	1751	1954	2157	2563	2969
	90	473.5	338.6	541.6	744.7	947.7	1150	1353	1556	1759	1962	2368	2774
25	0	352.5	459.6	662.6	865.7	1068	1271	1474	1677	1880	2083	2489	2895
	90	598.7	213.4	416.4	619.5	822.5	1025	1228	1431	1634	1837	2243	2649
30	0	427.8		587.3	790.4	993.4	1196	1399	1602	1805	2008	2414	2820
	90	726.6		288.5	491.6	694.6	897.6	1100	1303	1506	1709	2115	2521
35	0	504.7			713.5	916.5	1119	1322	1525	1728	1931	2337	2743
	90	857.2			361.0	564.0	767.0	970.0	1173	1376	1579	1985	2391
40	0	583.2				838.0	1041	1244	1447	1650	1853	2259	2665
	90	990.5				430.6	633.7	836.7	1039	1242	1445	1851	2257
45	0	663.3					960.9	1163	1367	1570	1773	2179	2585
	90	1127					497.6	700.6	903.6	1106	1309	1715	2121
50	0	745.0						1082	1285	1488	1691	2097	2503
	90	1265						561.8	764.9	967.9	1170	1577	1983
55	0	828.3							1201	1405	1608	2014	2420
	90	1407							623.4	826.4	1029	1435	1841
60	0	913.2								1320	1523	1929	2335
	90	1551								682.2	885.2	1291	1697

 Note
 The operating torque of the actuator must not be greater than the maximum permissible torque listed in ISO 5211 in relation to the size of the mounting flange and of the coupling.

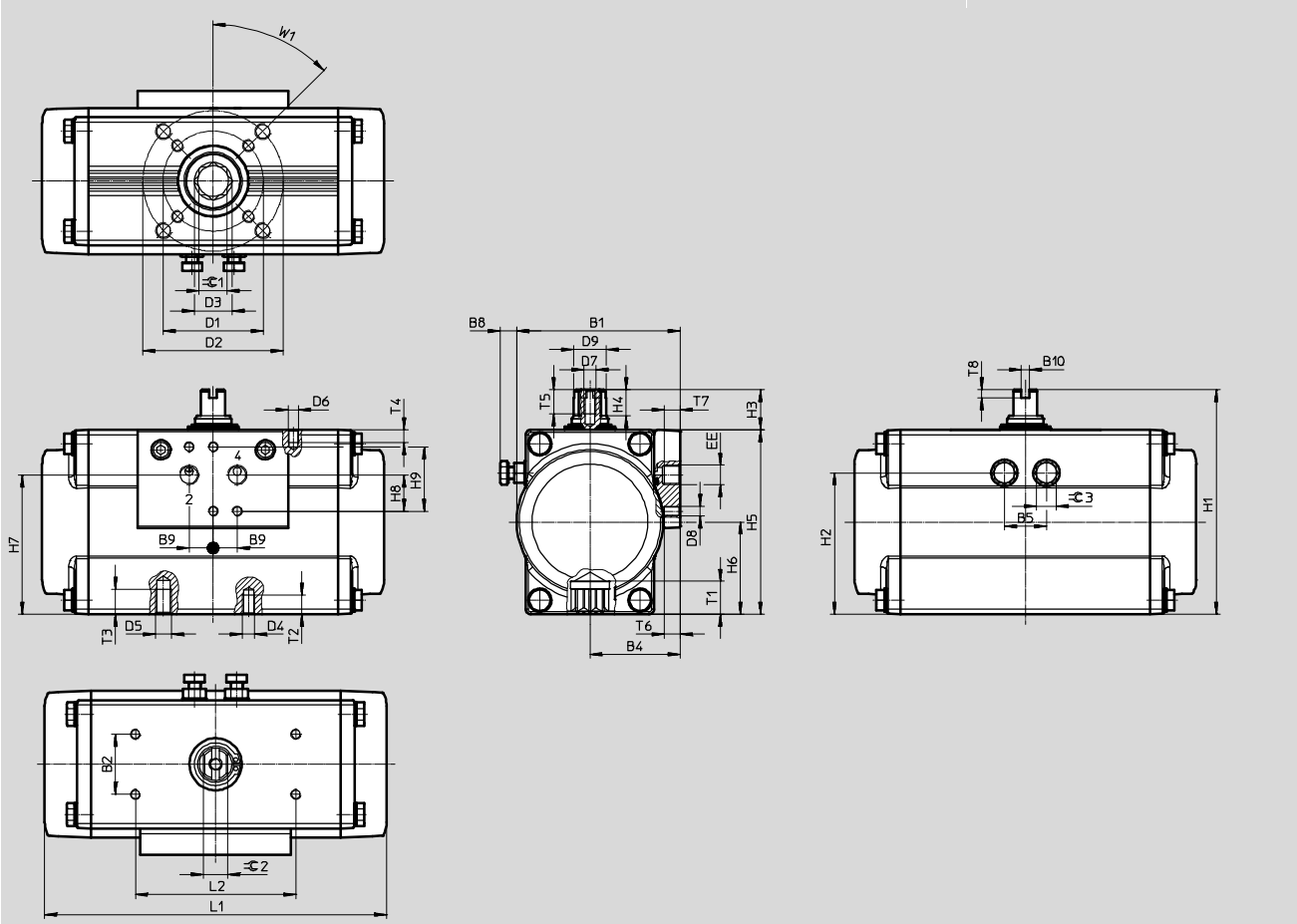
Quarter turn actuators DFPD, single-acting

Technical data

Dimensions

Size 20 ... 80

Download CAD data → www.festo.com



05

Quarter turn actuators

Quarter turn actuators DFPD, single-acting

Technical data

Type code [mm]	B1	B2 ±0.1	B4	B5	B8 max.	B9	B10 +0.1	D1 ∅ ±0.1	D2 ∅ ±0.1	D3 ∅	D4	D5	D6
DFPD-20-F03	68.5	30	38.5	19	9.2	12	4	36	-	12	M5	-	M5
DFPD-20-F04								42		14.6			
DFPD-20-F05								50		14.6			
DFPD-40-F04	81.5	30	45	21	8.2	12	4	42	70	18.7	M6	M8	M5
DFPD-40-F0507								50		23.3			
DFPD-80-F0507	99	30	53	26	9	12	4	50	70	23.3	M6	M8	M5

Type code [mm]	D7	D8	D9 ∅ ±0.1	EE	H1	H2	H3 -0.5	H4 +0.1	H5	H6 ±0.2	H7 ±0.3	H8 ±0.1	H9
DFPD-20-F03	M6	M5	12.7	G 1/8 or 1/8 NPT	100	59.8	20	10	80	40	57.5	16	32
DFPD-20-F04													
DFPD-20-F05													
DFPD-40-F04	M6	M5	16.2	G 1/8 or 1/8 NPT	112	70.5	20	13	92	46	67.5	16	32
DFPD-40-F0507													
DFPD-80-F0507	M6	M5	20.2	G 1/8 or 1/8 NPT	130	86	20	13	110	55	86.5	16	32

Type code [mm]	L1	L2 ±0.1	T1 ±0.4	T2	T3	T4	T5	T6	T7	T8 +0.5	≈C 1 H11	≈C 2 h11	≈C 3	W1
DFPD-20-F03	145.7	80	10 min.	8	-	8	12	8	8	4	9	9	10	45°
DFPD-20-F04			13.2	9							11			
DFPD-20-F05			12 min.	8							14			
DFPD-40-F04	170.4	80	16.5	9	12	8	12	8	8	4	14	12	10	45°
DFPD-40-F0507											17			
DFPD-80-F0507	223.1	80	19.3	9	12	8	12	8	8	4	17	15	13	45°

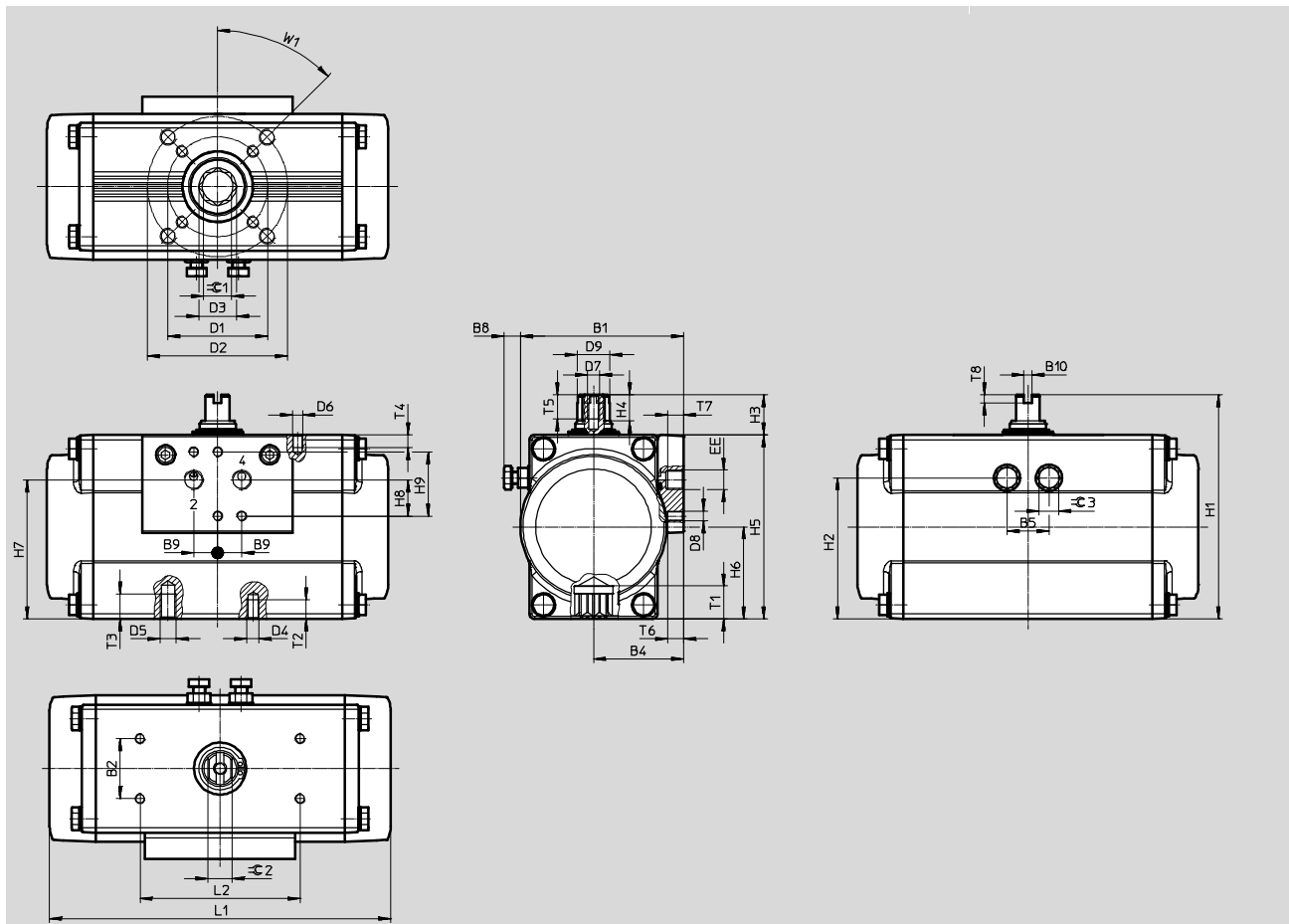
Quarter turn actuators DFPD, single-acting

Technical data

Dimensions

Size 120 ... 480

Download CAD data → www.festo.com



05

Quarter turn actuators

Quarter turn actuators DFPD, single-acting

Technical data

Type code [mm]	B1	B2 ±0.1	B4	B5	B8 max.	B9	B10	D1 ∅ ±0.1	D2 ∅ ±0.1	D3 ∅	D4	D5	D6
DFPD-120-F0507	111.5	30	60.5	32	12.3	12	4	50	70	23.2	M6	M8	M5
DFPD-160-F0710	120		63.5	36	13.4			30	M8	M10			
DFPD-240-F0710	135.5		71.5	41	18.5			30.3					
DFPD-300-F0710	144		74.5	46	17			30					
DFPD-480-F1012	163		83	52	19.3			102	125	37.4	M10	M12	

Type code [mm]	D7	D8	D9 ∅ ±0.1	EE	H1	H2	H3 0.5	H4 +0.1	H5	H6	H7 ±0.3	H8 ±0.1	H9
DFPD-120-F0507	M6	M5	22.5	G 1/4 or 1/4 NPT	143	97.75	20	13	123	61.5	98.4	16	32
DFPD-160-F0710			25.5		154	106.25			134	67	109.4		
DFPD-240-F0710			31.8		180	120.5			150	75	120.2		
DFPD-300-F0710			192		131	162			81	132.1			
DFPD-480-F1012			38		214	149.5			184	92	152.5		

Type code [mm]	L1	L2 ±0.1	T1 ±0.4	T2	T3	T4	T5	T6	T7	T8 +0.5	≙ 1 H11	≙ 2 h11	≙ 3	W1
DFPD-120-F0507	252.3	80	19.3	9	12	8	14	8	12	4	17	15	13	45°
DFPD-160-F0710	270.9		19	16										
DFPD-240-F0710	301.4		22	18										
DFPD-300-F0710	334.4		27	27	21									
DFPD-480-F1012	374.2		29.5	15	18									

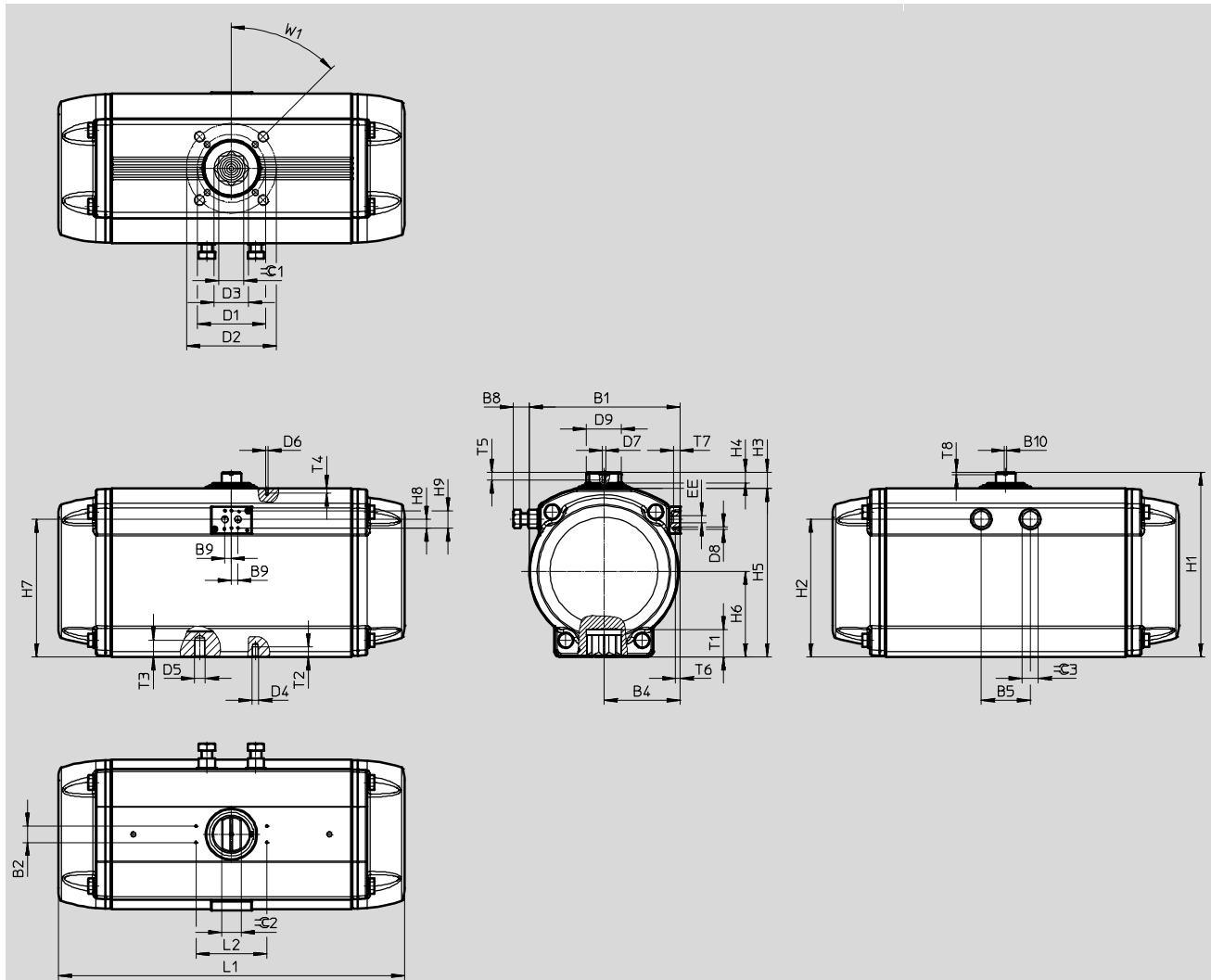
Quarter turn actuators DFPD, single-acting

Technical data

Dimensions

Size 700 ... 2300

Download CAD data → www.festo.com



05

Quarter turn actuators

Quarter turn actuators DFPD, single-acting

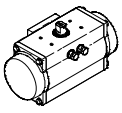
Technical data

Type code	B1	B2	B4	B5	B8	B9	B10	D1	D2	D3	D4	D5	D6
[mm]		±0.1			max.		±0.1	∅	∅	∅			
DFPD-700-...-F1012	184	30	93	57.6	17.5	12	4	102	125	37.4	M10	M12	M5
DFPD-900-...-F1012	202		102	64.8	28.6			140	–	50.1	M16	–	
DFPD-900-...-F14			102	125	37.4			M10	M12				
DFPD-1200-...-F1012	221.5		111.5	72	24			140	–	50.1	M16	–	
DFPD-1200-...-F14			125	165	62.9			M12	M20				
DFPD-2300-...-F1216	277		139.8	90	33			140	–	50.1	M16	–	
DFPD-2300-...-F14													

Type code	D7	D8	D9	EE	H1	H2	H3	H4	H5	H6	H7	H8	H9	
[mm]			∅ ±0.1									±0.1		
DFPD-700-...-F1012	M6	M5	41	G 1/4 or 1/4 NPT	232.7	168	29.7	21	203	103	164.9	16	32	
DFPD-900-...-F1012			44		252.7	182			223	113	178.3			
DFPD-900-...-F14			50		275.7	204			246	125	199.6			
DFPD-1200-...-F1012			64		338.7	253			19	309	157			252.3
DFPD-1200-...-F14														
DFPD-2300-...-F1216														
DFPD-2300-...-F14														

Type code	L1	L2	T1	T2	T3	T4	T5	T6	T7	T8	≈C 1	≈C 2	≈C 3	W1
[mm]		±0.1	Min.							+0.5	H11	h11		
DFPD-700-...-F1012	428.2	80	29.7	15	18	8	8.5	14	8	12	4	27	30	21
DFPD-900-...-F1012	469.6	130	30.2	15.5	18.5	36						32	24	
DFPD-900-...-F14			40.2	24.5	–	27						36	24	
DFPD-1200-...-F1012	519.3		31	15.5	18.5	36						36	30	
DFPD-1200-...-F14			40	24.5	–	46						36	30	
DFPD-2300-...-F1216	636		50	18.5	30	36						36	30	
DFPD-2300-...-F14			40	24.5	–									

★ Core product range

Ordering data				
Type code	Size	Product weight [g]	Part No.	Type code
	20	1419	★ 8047622	DFPD-20-RP-90-RS60-F04
	40	2180	★ 8047624	DFPD-40-RP-90-RS60-F0507
	80	3960	★ 8047626	DFPD-80-RP-90-RS60-F0507
	120	5736	★ 8048134	DFPD-120-RP-90-RS60-F0507
	160	7179	★ 8048136	DFPD-160-RP-90-RS60-F0710
	240	10036	★ 8048138	DFPD-240-RP-90-RS60-F0710
	300	12880	★ 8048140	DFPD-300-RP-90-RS60-F0710
	480	18485	★ 8048142	DFPD-480-RP-90-RS60-F1012

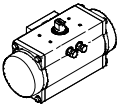
Festo core product range

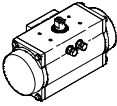
★ Generally ready for shipping ex works in 24 hours

★ Generally ready for shipping ex works in 5 days

Quarter turn actuators DFPD, single-acting

Technical data

Ordering data				
Type code	Size	Product weight [g]	Part No.	Type code
	20	1371	8047644	DFPD-20-RP-90-RS30-F03
		1419	8047645	DFPD-20-RP-90-RS60-F03
		1371	8047621	DFPD-20-RP-90-RS30-F04
		1371	8048014	DFPD-20-RP-90-RS30-F05
		1419	8048015	DFPD-20-RP-90-RS60-F05
		1419	8048016	DFPD-20-RP-90-RS60-F05
	40	2087	8047635	DFPD-40-RP-90-RS30-F04
		2180	8047636	DFPD-40-RP-90-RS60-F04
		2087	8047623	DFPD-40-RP-90-RS30-F0507
	80	3746	8047625	DFPD-80-RP-90-RS30-F0507
	120	5422	8048133	DFPD-120-RP-90-RS30-F0507
	160	6767	8048135	DFPD-160-RP-90-RS30-F0710
	240	9442	8048137	DFPD-240-RP-90-RS30-F0710
	300	12052	8048139	DFPD-300-RP-90-RS30-F0710
	480	17261	8048141	DFPD-480-RP-90-RS30-F1012
	700	26268	8065262	DFPD-700-RP-90-RS60-F1012
	900	30395	8065266	DFPD-900-RP-90-RS60-F14
1200	43022	8065270	DFPD-1200-RP-90-RS60-F14	
2300	77884	8065274	DFPD-2300-RP-90-RS60-F1216	

Ordering data				
Type code	Size	Product weight [g]	Part No.	Type code
Version EP, epoxy-coated				
	20	1371	8047646	DFPD-20-RP-90-RS30-F03-R3-EP
		1419	8047647	DFPD-20-RP-90-RS60-F03-R3-EP
		1371	8047627	DFPD-20-RP-90-RS30-F04-R3-EP
		1419	8047628	DFPD-20-RP-90-RS60-F04-R3-EP
		1371	8048016	DFPD-20-RP-90-RS30-F05-R3-EP
		1419	8048017	DFPD-20-RP-90-RS60-F05-R3-EP
	40	2087	8047642	DFPD-40-RP-90-RS30-F04-R3-EP
		2180	8047643	DFPD-40-RP-90-RS60-F04-R3-EP
		2087	8047629	DFPD-40-RP-90-RS30-F0507-R3-EP
		2180	8047630	DFPD-40-RP-90-RS60-F0507-R3-EP
	80	3746	8047631	DFPD-80-RP-90-RS30-F0507-R3-EP
		3960	8047632	DFPD-80-RP-90-RS60-F0507-R3-EP
	120	5422	8048143	DFPD-120-RP-90-RS30-F0507-R3-EP
		5736	8048144	DFPD-120-RP-90-RS60-F0507-R3-EP
	160	6767	8048145	DFPD-160-RP-90-RS30-F0710-R3-EP
		7179	8048146	DFPD-160-RP-90-RS60-F0710-R3-EP
	240	9442	8048147	DFPD-240-RP-90-RS30-F0710-R3-EP
		10036	8048148	DFPD-240-RP-90-RS60-F0710-R3-EP
	300	12052	8048149	DFPD-300-RP-90-RS30-F0710-R3-EP
		12880	8048150	DFPD-300-RP-90-RS60-F0710-R3-EP
	480	17261	8048151	DFPD-480-RP-90-RS30-F1012-R3-EP
		18485	8048152	DFPD-480-RP-90-RS60-F1012-R3-EP
	700	26268	8065264	DFPD-700-RP-90-RS60-F1012-R3-EP
	900	30395	8065268	DFPD-900-RP-90-RS60-F14-R3-EP
	1200	43022	8065272	DFPD-1200-RP-90-RS60-F14-R3-EP
	2300	77884	8065276	DFPD-2300-RP-90-RS60-F1216-R3-EP

Quarter turn actuators DFPD

Ordering data – Modular product system, size 10 ... 80

Ordering table		10	20	40	80	Condi- tions	Code	Enter code	
M	Module No.	8042184	8042185	8042186	8042187				
	Function	Quarter turn actuator, based on ISO 5211						DFPD	DFPD
O	System of units	Metric							
		Imperial					-N		
	Version	Standard							
M	Size	10	-	-	-		-10		
		20	-	-	-		-20		
		40	-	-	-		-40		
		80	-	-	-		-80		
M	Design	Rack and pinion					-RP	-RP	
O	Yoke type	None							
M	Swivel angle	90°					-90		
		180°	-	-	-		-180		
	Swivel direction	To the left					-L		
		To the right					-R		
	Function	Double-acting					D		
		Single-acting	-			1	★ S		
O	Spring configuration	None							
	Connection pressure	2 bar				5	20		
		2.5 bar				5	25		
		3 bar				5	30		
		3.5 bar				5	35		
		4 bar				5	40		
		4.5 bar				5	45		
		5 bar				5	50		
		5.5 bar				5	55		
		6 bar				5	★ 60		
M	Flange pattern 1	Hole pattern	F03	-	-		-F03		
			F04		-		-F04		
			F05	-			-F05		
O	Flange pattern 2	None							
		Hole pattern	07	-	-	6	07		
	Manual override	None							
	Temperature range	Standard							
		0 ... +150 °C	-	-			-T4		
		-50 ... +60 °C	-	-			-T6		
	Material shaft	Standard							
		High				8	-R3		
	Housing surface treatment	None							
		Epoxy-coated				4	-EP		

1 S Not in combination with swivel angle 180°
 4 EP Only in combination with material shaft -R3

5 20, 25, 30, 35, 40, 45, 50, 55, 60 Not in combination with double-acting function, with 2 cylinders (DD), mandatory specification in combination with (function) single-acting (S)
 6 07 Mandatory specification in combination with (torque) 40 Nm, 80 Nm, 120 Nm
 8 R3 Mandatory specification in combination with (housing surface treatment) epoxy-coated -EP

M Mandatory data
 O Options

Order code

Quarter turn actuators DFPD

Ordering data – Modular product system, size 120 ... 480

Ordering table			120	160	240	300	480	Condi- tions	Code	Enter code	
M	Module No.		8042188	8042189	8042190	8042191	8042192				
	Function	Quarter turn actuator, based on ISO 5211								DFPD	DFPD
O	System of units	Metric									
		Imperial							-N		
	Version	Standard									
M	Size	120		-	-	-	-		-120		
		160	-		-	-	-		★-160		
		240	-	-		-	-		★-240		
		300	-	-	-		-		★-300		
		480	-	-	-	-			★-480		
M	Design	Rack and pinion							-RP	-RP	
O	Yoke type	None									
M	Swivel angle	90°							-90		
		180°		-		-			-180		
	Swivel direction	To the left							-L		
		To the right							-R		
	Function	Double-acting							D		
		Single-acting						1	★S		
O	Spring configuration	None									
	Connection pressure	2 bar						5	20		
		2.5 bar						5	25		
		3 bar						5	30		
		3.5 bar						5	35		
		4 bar						5	40		
		4.5 bar						5	45		
		5 bar						5	50		
		5.5 bar						5	55		
		6 bar						5	★60		

1 S Not in combination with swivel angle 180°

5 20, 25, 30, 35, 40, 45, 50, 55, 60 Not in combination with double-acting function, with 2 cylinders (DD), mandatory specification in combination with (function) single-acting (S)

- M Mandatory data
- O Options

Transfer order code

DFPD - - - - - - - -

Ordering data – Modular product system, size 120 ... 480

Ordering table				120	160	240	300	480	Condi- tions	Code	Enter code	
Size												
M	Flange pattern 1	Hole pattern	F05		-	-	-	-		-F05		
			F07	-						★-F07		
			F10	-	-	-	-			★-F10		
O	Flange pattern 2	Standard		-	-	-	-					
			Hole pattern	F07		-	-	-		6	07	
			F10	-							★10	
			F12	-	-	-	-				★12	
O	Manual override	None										
	Temperature range	Standard										
		0 ... +150 °C									-T4	
		-50 ... +60 °C									-T6	
	Material shaft	Standard										
		High							8		-R3	
Housing surface treatment	None											
	Epoxy-coated							4		-EP		

4 EP Only in combination with material shaft -R3

6 07

Mandatory specification in combination with (torque) 40 Nm, 80 Nm, 120 Nm

8 R3

Mandatory specification in combination with (housing surface treatment) epoxy-coated -EP

M Mandatory data

O Options

Transfer order code

- - - - -

Festo core product range

★ Generally ready for shipping ex works in 24 hours

☆ Generally ready for shipping ex works in 5 days

Quarter turn actuators DFPD

Ordering data – Modular product system, size 700 ... 2300

Ordering table			700	900	1200	2300	Condi- tions	Code	Entry code	
M	Module no.		8042193	8042194	8042195	8042196				
	Function	Quarter turn actuator, based on ISO 5211							DFPD	DFPD
O	System of units	Metric								
		Imperial						-N		
	Version	Standard								
M	Size	700		-	-	-		-700		
		900	-		-	-		-900		
		1200	-	-		-		-1200		
		2300	-	-	-			-2300		
M	Design	Rack and pinion						-RP	-RP	
O	Yoke type	None								
M	Swivel angle	90°						-90		
	Swivel direction	To the left						-L		
		To the right						-R		
	Function	Double-acting						D		
		Single-acting						S		
O	Spring configuration	Without								
	Connection pressure	2 bar					5	20		
		2.5 bar					5	25		
		3 bar					5	30		
		3.5 bar					5	35		
		4 bar					5	40		
		4.5 bar					5	45		
		5 bar					5	50		
		5.5 bar					5	55		
		6 bar					5	60		
M	Flange pattern 1	Hole pattern	F10			-		-F10		
			F12	-	-	-		-F12		
			F14	-				-F14		
O	Flange pattern 2	None								
		Hole pattern	F12			-	2	12		
			F16	-	-	-	15	16		
	Manual override	None								
	Temperature range	Standard								
	Shaft material	Standard								
		Stainless steel					8	-R3		
	Housing surface treatment	None								
		Epoxy-coated					4	-EP		

2 12 Mandatory specification in combination with (flange pattern 1) hole pattern F10 (-F10)

4 EP Only in combination with shaft material -R3

5 20, 25, 30, 35, 40, 45, 50, 55, 60

Not in combination with double-acting function, with 2 cylinders (DD), mandatory specification in combination with (function) single-acting (S)

8 R3

Mandatory specification in combination with (housing surface treatment) epoxy-coated -EP

15 16

Mandatory specification in combination with (flange pattern 1) hole pattern F12 (-F12) Not in combination with (flange pattern 1) hole pattern F14 (-F14)

M Mandatory data

O Options

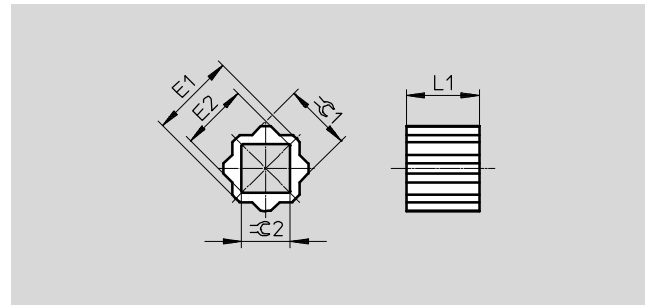
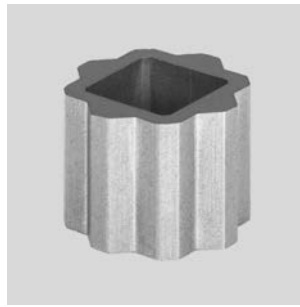
Order code

DFPD - - - - - - - - - - - -

Accessories

Reducing sleeve square DARQ

- Connection 1,
function drive outlet
- Connection 2,
function reducing outlet
- Material:
Sintered stainless steel
- RoHS-compliant
- Contains paint-wetting impairment
substances



DARQ-R-A-...	E1 +01/-03	E2 +03/-01	L1 ± 0.2	$\varnothing 1$ -0.02/-0.12	$\varnothing 2$ +0.04/+0.18
S11-S8-...	14	11	12	11	8
S11-S9-...	14	12.3	11	11	9
S14-S8-...	18	11	16	14	8
S14-S9-...	18	12.3	16	14	9
S14-S10-...	18	13.3	16	14	10
S14-S11-...	18	14.3	16	14	11
S14-S12-...	18	16.3	16	14	12
S17-S8-...	22	11	17	17	8
S17-S11-...	22	14.3	17	17	11
S17-S12-...	22	16.3	17	17	12
S17-S14-...	22	18.3	17	17	14
S22-S11-...	28	14.3	22	22	11
S22-S14-...	28	18.3	22	22	14
S22-S16-...	28	21.3	22	22	16
S22-S17-...	28	22.3	22	22	17
S27-S17-...	36	22.3	27	27	17
S27-S22-...	36	28.5	27	27	22
S36-S27-...	48	36.1	36	36	27
S46-S36-...	59	48	46	46	36

Quarter turn actuators DFPD

Accessories

Ordering data								PU ²⁾	
Design	Connection		Length [mm]	CRC ¹⁾	Weight/piece [g]	Part No.	Type		
	Drive outlet	Reducing outlet							
Internal square and external octagon	Size 11	Size 8	12	2	7	8082116	DARQ-R-A-S11-S8-12	1	
	Size 11	Size 9	11		5	8082117	DARQ-R-A-S11-S9-11		
	Size 14	Size 8	16		20	8086383	DARQ-R-A-S14-S8-16		
	Size 14	Size 9	16		18	8082118	DARQ-R-A-S14-S9-16		
	Size 14	Size 10	16		16	8082119	DARQ-R-A-S14-S10-16		
	Size 14	Size 11	16		13	8082120	DARQ-R-A-S14-S11-16		
	Size 14	Size 12	16		10	8082121	DARQ-R-A-S14-S12-16		
	Size 17	Size 8	17		36	8086384	DARQ-R-A-S17-S8-17		
	Size 17	Size 11	17		29	8082122	DARQ-R-A-S17-S11-17		
	Size 17	Size 12	17		25	8086385	DARQ-R-A-S17-S12-17		
	Size 17	Size 14	17		19	8082123	DARQ-R-A-S17-S14-17		
	Size 22	Size 11	22		75	8086386	DARQ-R-A-S22-S11-22		
	Size 22	Size 14	22		62	8082124	DARQ-R-A-S22-S14-22		
	Size 22	Size 16	22		52	8082125	DARQ-R-A-S22-S16-22		
	Size 22	Size 17	22		46	8082126	DARQ-R-A-S22-S17-22		
	Size 27	Size 17	27		121	8086387	DARQ-R-A-S27-S17-27		
	Size 27	Size 22	27		80	8082127	DARQ-R-A-S27-S22-27		
	Size 36	Size 27	36		215	8082128	DARQ-R-A-S36-S27-36		
	Size 46	Size 36	46		410	8082129	DARQ-R-A-S46-S36-46		
	Size 11	Size 8	12		35	8082130	DARQ-R-A-S11-S8-12-P5		5
	Size 11	Size 9	11		25	8082131	DARQ-R-A-S11-S9-11-P5		
	Size 14	Size 8	16		100	8086388	DARQ-R-A-S14-S8-16-P5		
	Size 14	Size 9	16		90	8082132	DARQ-R-A-S14-S9-16-P5		
	Size 14	Size 11	16		65	8082133	DARQ-R-A-S14-S11-16-P5		
	Size 17	Size 11	17		145	8082134	DARQ-R-A-S17-S11-17-P5		
	Size 17	Size 12	17		125	8086389	DARQ-R-A-S17-S12-17-P5		
	Size 17	Size 14	17		95	8082135	DARQ-R-A-S17-S14-17-P5		
	Size 22	Size 14	22		310	8082136	DARQ-R-A-S22-S14-22-P5		
	Size 22	Size 17	22		230	8082137	DARQ-R-A-S22-S17-22-P5		
	Size 27	Size 22	27		400	8082138	DARQ-R-A-S27-S22-27-P5		
Size 36	Size 27	36	1075	8082139	DARQ-R-A-S36-S27-36-P5				
Size 11	Size 9	11	50	8082140	DARQ-R-A-S11-S9-11-P10	10			
Size 14	Size 9	16	180	8082141	DARQ-R-A-S14-S9-16-P10				
Size 14	Size 11	16	130	8082142	DARQ-R-A-S14-S11-16-P10				
Size 17	Size 14	17	190	8082143	DARQ-R-A-S17-S14-17-P10				
Size 22	Size 17	22	460	8082144	DARQ-R-A-S22-S17-22-P10				
Size 11	Size 9	11	250	8082145	DARQ-R-A-S11-S9-11-P50		50		
Size 14	Size 9	16	900	8082146	DARQ-R-A-S14-S9-16-P50				
Size 14	Size 11	16	650	8082147	DARQ-R-A-S14-S11-16-P50				
Size 17	Size 11	17	1450	8082148	DARQ-R-A-S17-S11-17-P50				
Size 22	Size 17	22	2300	8082149	DARQ-R-A-S22-S17-22-P50				

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
- 2) Packaging unit

Quarter turn actuators

DAPS



Overview, configuration and ordering
→ www.festo.com/catalogue/daps



Additional information, support and user documentation
→ www.festo.com/sp/daps



Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/ex



- + Scotch yoke kinematics
- + Flange hole pattern to ISO 5211
- + NAMUR connection pattern for solenoid valves/sensor boxes to VDI/VDE 3845

- + Size 8 ... 8000
- + Torque 7 ... 8000 Nm
- + Swivel angle 0 ... 90°


Quarter turn actuators DAPS


Key features


General

DAPS

→ page 423, 438

-  Size
0008 ... 8000

-  Torque
8 ... 8,000 Nm

-  Swivel angle
0 ... 90°

The quarter turn actuators DAPS are specially tailored to the requirements of the process industry. The torque is generated via a scotch yoke mechanism, which helps to overcome the valve's high breakaway torques. Given their robustness and graduated torques, the quarter turn actuators DAPS are predominantly used to control valves through which various media flow and whose angle of rotation is limited to 90°, e.g. ball valves and butterfly valves.

- Compact design
 - Torque characteristics adapted to the process valves
 - For the same housing size, the single-acting drive has half the torque of the double-acting drive
 - Low wearing thanks to the simple and robust mechanical system
 - Adjustable swivel angle
 - Selected types in accordance with ATEX directive for potentially explosive atmospheres
- www.festo.com/en/ex


- Port pattern to NAMUR VDI/VDE 3845 for attaching solenoid valves





High-temperature version


DAPS T4

→ page 423, 438

-  Size
0015 ... 0960

-  Torque
15 ... 960 Nm

-  Swivel angle
0 ... 90°

-  Temperature range
-20 ... +150 °C

The high temperature version of the quarter turn actuator DAPS-T4 is specifically designed for the requirements for controlling process valves used with hot media flows.

- Compact design
- Torque characteristics adapted to process valves
- The single-acting drive has half the torque of the double-acting drive for the same housing size
- Low wear thanks to the simple and robust mechanical system
- Adjustable swivel angle


- Selected types in accordance with ATEX directive for potentially explosive atmospheres
- www.festo.com/en/ex
- Port pattern to NAMUR VDI/VDE 3845 for attaching solenoid valves


Stainless steel variant

DAPS CR

→ page 455

-  Size
0015 ... 0480

-  Torque
15 ... 480 Nm

-  Swivel angle
0 ... 90°

Single-acting and double-acting quarter turn actuators DAPS in stainless steel are used for automating fittings with a 90° swivel angle. The single-acting variant comes in different spring strengths for different supply pressures.

- Low wearing thanks to the simple and robust mechanical system
 - Torque characteristics adapted to the process valves
 - Selected types in accordance with ATEX directive for potentially explosive atmospheres
- www.festo.com/en/ex


- Port pattern to NAMUR VDI/VDE 3845 for attaching solenoid valves





Variant with handwheel

DAPS MW

→ page 468

-  Size
0106 ... 1920

-  Torque
106 ... 1920 Nm

-  Swivel angle
0 ... 90°

The position of the process valve or actuator can be manually adjusted using the handwheel when the supply pressure is switched off. The handwheel therefore acts as a manual emergency override.

- Low wearing thanks to the simple and robust mechanical system
 - Torque characteristics adapted to the process valves
 - Selected types in accordance with ATEX directive for potentially explosive atmospheres
- www.festo.com/en/ex

- Port pattern to NAMUR VDI/VDE 3845 for attaching solenoid valves



Quarter turn actuators DAPS, double-acting

Product range overview

Flange hole pattern – Connection dimensions to DIN ISO 5211 and NAMUR VDI/VDE 3845										
Connection	F03	F03	F04	F04	F05	F05	F05	F07	F07	Shaft height
Square	V11	V11	V11	V14	V11	V14	V17	V14	V17	
DAPS-0008-...-F03	■	-	-	-	-	-	-	-	-	20
DAPS-0015-...-F03	-	■	-	-	-	-	-	-	-	20
DAPS-0015-...-F04	-	-	■	-	-	-	-	-	-	20
DAPS-0030-...-F0305	-	■	-	-	■	-	-	-	-	20
DAPS-0030-...-F04	-	-	■	-	-	-	-	-	-	20
DAPS-0060-...-F04	-	-	-	■	-	-	-	-	-	20
DAPS-0060-...-F0507	-	-	-	-	-	■	-	■	-	20
DAPS-0106-...-F0507	-	-	-	-	-	-	■	-	■	20
Hole pattern for NAMUR accessories	30	30	30	30	30	30	30	30	30	
	30	80	80	80	80	80	80	80	80	

Flange hole pattern – Connection dimensions to DIN ISO 5211 and NAMUR VDI/VDE 3845													
Connection	F07	F10	F10	F12	F10	F12	F12	F14	F14	F16	F16	F25	Shaft height
Square	V22	V22	V27	V27	V36	V36	V46	V36	V46	V46	V46	V55	
DAPS-0180-...-F0710	■	■	-	-	-	-	-	-	-	-	-	-	30
DAPS-0240-...-F0710	■	■	-	-	-	-	-	-	-	-	-	-	30
DAPS-0360-...-F0710	■	■	-	-	-	-	-	-	-	-	-	-	30
DAPS-0480-...-F1012	-	-	■	■	-	-	-	-	-	-	-	-	30
DAPS-0720-...-F1012	-	-	■	■	-	-	-	-	-	-	-	-	30
DAPS-0960-...-F1012	-	-	-	-	■	■	-	-	-	-	-	-	30
DAPS-0960-...-F12	-	-	-	-	-	■	-	-	-	-	-	-	30
DAPS-0960-...-F14	-	-	-	-	-	-	-	■	-	-	-	-	30
DAPS-1440-...-F12	-	-	-	-	-	■	-	-	-	-	-	-	30
DAPS-1440-...-F14	-	-	-	-	-	-	-	■	-	-	-	-	30
DAPS-1920-...-F14	-	-	-	-	-	-	-	-	■	-	-	-	30
DAPS-1920-...-F1216	-	-	-	-	-	-	■	-	-	■	-	-	30
DAPS-2880-...-F16	-	-	-	-	-	-	-	-	-	-	■	-	30
DAPS-3840-...-F16	-	-	-	-	-	-	-	-	-	-	■	-	30
DAPS-5760-...-F25	-	-	-	-	-	-	-	-	-	-	-	■	30
DAPS-8000-...-R-F25	-	-	-	-	-	-	-	-	-	-	-	■	30
Hole pattern for NAMUR accessories	30	30	30	30	30	30	30	30	30	30	30	30	
	80	80	80	80	80	80	80	80	80	80	130	130	

Quarter turn actuators DAPS, single-acting

Product range overview

Flange hole pattern – Connection dimensions to DIN ISO 5211 and NAMUR VDI/VDE 3845									
Connection	F03	F04	F04	F05	F05	F05	F07	F07	Shaft height
Square	V11	V11	V14	V11	V14	V17	V14	V17	
DAPS-0015-...-F0305	■	-	-	■	-	-	-	-	20
DAPS-0015-...-F04	-	■	-	-	-	-	-	-	20
DAPS-0030-...-F04	-	-	■	-	-	-	-	-	20
DAPS-0030-...-F0507	-	-	-	-	■	-	■	-	20
DAPS-0053-...-F0507	-	-	-	-	-	■	-	■	20
Hole pattern for NAMUR accessories	30	30	30	30	30	30	30	30	
	80	80	80	80	80	80	80	80	

Flange hole pattern – Connection dimensions to DIN ISO 5211 and NAMUR VDI/VDE 3845												
Connection	F07	F10	F10	F12	F10	F12	F12	F14	F14	F16	F16	Shaft height
Square	V22	V22	V27	V27	V36	V36	V46	V36	V46	V46	V46	
DAPS-0090-...-F0710	■	■	-	-	-	-	-	-	-	-	-	30
DAPS-0120-...-F0710	■	■	-	-	-	-	-	-	-	-	-	30
DAPS-0180-...-F0710	■	■	-	-	-	-	-	-	-	-	-	30
DAPS-0240-...-F1012	-	-	■	■	-	-	-	-	-	-	-	30
DAPS-0360-...-F1012	-	-	■	■	-	-	-	-	-	-	-	30
DAPS-0480-...-F1012	-	-	-	-	■	■	-	-	-	-	-	30
DAPS-0480-...-F12	-	-	-	-	-	■	-	-	-	-	-	30
DAPS-0480-...-F14	-	-	-	-	-	-	-	■	-	-	-	30
DAPS-0720-...-F12	-	-	-	-	-	■	-	-	-	-	-	30
DAPS-0720-...-F14	-	-	-	-	-	-	-	■	-	-	-	30
DAPS-0960-...-F14	-	-	-	-	-	-	-	-	■	-	-	30
DAPS-0960-...-F1216	-	-	-	-	-	-	■	-	-	■	-	30
DAPS-1440-...-F16	-	-	-	-	-	-	-	-	-	-	■	30
DAPS-1920-...-F16	-	-	-	-	-	-	-	-	-	-	■	30
DAPS-2880-...-F16	-	-	-	-	-	-	-	-	-	-	■	30
DAPS-4000-...-RS1-F25	-	-	-	-	-	-	-	-	-	-	■	30
DAPS-4000-...-RS2-F25	-	-	-	-	-	-	-	-	-	-	■	30
DAPS-4000-...-RS3-F25	-	-	-	-	-	-	-	-	-	-	■	30
DAPS-4000-...-RS4-F25	-	-	-	-	-	-	-	-	-	-	■	30
Hole pattern for NAMUR accessories	30	30	30	30	30	30	30	30	30	30	30	
	80	80	80	80	80	80	80	80	80	80	130	

05

Quarter turn actuators

Quarter turn actuators DAPS CR

Product range overview

DAPS CR, double-acting
Flange hole pattern – Connection dimensions to DIN ISO 5211 and NAMUR VDI/VDE 3845

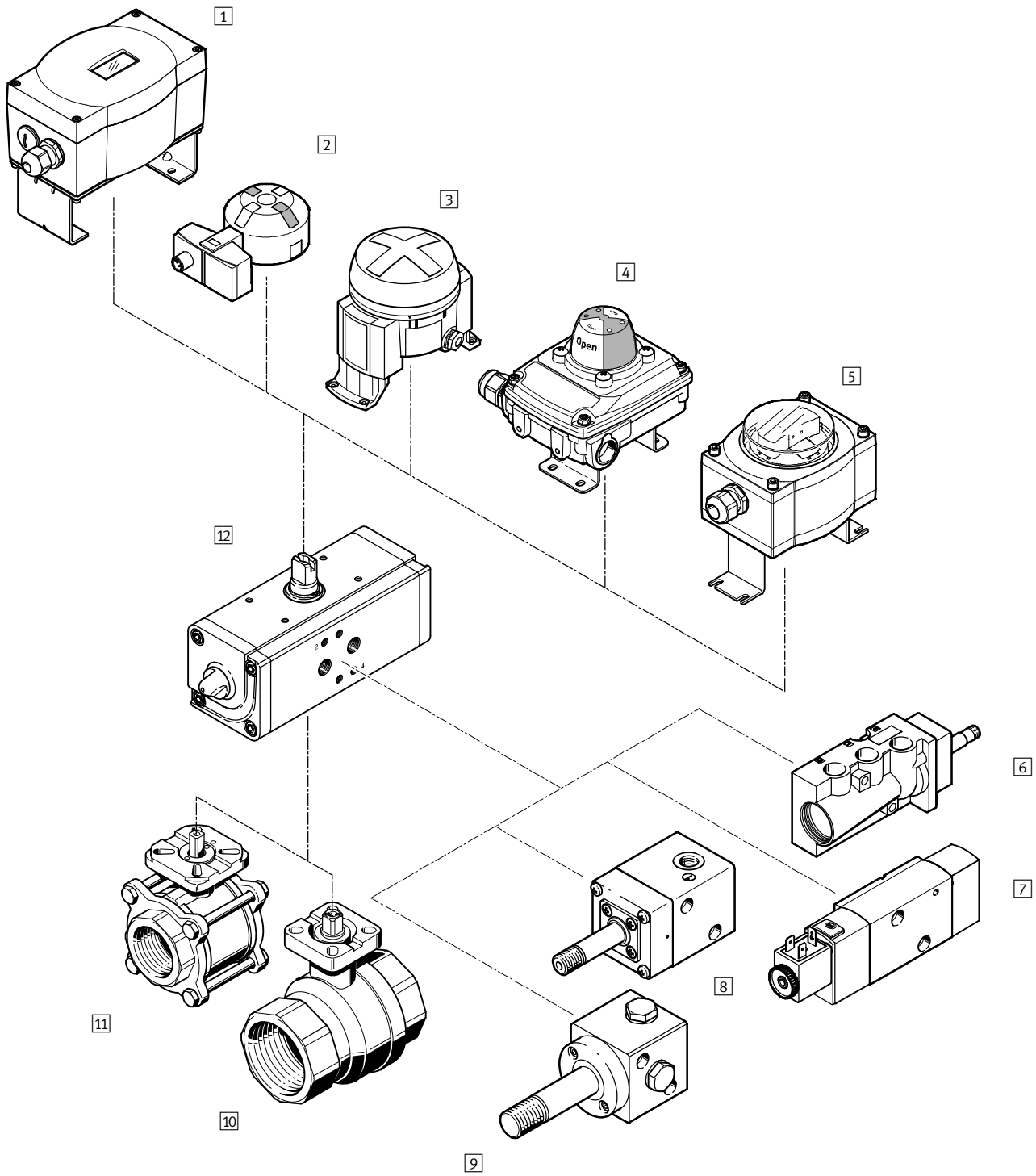
Connection	F03	F03	F05	F05	F05	F07	F07	F07	F10	F10	Shaft height
Square	V09	V11	V11	V14	V17	V14	V17	V22	V17	V22	
DAPS-0015-...-R-F03-CR	■	–	–	–	–	–	–	–	–	–	20 mm
DAPS-0030-...-R-F03-CR	■	–	–	–	–	–	–	–	–	–	20 mm
DAPS-0060-...-R-F0305-CR	–	■	■	–	–	–	–	–	–	–	20 mm
DAPS-0120-...-R-F0507-CR	–	–	–	■	–	■	–	–	–	–	30 mm
DAPS-0240-...-R-F0507-CR	–	–	–	–	■	–	■	–	–	–	30 mm
DAPS-0480-...-R-F0710-CR	–	–	–	–	–	–	–	■	–	■	30 mm
Hole pattern for NAMUR accessories	25	25	25	30	30	30	30	30	30	30	
	50	50	50	80	80	80	80	80	80	80	

DAPS CR, single-acting
Flange hole pattern – Connection dimensions to DIN ISO 5211 and NAMUR VDI/VDE 3845

Connection	F03	F03	F05	F05	F05	F07	F07	F07	F10	F10	Shaft height
Square	V09	V11	V11	V14	V17	V14	V17	V22	V17	V22	
DAPS-0015-...-RS1-F03-CR	■	–	–	–	–	–	–	–	–	–	20 mm
DAPS-0015-...-RS2-F03-CR	■	–	–	–	–	–	–	–	–	–	20 mm
DAPS-0015-...-RS3-F03-CR	■	–	–	–	–	–	–	–	–	–	20 mm
DAPS-0015-...-RS4-F03-CR	■	–	–	–	–	–	–	–	–	–	20 mm
DAPS-0030-...-RS1-F03-CR	–	■	■	–	–	–	–	–	–	–	20 mm
DAPS-0030-...-RS2-F03-CR	–	■	■	–	–	–	–	–	–	–	20 mm
DAPS-0030-...-RS3-F03-CR	–	■	■	–	–	–	–	–	–	–	20 mm
DAPS-0030-...-RS4-F03-CR	–	■	■	–	–	–	–	–	–	–	20 mm
DAPS-0060-...-RS1-F0305-CR	–	–	–	■	–	■	–	–	–	–	30 mm
DAPS-0060-...-RS2-F0305-CR	–	–	–	■	–	■	–	–	–	–	30 mm
DAPS-0060-...-RS3-F0305-CR	–	–	–	■	–	■	–	–	–	–	30 mm
DAPS-0060-...-RS4-F0305-CR	–	–	–	■	–	■	–	–	–	–	30 mm
DAPS-0120-...-RS1-F0507-CR	–	–	–	–	■	–	■	–	–	–	30 mm
DAPS-0120-...-RS2-F0507-CR	–	–	–	–	■	–	■	–	–	–	30 mm
DAPS-0120-...-RS3-F0507-CR	–	–	–	–	■	–	■	–	–	–	30 mm
DAPS-0120-...-RS4-F0507-CR	–	–	–	–	■	–	■	–	–	–	30 mm
DAPS-0240-...-RS1-F0507-CR	–	–	–	–	–	–	–	■	–	■	30 mm
DAPS-0240-...-RS1-F0507-CR	–	–	–	–	–	–	–	■	–	■	30 mm
DAPS-0240-...-RS1-F0507-CR	–	–	–	–	–	–	–	■	–	■	30 mm
DAPS-0240-...-RS1-F0507-CR	–	–	–	–	–	–	–	■	–	■	30 mm
Hole pattern for NAMUR accessories	25	25	25	30	30	30	30	30	30	30	
	50	50	50	80	80	80	80	80	80	80	

Quarter turn actuators DAPS

Peripherals overview



Peripherals overview

Mounting components and accessories			
	Description	→ Page/Internet	
1	Positioner CMSX	For position control of quarter turn actuators in process automation systems	289
2	Sensor boxes SRBG	For electrical feedback and position monitoring of process valves which are actuated with quarter turn actuators	235
3	Limit switch attachments DAPZ	Round design, variant AR Electrical, inductive or inductive and explosion-proof sensing	279
4	Sensor boxes SRBC	For electrical feedback and position monitoring of process valves which are actuated with quarter turn actuators	217
5	Sensor boxes SRAP	Analogue sensor box continuously senses the entire swivel range and reports this back to the controller	269
6	Solenoid valves NVF3 ¹⁾	For F solenoid coil and explosion-proof F solenoid coil	nvf3
7	Solenoid valves VSNC	For single- and double-acting quarter turn actuators with a connection pattern to VDI/VDE 3845	23
8	Solenoid valves VOFC	Solenoid valve with solenoid coil, connection pattern to Namur	85
9	Solenoid valves VOFD	Solenoid valve with solenoid coil, connection pattern to Namur	151
10	Ball valves VAPB	2-way, brass, pipe thread to EN 10226-1	542
11	Ball valves VZBA	2-way, stainless steel, optionally with pipe thread to EN 10226-1 or with welding ends	495
12	Quarter turn actuators DAPS	Connection pattern to VDI/VDE 3845 for attaching solenoid valves	423

1) Direct mounting of solenoid valves only possible from size 0015 onwards

Quarter turn actuators DAPS

Type codes DAPS

DAPS – 0240 – 090 – R – S – 4 – F10 –

Type	
DAPS	Quarter turn actuator
Size	
0008	Nominal torque 8 Nm
0015	Nominal torque 15 Nm
0030	Nominal torque 30 Nm
0053	Nominal torque 53 Nm
0060	Nominal torque 60 Nm
0090	Nominal torque 90 Nm
0106	Nominal torque 106 Nm
0120	Nominal torque 120 Nm
0180	Nominal torque 180 Nm
0240	Nominal torque 240 Nm
0360	Nominal torque 360 Nm
0480	Nominal torque 480 Nm
0720	Nominal torque 720 Nm
0960	Nominal torque 960 Nm
1440	Nominal torque 1440 Nm
1920	Nominal torque 1920 Nm
2880	Nominal torque 2880 Nm
3840	Nominal torque 3840 Nm
4000	Nominal torque 4000 Nm
5760	Nominal torque 5760 Nm
8000	Nominal torque 8000 Nm
Swivel angle	
090	90°
Closing direction	
R	Closes to right
Mode of operation	
–	Double-acting
S	Single-acting
Spring strength	
–	Not applicable for double-acting
1	For connection pressure 2.8 bar
2	For connection pressure 3.5 bar
3	For connection pressure 4.2 bar
4	For connection pressure 5.6 bar
1st flange hole pattern	
F03	Flange hole pattern F03
F04	Flange hole pattern F04
F05	Flange hole pattern F05
F07	Flange hole pattern F07
F10	Flange hole pattern F10
F12	Flange hole pattern F12
F14	Flange hole pattern F14
F16	Flange hole pattern F16
F25	Flange hole pattern F25

05

Quarter turn actuators

Type codes DAPS

		12	-	-	-
2nd flange hole pattern					
05	Flange hole pattern F05				
07	Flange hole pattern F07				
10	Flange hole pattern F10				
12	Flange hole pattern F12				
16	Flange hole pattern F16				
Manual override					
MW	With handwheel				
Temperature range					
-	Standard (-20 °C ... +80 °C)				
T4	-20 °C ... +150 °C				
T6	-50 °C ... +60 °C				

Quarter turn actuators DAPS CR

Type codes DAPS CR

DAPS - 0015 - 090 - R S 4 - F03 - 05 - CR

Type	
DAPS	Quarter turn actuator for process automation
Nominal torque in Nm	
0015	15 Nm
0030	30 Nm
0060	60 Nm
0120	120 Nm
0240	240 Nm
0480	480 Nm
Swivel angle in degrees	
90	90°
Closing direction	
R	Closes to right
Mode of operation	
S	Single-acting
Spring strength	
1	Spring strength for connection pressure 2.8 bar
2	Spring strength for connection pressure 3.5 bar
3	Spring strength for connection pressure 4.2 bar
4	Spring strength for connection pressure 5.6 bar
1st flange hole pattern	
F03	Flange hole pattern 03
F05	Flange hole pattern 05
F07	Flange hole pattern 07
2nd flange hole pattern	
05	Flange hole pattern 05
07	Flange hole pattern 07
10	Flange hole pattern 10
Special design	
CR	Stainless steel

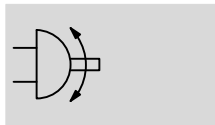
05


Quarter turn actuators

Quarter turn actuators DAPS, double-acting

Technical data


Function




 Swivel angle
0 ... 90°

Wearing parts kits
→ page 436



 Size
0008 ... 8000

 Torque
8 ... 8000 Nm

General technical data

Size	0008	0015 ... 0360	0480 ... 0960	1440 ... 1920	2880 ... 5760	8000
Pneumatic connection	G1/8	G1/8	G1/4	G1/4	G1/8	G3/8
Design	Scotch yoke system					
Mode of operation	Double-acting					
Mounting position	Any					
Position sensing	None					
Cushioning	No cushioning					
Swivel angle [°]	90					
End-position adjusting range at 0°						
DAPS ... R- ...	[°]	-	-1 ... +9		±5	
DAPS ... R- ... T4	[°]	-	-1 ... +9	-		
DAPS ... R- ... T6	[°]	-	-1 ... +9		±5	-
End-position adjusting range at 90°						
DAPS ... R- ...	[°]	-			85 ... 95	
DAPS ... R- ... T4	[°]	-				
DAPS ... R- ... T6	[°]	-			85 ... 95	-
Closing direction	Closes to right					

Operating and environmental conditions

Size	0008	0015 ... 0360	0480 ... 0960	1440 ... 1920	2880 ... 5760	8000	
Nominal operating pressure [bar]	5.6						
Operating pressure							
DAPS ... R- ...	[bar]	1 ... 8.4				1 ... 7	
DAPS ... R- ... T4	[bar]	3 ... 8.4			-		
DAPS ... R- ... T6	[bar]	3 ... 8.4				-	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]						
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)						
Ambient temperature							
DAPS ... R- ...	[°C]	-20 ... +80					
DAPS ... R- ... T4	[°C]	-	-20 ... +150		-		
DAPS ... R- ... T6	[°C]	-	-50 ... +60				-
Corrosion resistance class CRC ¹⁾	3						
Connection to process valve as per standard	ISO 5211						
Valve connection as per standard	VDI/VDE 3845 (NAMUR)						
Safety Integrity Level (SIL)	Up to SIL 2 High Demand mode						
	Up to SIL 2 Low Demand mode						

1) Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Quarter turn actuators DAPS, double-acting

Technical data

ATEX		
ATEX category for gas	II 2G	
Type of (ignition) protection for gas	Ex h IIC T6 ... T3 Gb X	
ATEX category for dust	II 2D	
Type of (ignition) protection dust	Ex h IIIC T85°C ... T200°C Db X	
Explosion ambient temperature	Standard	-20 °C ≤ Ta ≤ +60 °C
	Variant T4	-20 °C ≤ Ta ≤ +150 °C
	Variant T6	-50 °C ≤ Ta ≤ +60 °C
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)	

Air consumption [l/cycle] at 6 bar

Size	
DAPS-0008	0.24
DAPS-0015	0.56
DAPS-0030	1.05
DAPS-0060	2.1
DAPS-0106	3.85
DAPS-0180	6.65
DAPS-0240	9.1
DAPS-0360	12.6
DAPS-0480	18.2

Size	
DAPS-0720	24.5
DAPS-0960	34.3
DAPS-1440	53.2
DAPS-1920	71.4
DAPS-2880	140
DAPS-3840	179.2
DAPS-5760	266
DAPS-8000	350

Weight [g]

Size	
DAPS-0008	300
DAPS-0015	750
DAPS-0030	1000
DAPS-0060	1600
DAPS-0106	2500
DAPS-0180	4600
DAPS-0240	5400
DAPS-0360	6500
DAPS-0480	9600

Size	
DAPS-0720	12000
DAPS-0960	17400
DAPS-1440	23000
DAPS-1920	32000
DAPS-2880	56000
DAPS-3840	49000
DAPS-5760	86000
DAPS-8000	106000

Materials

Quarter turn actuators		Material number
Housing	Wrought aluminium alloy	-
Cap	Wrought aluminium alloy	-
Shaft	High-alloy steel	1.4305
External screws	High-alloy steel	-
Seals	Standard	FPM, NBR, PUR
	T4	FPM, PTFE-reinforced
	T6	FVMQ, PTFE-reinforced
Note on materials	Standard	RoHS-compliant
	T4	Contains paint-wetting impairment substances, RoHS-compliant
	T6	Contains paint-wetting impairment substances, RoHS-compliant

Actual torque [Nm] as a function of operating pressure [bar] and swivel angle [°]

Size	Swivel angle [°]	Operating pressure [bar]							
		2.5	3	4	5	5.6	6	7	8
DAPS-0008	0	3.1	3.8	5	6.3	7	7.5	8.8	10
	50	1.6	1.9	2.5	3.1	3.5	3.8	4.4	5
	90	3.1	3.8	5	6.3	7	7.5	8.8	10
DAPS-0015	0	6.7	8	10.7	13.4	15	16.1	18.8	21.4
	50	3.3	4	5.4	6.7	7.5	8	9.4	10.7
	90	5	6	8.1	10.1	11.3	12.1	14.1	16.1

Quarter turn actuators DAPS, double-acting

Technical data

Actual torque [Nm] as a function of operating pressure [bar] and swivel angle [°]									
Size	Swivel angle [°]	Operating pressure [bar]							
		2.5	3	4	5	5.6	6	7	8
DAPS-0030	0	13.4	16.1	21.4	26.8	30	32.1	37.5	42.9
	50	6.7	8	10.7	13.4	15	16.1	18.8	21.4
	90	10	12	16.1	20.1	22.5	24.1	28.1	32.1
DAPS-0060	0	26.8	32.1	42.9	53.6	60	64.3	75	85.7
	50	13.4	16.1	21.4	26.8	30	32.1	37.5	42.9
	90	20.1	24.1	32.1	40.2	45	48.2	56.3	64.3
DAPS-0106	0	47.5	57	76	95	106	114	133	151
	50	23.5	28	38	47	53	57	66	76
	90	35.5	43	57	71	80	86	100	114
DAPS-0180	0	80.4	96	128.4	160.8	180	193.2	225.6	264.8
	50	40.2	48	64.8	80.4	90	96	112.8	128.4
	90	60.6	72	97.2	121.2	135	145.2	169.2	193.2
DAPS-0240	0	107.1	128.6	171.4	214.3	240	257.1	300	342.9
	50	53.5	64.3	85.7	107.1	120	128.6	150	171.4
	90	80.3	96.4	128.6	160.7	180	192.9	225	257.1
DAPS-0360	0	160.8	192	256.8	321.6	360	386.4	451.2	513.6
	50	80.4	96	129.6	160.8	180	192	225.6	264.8
	90	121.2	144	194.4	242.4	270	290.4	338.4	386.4
DAPS-0480	0	214.3	257.1	342.9	428.6	480	514.3	600	685.7
	50	107.1	128.6	171.4	214.3	240	257.1	300	342.9
	90	160.7	192.9	257.1	321.4	360	358.7	450	514.3
DAPS-0720	0	321.4	384	513.6	643.2	720	772.8	902.4	1027.2
	50	160.7	192	259.2	321.6	360	384	451.2	529.6
	90	241	288.1	388.8	484.8	540	580.8	676.8	772.8
DAPS-0960	0	428.6	514.3	685.7	857.1	960	1028.6	1200	1371.4
	50	214.3	257.1	342.9	428.6	480	514.3	600	685.7
	90	321.4	385.7	514.3	642.9	720	771.4	900	1028.6
DAPS-1440	0	642.8	768	1027.2	1286.4	1440	1545.6	1804.8	2057.4
	50	321.4	384	518.4	643.2	720	768	902.4	1059.2
	90	482.1	576	777.6	969.9	1080	1161.6	1353.6	1545.6
DAPS-1920	0	857.1	1028.6	1371.4	1714.3	1920	2057.1	2400	2742.9
	50	428.6	514.3	685.8	857.1	960	1028.6	1200	1371.4
	90	642.9	771.4	1028.6	1285.7	1440	1542.9	1800	2057.1
DAPS-2880	0	1285	1,542	2057	2571	2880	3085	3600	4114
	50	642	771	1028	1285	1440	1542	1800	2057
	90	856	1028	1371	1741	1920	2056	2400	2742
DAPS-3840	0	1714	2057	2743	3428	3840	4114	4800	5485
	50	857	1028	1371	1714	1920	2057	2400	2742
	90	1285	1543	2057	2571	2880	3085	3600	4114
DAPS-5760	0	2571	3085	4114	5142	5760	6171	7200	8228
	50	1285	1542	2057	2571	2880	3085	3600	4141
	90	1928	2313	3085	3856	4320	4628	5400	6171
DAPS-8000	0	3571.4	4285.7	5714.3	7142.9	8000	8571.4	10000	–
	50	1785.7	2142.9	2857.1	3571.4	4000	4285.7	5000	–
	90	2678.6	3214.3	4285.7	5357.1	6000	6428.6	7500	–

Torque for size at 5.6 bar and swivel angle 0°



Note

The operating torque of the drive must not be higher than the maximum permissible torque listed in ISO 5211, with reference to the size of the mounting flange and of the coupling.

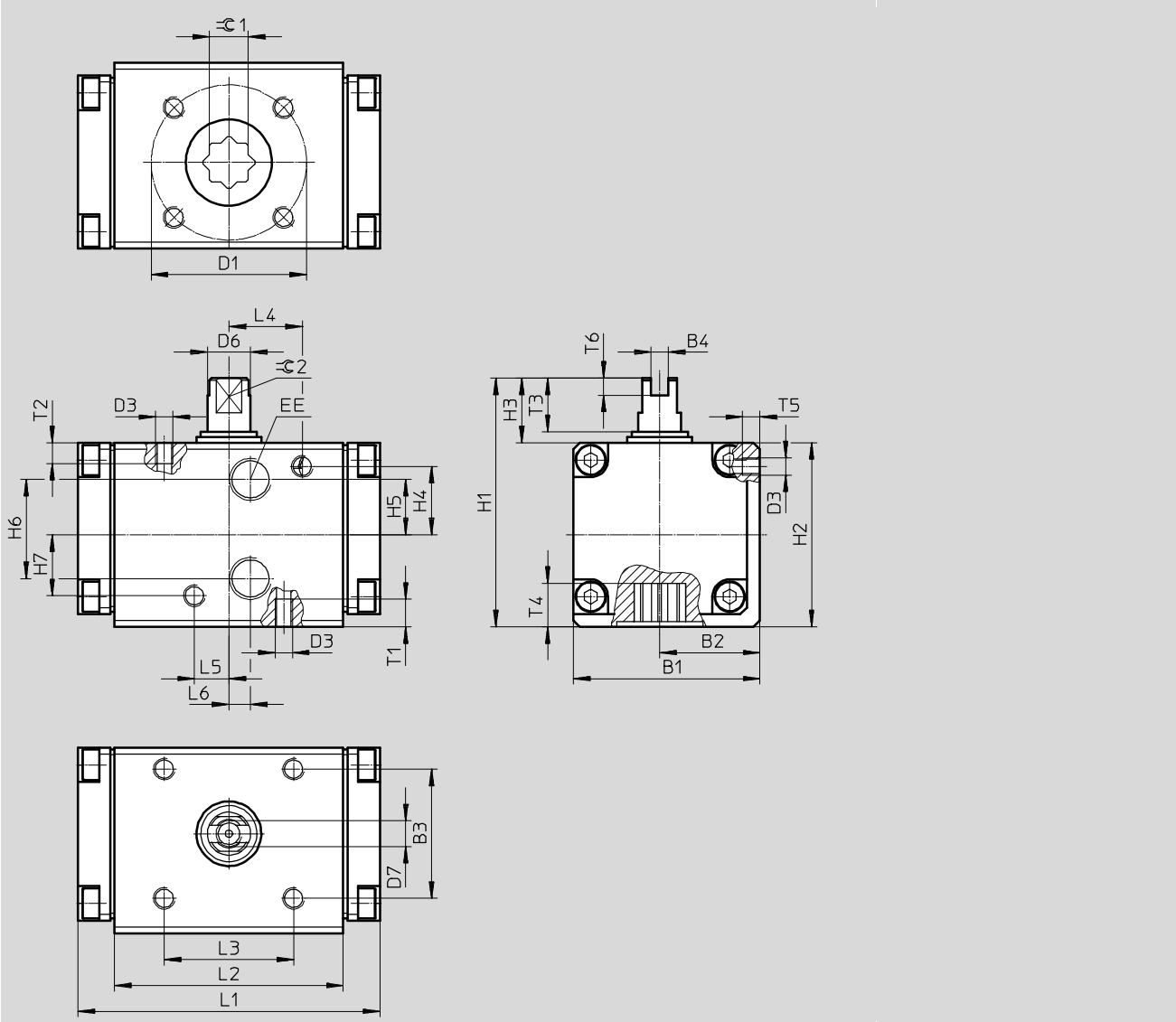
Quarter turn actuators DAPS, double-acting

Technical data

Dimensions

Size 0008

Download CAD data → www.festo.com



Quarter turn actuators DAPS, double-acting

Technical data

Size	B1	B2	B3	B4 +0.1	D1 ∅	D3	D6 ∅	D7	EE	H1	H2	H3	H4	H5	H6
DAPS-008-...	43.2	23.2	30	4	36	M5	10	M6	G1/8	57.7	42.7	15	14.5	11.5	23

Size	H7	L1	L2	L3	L4	L5	L6	T1	T2	T3	T4	T5	T6 +0.5	≈C 1 H11	≈C 2 h11
DAPS-008-...	15.5	70	53	30	17	8	5	8	6	12.4	10.1	5	4.5	9	8

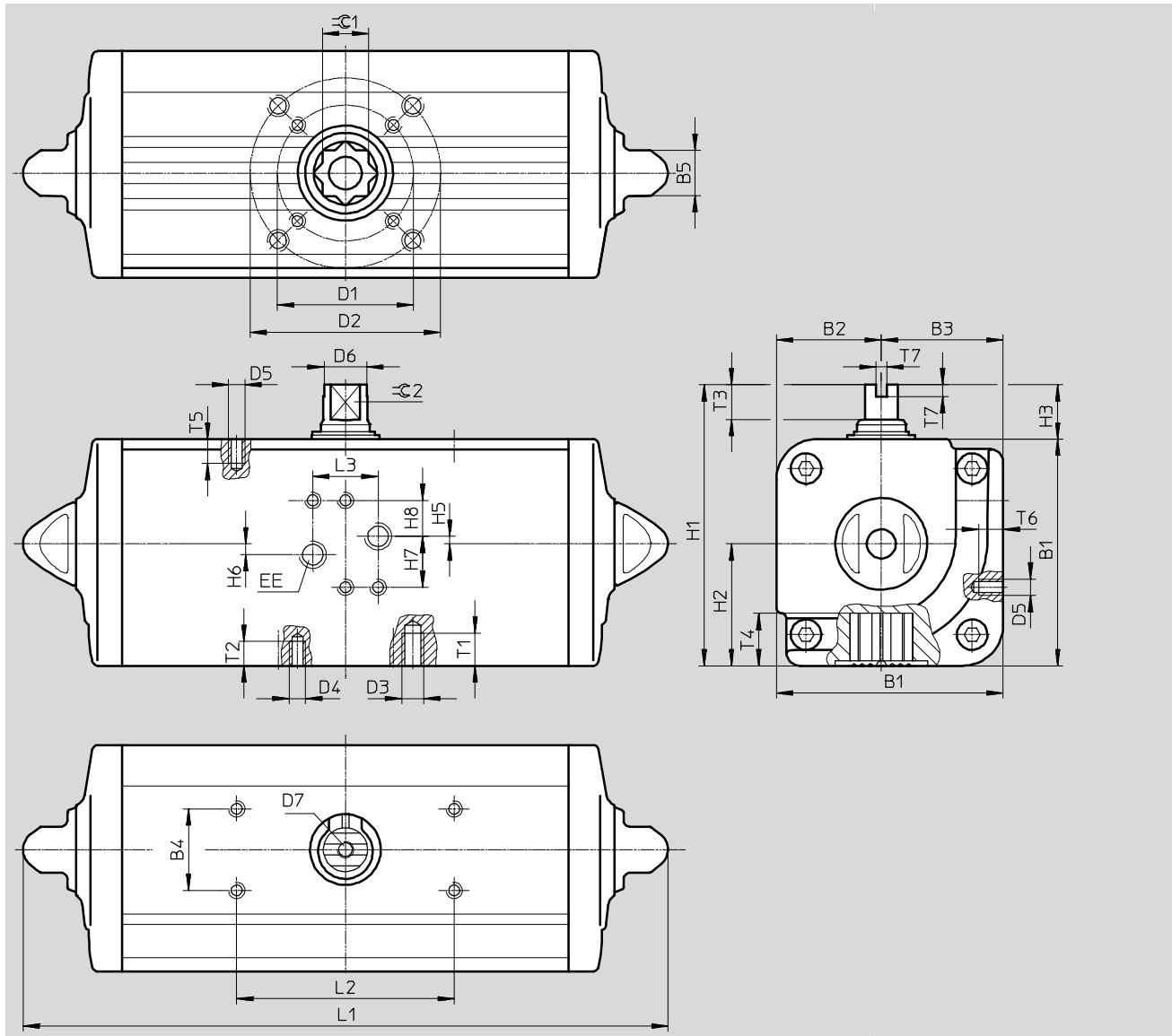
Quarter turn actuators DAPS, double-acting

Technical data

Dimensions

DAPS-0015-090-...-T4

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05

Quarter turn actuators

Quarter turn actuators DAPS, double-acting

Technical data

Size	B1	B2	B3	B4	B5	D1 ∅ ±0.1	D2 ∅ ±0.1	D3	D4	D5	D6 ∅	D7	EE	H1	H2	H3	
DAPS-0015-...-F03	52.2	24.2	28	30	13	36	-	-	M5	M5	9.2	M6	G1/8	72.2	28	20	
DAPS-0015-...-F04						42											
DAPS-0030-...-F0305	59.2	27.7	31.5		13	36	50	M6	M5		10.9			79.2	31.5	20	
DAPS-0030-...-F04						42	-	-									
DAPS-0060-...-F04	70.4	32.7	37.7		13	42	-	-	M5		14.5			16.2	103.3	44.8	20
DAPS-0060-...-F0507						50	70	M8	M6								
DAPS-0106-...-F0507	83.3	38.5	44.8		17	50	70	M8	M6		20.2			137.5	56.5	30	
DAPS-0180-...-F0710	107.5	51	56.5		22	70	102	M10	M8		22.5			141.1	60.1	30	
DAPS-0240-...-F0710	111.1	51	60.1		22	70	102	M10	M8		25.5			148	62	30	
DAPS-0360-...-F0710	118	56	62		22	70	102	M10	M8								

Size	H5	H6	H7	H8	L1 ±2	L2	L3	T1	T2	T3	T4	T5	T6	T7	≈ 1	≈ 2	
DAPS-0015-...-F03	0.8	3.2	18	14	159	80	24	-	8	10	13.2	6	7	4	11	8	
DAPS-0015-...-F04								9	8	10	13.2				11	9	
DAPS-0030-...-F0305	0.8	3.2			174			198	-	8	13				16.5	14	10
DAPS-0030-...-F04									12	9	13				16.5	14	10
DAPS-0060-...-F04	-	4			237.1			289.9	12	9	13				19.3	17	12
DAPS-0060-...-F0507									15	12	16				24.8	22	15
DAPS-0106-...-F0507	-	4			313.6			339.3	15	12	17				24.8	22	15
DAPS-0180-...-F0710	-	4			15			12	19	24.3	22				19		
DAPS-0240-...-F0710	-	4															
DAPS-0360-...-F0710	-	4															

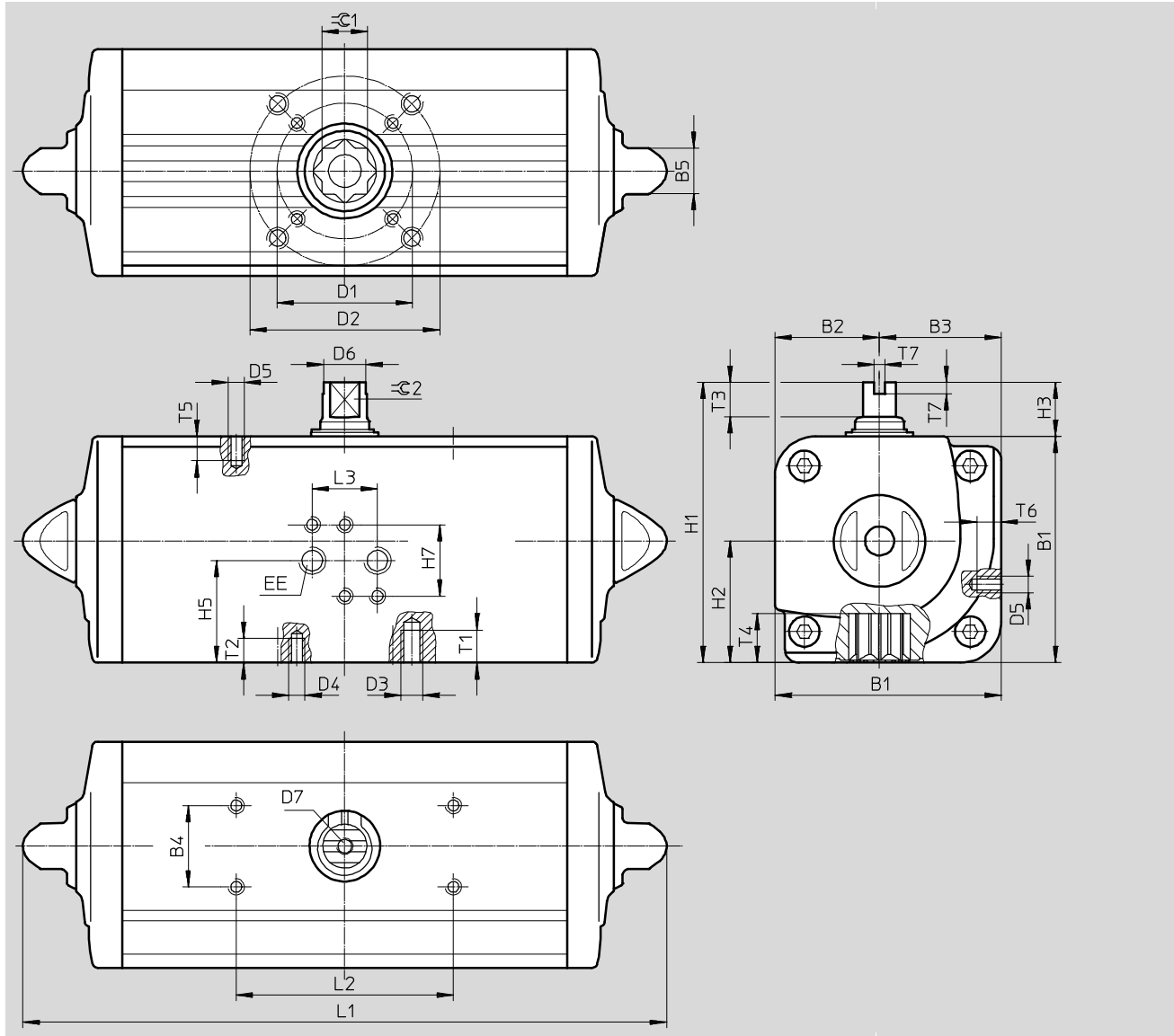
Quarter turn actuators DAPS, double-acting

Technical data

Dimensions

Size 0015 ... 1920

Download CAD data → www.festo.com



05

Quarter turn actuators

Quarter turn actuators DAPS, double-acting

Technical data

Size	B1	B2	B3	B4	B5	D1 ∅ ±0.1	D2 ∅ ±0.1	D3	D4	D5	D6 ∅	D7	EE	H1	H2							
DAPS-0015-...-F03	52.2	24.2	28	30	13	36	-	-	M5	M5	9.2	M6	G1/8	72.2	28							
DAPS-0015-...-F04						42			M5													
DAPS-0030-...-F0305	59.2	27.7	31.5		13	36	50	M6	M5		10.9			14.5	16.2	20.2	22.5	25.5	79.2	31.5		
DAPS-0030-...-F04						42	-	-	M5													
DAPS-0060-...-F04	70.4	32.7	37.7		13	42	-	-	M5		17			22	22	22	22	22	22	22	22	
DAPS-0060-...-F0507						50	70	M8	M6													
DAPS-0106-...-F0507	83.3	38.5	44.8		17	50	70	M8	M6		17			22	22	22	22	22	22	22	22	22
DAPS-0180-...-F0710	107.5	51	56.5		22	70	102	M10	M8		22			22	22	22	22	22	22	22	22	22
DAPS-0240-...-F0710	111.1	51	60.1		22	70	102	M10	M8		22			22	22	22	22	22	22	22	22	22
DAPS-0360-...-F0710	118	56	62		22	70	102	M10	M8		22			22	22	22	22	22	22	22	22	22

Size	H3	H5	H7	L1 ±2	L2	L3	T1	T2	T3	T4	T5	T6	T7	≈C1	≈C2						
DAPS-0015-...-F03	20	28.8	32	159	80	24	-	8	10	13.2	6	7	4	11	8						
DAPS-0015-...-F04								8													
DAPS-0030-...-F0305	20	32.3		174			9	8	10	13.2				-	8	14	10	17	22	22	22
DAPS-0030-...-F04								8													
DAPS-0060-...-F04	20	37.7		198			-	8	13	16.5				12	9	13	19.3	22	22	22	22
DAPS-0060-...-F0507								12													
DAPS-0106-...-F0507	20	44.8		237.1			12	9	13	19.3				15	12	16	24.8	22	15	15	15
DAPS-0180-...-F0710	30	56.5		289.9			15	12	16	24.8				15	12	17	24.8	22	15	15	15
DAPS-0240-...-F0710	30	60.1		313.6			15	12	17	24.8				15	12	19	24.3	22	15	15	15
DAPS-0360-...-F0710	30	62		339.3			15	12	19	24.3				15	12	19	24.3	22	15	15	15

Size	B1	B2	B3	B4	B5	D1 ∅ ±0.1	D2 ∅ ±0.1	D3	D4	D5	D6 ∅	D7	EE	H1	H2		
DAPS-0480-...-F1012	134.9	62	72.9	30	27	102	125	M12	M10	M5	29	M6	G1/4	164.9	72.9		
DAPS-0720-...-F1012	148	69.5	78.5		27	102	125	M12	M10		31.8			178	78.5		
DAPS-0960-...-F12	168	74.5	93.5		27	102	125	M12	M10		36.5			41	46	216	101.5
DAPS-0960-...-F14					27	140	-	-	M16								
DAPS-1440-...-F12	186	84.5	101.5		36	125	-	-	M12		M16			46	237.7	114.7	
DAPS-1440-...-F14					36	140			M16								
DAPS-1920-...-F14	207.7	93	114.7		36	140	-	-	M16		M12			46	237.7	114.7	
DAPS-1920-...-F1216					36	125	165	M20	M12								

Size	H3	H5	H7	L1	L2	L3	T1	T2	T3	T4	T5	T6	T7	≈C1	≈C2
DAPS-0480-...-F1012	30	57.4	32	387.7	80	24	18	15	19	29.5	6	7	4	27	19
DAPS-0720-...-F1012		61.5		433			18	15	19.5	29.5				27	22
DAPS-0960-...-F12		78		479.4			18	15	19.5	38.5				36	24
DAPS-0960-...-F14							-	24							
DAPS-1440-...-F12		86.5		567			-	18	19.5	38.5				36	27
DAPS-1440-...-F14								-							
DAPS-1920-...-F14		99.2		601			-	24	18.5	48.5				46	32
DAPS-1920-...-F1216								30							

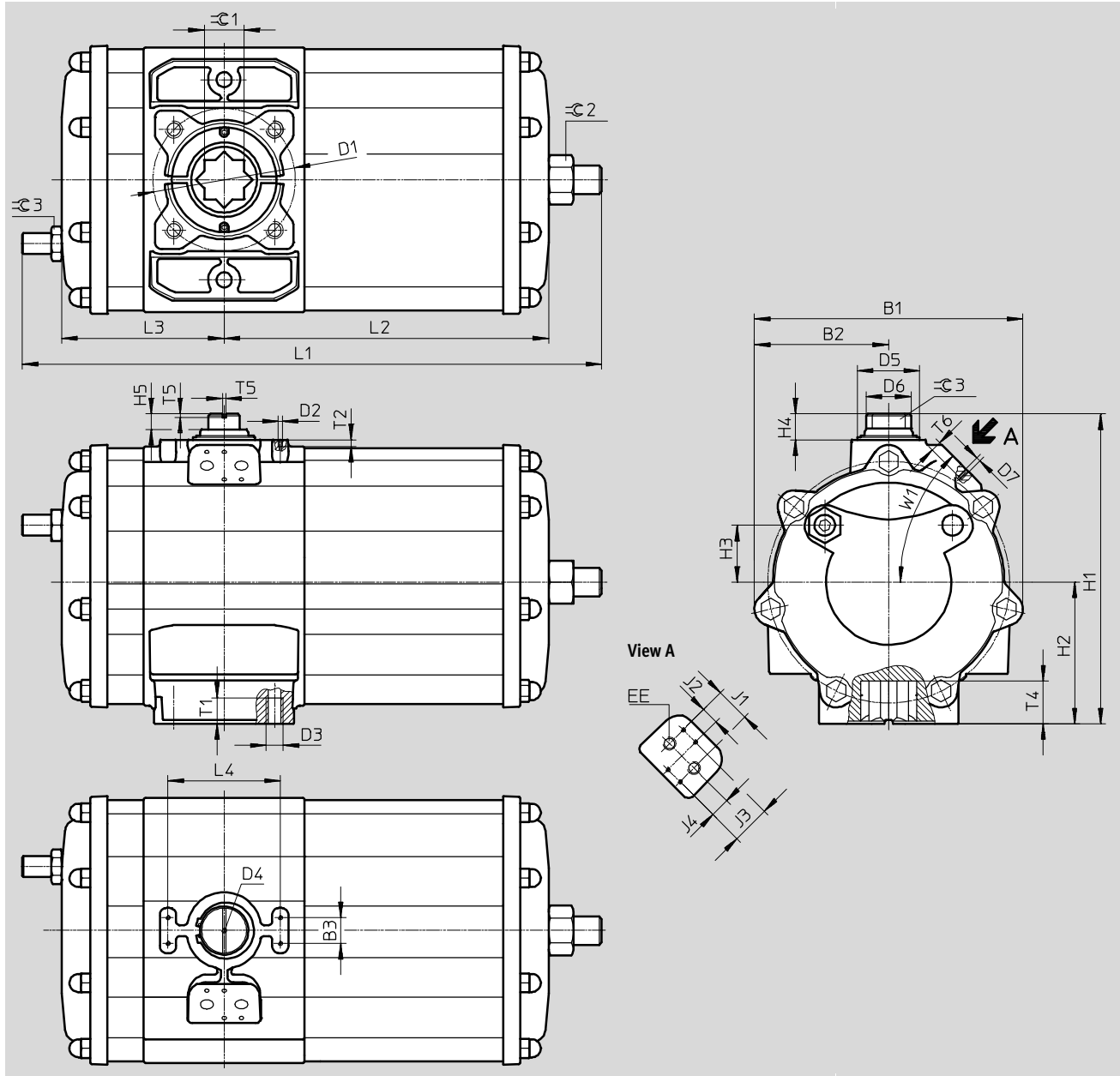
Quarter turn actuators DAPS, double-acting

Technical data

Dimensions

Size 2880

Download CAD data → www.festo.com



05

Quarter turn actuators

Size	B1	B2	B3	D1 ∅	D2	D3	D4	D5 ∅	D6 ∅	D7	EE	H1	H2	H3	H4	H5	J1
DAPS-2880-...	311	155	30	165	M5	M20	M6	72	52	M6	G3/8	359	164	66	30	18	40

Size	J2	J3	J4	L1 ±2	L2	L3	L4	T1	T2	T4 ±0.8	T5	T6	W1	C1	C2	C3
DAPS-2880-...	20	45	22.5	667	372	188	130	30	8	49.5	4	10	45°	46	50	36

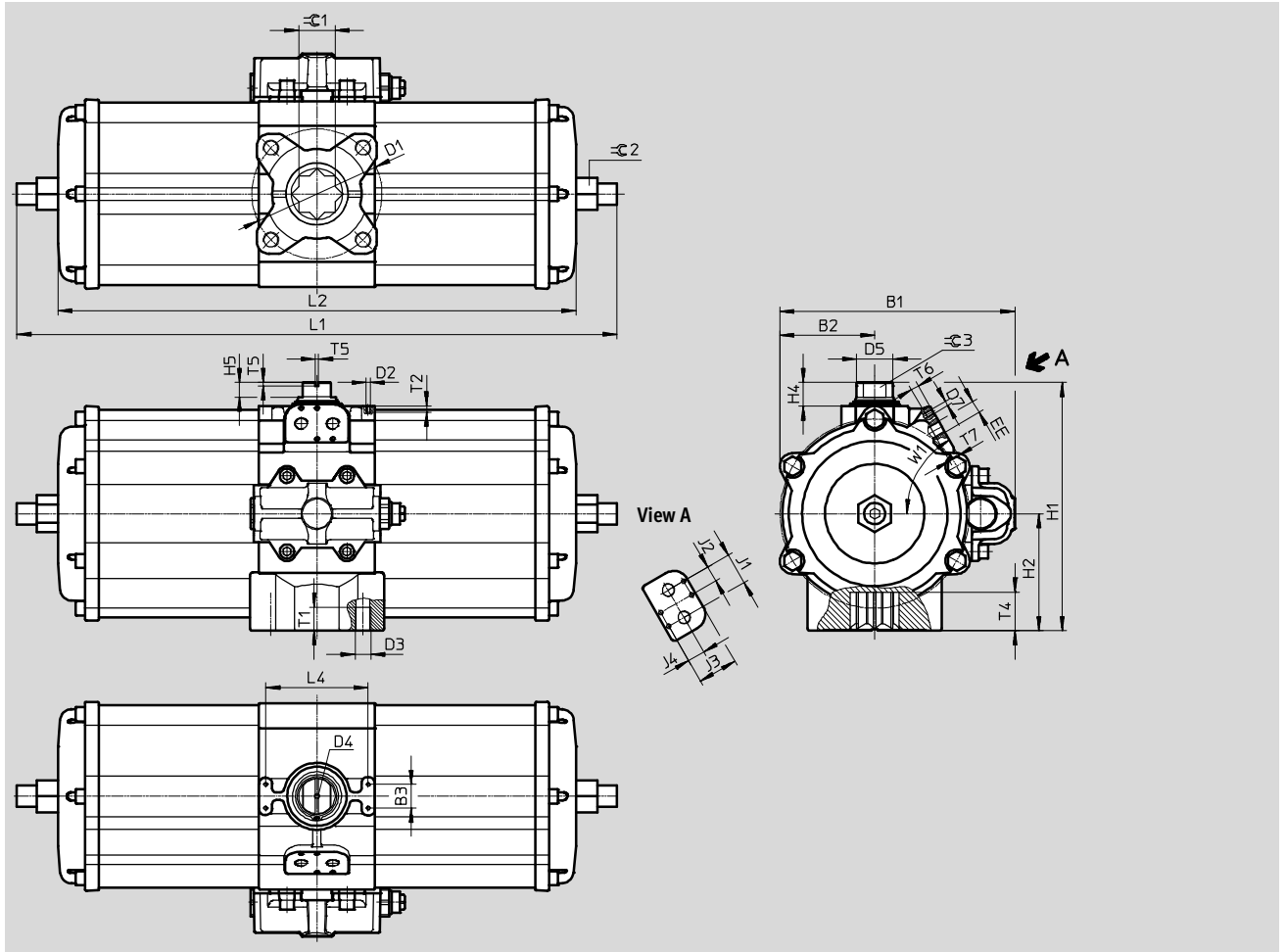
Quarter turn actuators DAPS, double-acting

Technical data

Dimensions

Download CAD data → www.festo.com

Size 3840



Size	B1	B2	B3	D1 ∅	D2	D3	D4	D5 ∅	D7	EE	H1	H2	H4	H5	J1	J2
DAPS-3840-...	298	120	30	165	M5	M20	M6	46	M6	G3/8	314	148.5	30	18.5	40	20

Size	J3	J4	L1 ±2	L2	L4	T1	T2	T4 ±1	T5	T6	T7	W1	⊙ 1	⊙ 2	⊙ 3
DAPS-3840-...	45	22.5	765	614	130	30	8	49	4	10	13	60°	46	41	32

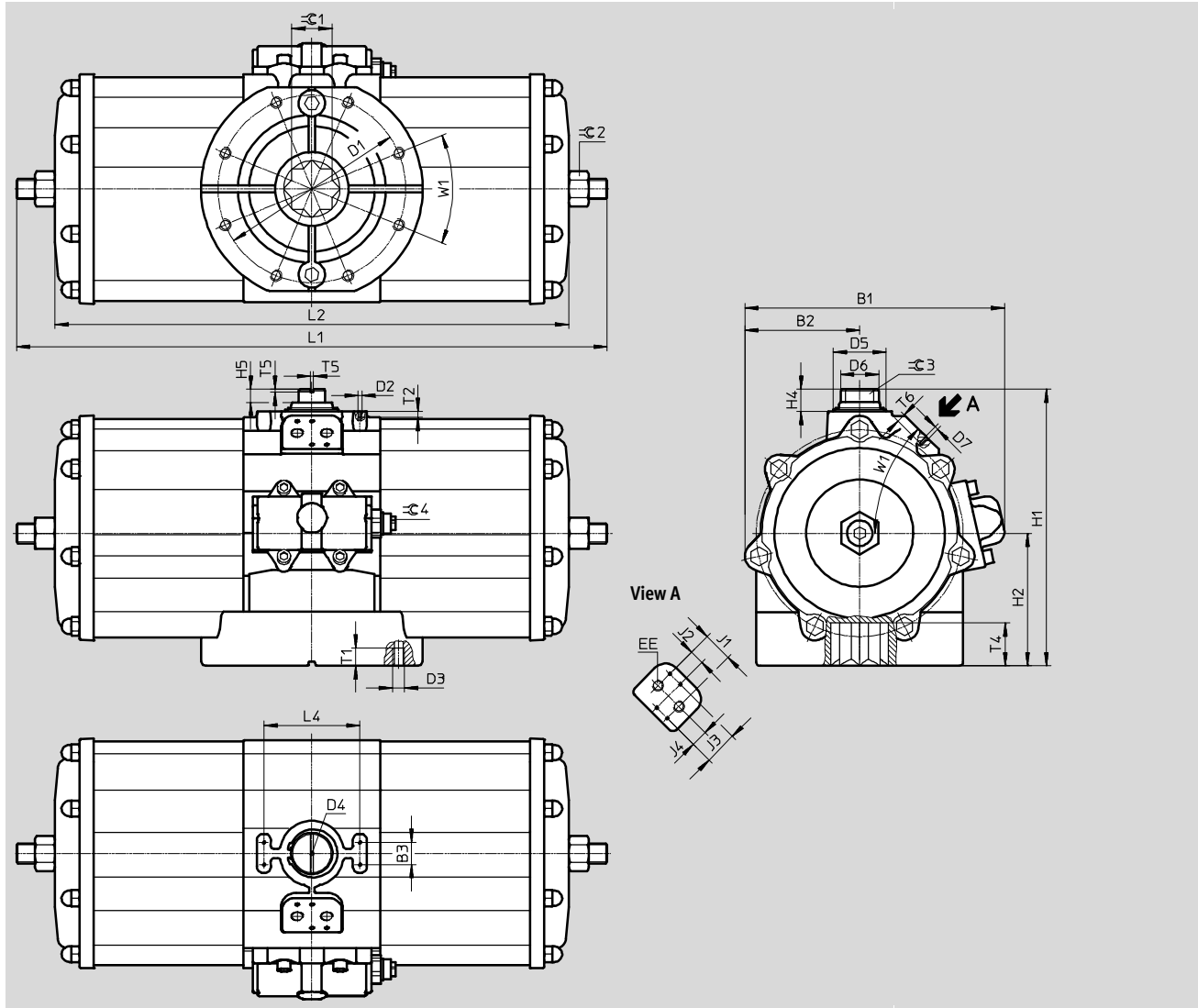
Quarter turn actuators DAPS, double-acting

Technical data

Dimensions

Size 5760

Download CAD data → www.festo.com



Size	B1	B2	B3	D1 ∅	D2	D3	D4	D5 ∅	D6	D7	EE	H1	H2	H4	H5	J1
DAPS-5760-...	361	155	30	254	M5	M16	M6	72	52	M6	G3/8	374	179	30	18	40

Size	J2	J3	J4	L1 ±2	L2	L4	T1	T2	T4 ±0.8	T5	T6	W1	≅ 1	≅ 2	≅ 3	≅ 4
DAPS-5760-...	20	45	22.5	885	744	130	24	8	58	4	10	45°	55	50	36	15

05

Quarter turn actuators

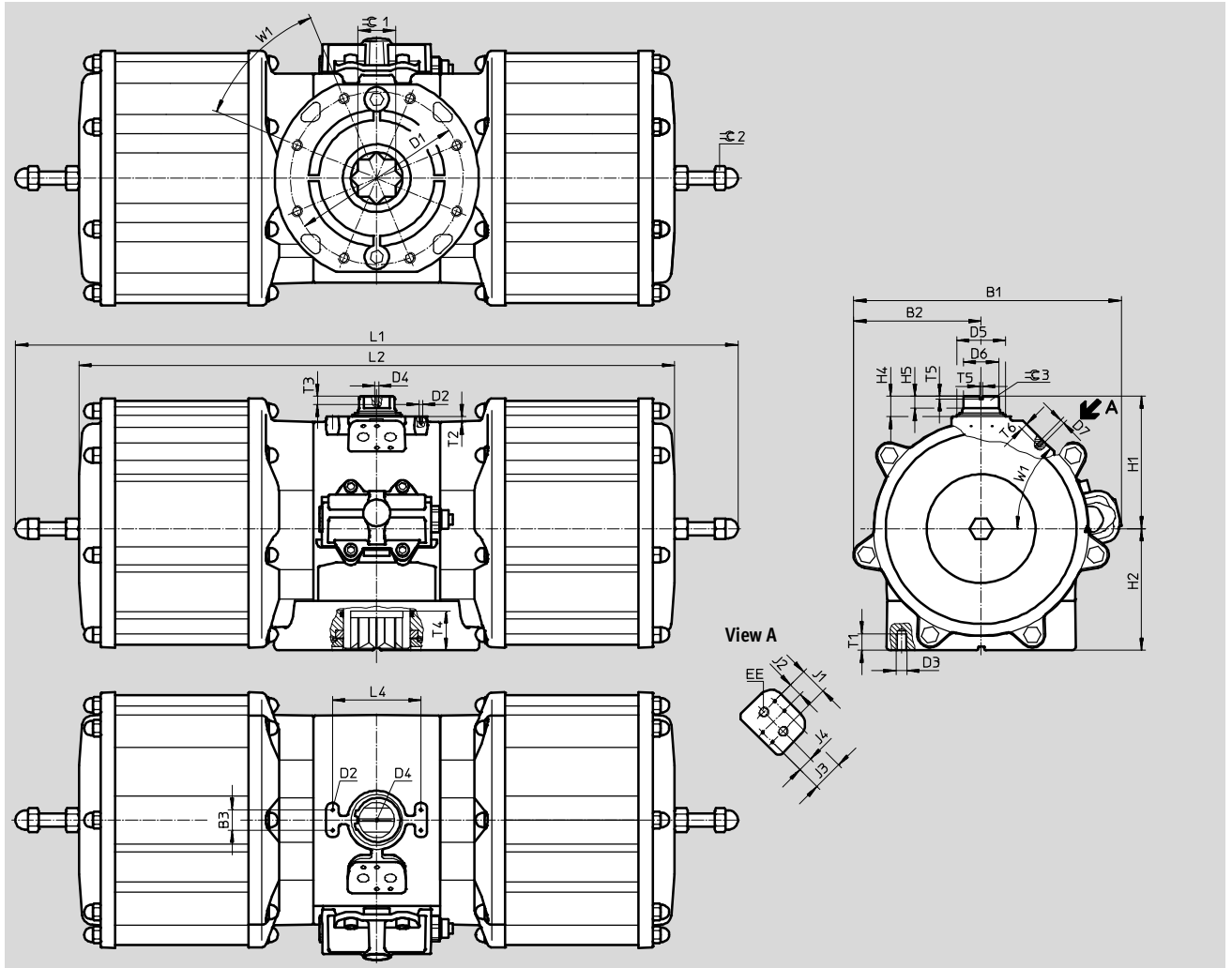
Quarter turn actuators DAPS, double-acting

Technical data

Dimensions

Size 8000

Download CAD data → www.festo.com



Size	B1	B2	B3	D1 ∅	D2	D3	D4	D5 ∅	D6 ∅	D7	EE	H1	H2	H4	H5	J1
DAPS-8000-...	394	188	30	254	M5	M16	M6	72	52	M6	G3/8	195	179	30	18	40

Size	J2	J3	J4	L1	L2	L4	T1	T2	T3	T4	T5	T6	W1	≅1	≅2	≅3
DAPS-8000-...	20	45	22.5	1044	877	130	24	8	12	58	4	10	45°	55	30	36

Quarter turn actuators DAPS, double-acting

Technical data

Ordering data – Drives

Part No.	Type
Size 0008	
549666	DAPS-0008-090-R-F03
Size 0015	
533417	DAPS-0015-090-R-F03
533475	DAPS-0015-090-R-F04
Size 0030	
533418	DAPS-0030-090-R-F0305
533476	DAPS-0030-090-R-F04
Size 0060	
533419	DAPS-0060-090-R-F04
533477	DAPS-0060-090-R-F0507
Size 0106	
533420	DAPS-0106-090-R-F0507
Size 0180	
533421	DAPS-0180-090-R-F0710
Size 0240	
533422	DAPS-0240-090-R-F0710
Size 0360	
533423	DAPS-0360-090-R-F0710
Size 0480	
533424	DAPS-0480-090-R-F1012

Part No.	Type
Size 0720	
549667	DAPS-0720-090-R-F1012
Size 0960	
533425	DAPS-0960-090-R-F1012
533478	DAPS-0960-090-R-F14
Size 1440	
549668	DAPS-1440-090-R-F12
549669	DAPS-1440-090-R-F14
Size 1920	
533426	DAPS-1920-090-R-F14
533479	DAPS-1920-090-R-F1216
Size 2880	
549670	DAPS-2880-090-R-F16
Size 3840	
549671	DAPS-3840-090-R-F16
Size 5760	
549672	DAPS-5760-090-F25
Size 8000	
560855	DAPS-8000-090-R-F25

Ordering data – Wearing parts kits

Part No.	Type
Size 0015	
397470	DAPS-0015
Size 0030	
397471	DAPS-0030/S0015
Size 0060	
397472	DAPS-0060/S0030
Size 0106	
397473	DAPS-0106/S0053
Size 0180	
397474	DAPS-0180/S0090

Part No.	Type
Size 0240	
397475	DAPS-0240/S0120
Size 0360	
397476	DAPS-0360/S0180
Size 0480	
397477	DAPS-0480/S0240
Size 0960	
397478	DAPS-0960/S0480
Size 1920	
397479	DAPS-1920/S0960

Quarter turn actuators DAPS, double-acting

Technical data

Ordering data – Drives for variant T4

Part No.	Type
Size 0015	
8030599	DAPS-0015-090-R-F03-T4
8030600	DAPS-0015-090-R-F04-T4
Size 0030	
8030601	DAPS-0030-090-R-F0305-T4
8030602	DAPS-0030-090-R-F04-T4
Size 0060	
8030603	DAPS-0060-090-R-F04-T4
8030604	DAPS-0060-090-R-F0507-T4
Size 0106	
8030605	DAPS-0106-090-R-F0507-T4
Size 0180	
8030606	DAPS-0180-090-R-F0710-T4

Ordering data – Drives for variant T6

Part No.	Type
Size 0015	
553170	DAPS-0015-090-R-F03-T6
553171	DAPS-0015-090-R-F04-T6
Size 0030	
553172	DAPS-0030-090-R-F0305-T6
553173	DAPS-0030-090-R-F04-T6
Size 0060	
553174	DAPS-0060-090-R-F04-T6
553175	DAPS-0060-090-R-F0507-T6
Size 0106	
553176	DAPS-0106-090-R-F0507-T6
Size 0180	
553177	DAPS-0180-090-R-F0710-T6
Size 0240	
553178	DAPS-0240-090-R-F0710-T6
Size 0360	
553179	DAPS-0360-090-R-F0710-T6
Size 0480	
553180	DAPS-0480-090-R-F1012-T6

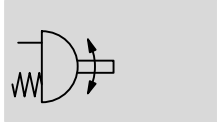
Part No.	Type
Size 0240	
8030607	DAPS-0240-090-R-F0710-T4
Size 0360	
8030608	DAPS-0360-090-R-F0710-T4
Size 0480	
8030609	DAPS-0480-090-R-F1012-T4
Size 0720	
8030610	DAPS-0720-090-R-F1012-T4
Size 0960	
8030611	DAPS-0960-090-R-F1012-T4
8030612	DAPS-0960-090-R-F14-T4

Part No.	Type
Size 0720	
553181	DAPS-0720-090-R-F1012-T6
Size 0960	
553182	DAPS-0960-090-R-F12-T6
553183	DAPS-0960-090-R-F14-T6
Size 1440	
553184	DAPS-1440-090-R-F12-T6
553185	DAPS-1440-090-R-F14-T6
Size 1920	
553186	DAPS-1920-090-R-F14-T6
553187	DAPS-1920-090-R-F1216-T6
Size 2880	
553188	DAPS-2880-090-R-F16-T6
Size 3840	
553189	DAPS-3840-090-R-F16-T6
Size 5760	
553190	DAPS-5760-090-R-F25-T6

Quarter turn actuators DAPS, single-acting

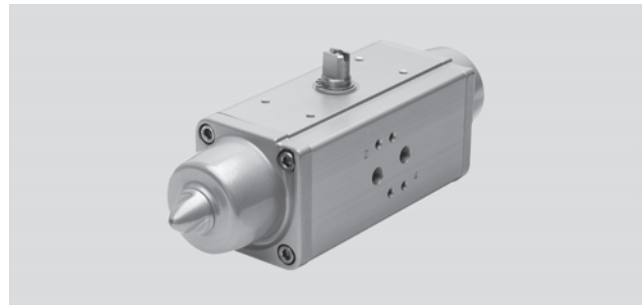
Technical data

Function



Swivel angle
0 ... 90°

Wearing parts kits
→ page 453



Size
0015 ... 4000

Torque
15 ... 4000 Nm

General technical data				
Size	0015 ... 0180	0240 ... 0960	1440 ... 2880	4000
Pneumatic connection	G1/8	G1/4	G3/8	G3/8
Design	Scotch yoke system			
Mode of operation	Single-acting			
Mounting position	Any			
Position sensing	None			
Cushioning	No cushioning			
Swivel angle [°]	90			
End-position adjusting range at 0°				
DAPS ... RS- ... [°]	One end position adjustable, -1 ... +9		±5	
DAPS ... RS- ... T4 [°]			-	
DAPS ... RS- ... T6 [°]			±5	-
End-position adjusting range at 90°				
DAPS ... RS- ... [°]	One end position adjustable, 81 ... +91		85 ... 95	
DAPS ... RS- ... T4 [°]			-	
DAPS ... RS- ... T6 [°]			85 ... 95	-
Note regarding end-position adjusting range	One end position optionally adjustable			
Closing direction	Closes to the right			

Operating and environmental conditions				
Size	0015 ... 0480	0720 ... 2880	4000	
Nominal operating pressure [bar]	5.6			
Operating pressure ¹⁾				
DAPS ... RS1- ... [bar]	2.8 ... 8.4			
DAPS ... RS2- ... [bar]	3.5 ... 8.4			
DAPS ... RS3- ... [bar]	4.2 ... 8.4			
DAPS ... RS4- ... [bar]	5.6 ... 8.4			
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]			
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)			
Ambient temperature				
DAPS ... RS- ... [°C]	-20 ... +80			
DAPS ... RS- ... T4 [°C]	-20 ... +150	-		
DAPS ... RS- ... T6 [°C]	-50 ... +60	-		
Corrosion resistance class CRC ²⁾	3			
Connection to process valve as per standard	ISO 5211			
Valve connection as per standard	VDI/VDE 3845 (NAMUR)			
Safety Integrity Level (SIL)	Up to SIL 2 High Demand mode			
	Up to SIL 2 Low Demand mode			

1) Minimum operating pressures vary for single-acting rotary actuators depending upon spring quantity

2) Corrosion resistance class CRC 3 to Festo standard FN 940070

High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Quarter turn actuators DAPS, single-acting

Technical data

ATEX		
ATEX category for gas		II 2G
Type of (ignition) protection for gas		Ex h IIC T6 ... T3 Gb X
ATEX category for dust		II 2D
Type of (ignition) protection dust		Ex h IIIC T85°C ... T200°C Db X
Explosion ambient temperature	Standard	-20 °C ≤ Ta ≤ +60 °C
	Variant T4	-20 °C ≤ Ta ≤ +150 °C
	Variant T6	-50 °C ≤ Ta ≤ +60 °C
CE marking (see declaration of conformity)		To EU Explosion Protection Directive (ATEX)

Air consumption [l/cycle] at 6 bar		Weight [g]	
Size		Size	
DAPS-0015	0.63	DAPS-0015	1200
DAPS-0030	1.19	DAPS-0030	1950
DAPS-0053	2.1	DAPS-0053	3000
DAPS-0090	3.85	DAPS-0090	5900
DAPS-0120	5.6	DAPS-0120	6800
DAPS-0180	7	DAPS-0180	8900
DAPS-0240	10.5	DAPS-0240	11800
DAPS-0360	14	DAPS-0360	16500
DAPS-0480	19.6	DAPS-0480	22700
DAPS-0720	29.4	DAPS-0720	33000
DAPS-0960	41.3	DAPS-0960	42000
DAPS-1440	77	DAPS-1440	74000
DAPS-1920	91.7	DAPS-1920	67000
DAPS-2880	147	DAPS-2880	117000
DAPS-4000	203.7	DAPS-4000	183000

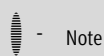
Materials			
Quarter turn actuators		Material number	
Housing		Wrought aluminium alloy	-
Cap		Wrought aluminum alloy	-
Shaft		High-alloy steel	1.4305
External screws		High-alloy steel	-
Seals	Standard	FPM, NBR, PUR	-
	T4	FPM, PTFE-reinforced	-
	T6	FVMQ, PTFE-reinforced	-
Note on materials	Standard	RoHS-compliant	-
	T4	Contains paint-wetting impairment substances, RoHS-compliant	-
	T6	Contains paint-wetting impairment substances, RoHS-compliant	-

Quarter turn actuators DAPS, single-acting

Technical data

Actual torque [Nm] as a function of operating pressure [bar], spring strength and swivel angle [°]

Spring strength	Spring torque [Nm]			Operating pressure [bar]														
				2.5			2.8			3			3.5			4.2		
	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°
DAPS-0015																		
1	5.0	3.7	7.5	6.2	2.9	3.7	7.5	3.7	5	8.4	4.2	5.9	10.6	5.6	8.1	13.8	7.4	11.3
2	6.3	4.7	9.4	-	-	-	-	-	-	7.2	3.3	4	9.4	4.7	6.3	12.6	6.5	9.4
3	7.5	5.6	11.3	-	-	-	-	-	-	-	-	-	8.2	3.7	4.4	11.3	5.6	7.5
4	10.0	7.5	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DAPS-0030																		
1	10.0	7.5	15	12.3	5.9	7.3	15	7.5	10	16.8	8.6	11.8	21.3	11.3	16.3	27.5	15	22.5
2	12.5	9.4	18.8	-	-	-	-	-	-	14.3	6.7	8	18.8	9.4	12.5	25.1	13.2	18.8
3	15.0	11.3	22.5	-	-	-	-	-	-	-	-	-	16.3	7.5	8.8	22.5	11.3	15
4	20.0	15	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DAPS-0053																		
1	17.5	13	26.5	21.8	10.2	12.8	26.5	13	17.5	29.6	14.9	20.6	37.5	19.5	28.5	48.5	26	39.5
2	22	16.5	33	-	-	-	-	-	-	25.1	11.8	14.1	33	16.5	22	44	23.1	33
3	26	19.5	40	-	-	-	-	-	-	-	-	-	29	13	15	40	19.5	26
4	35	26	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DAPS-0090																		
1	30	22.5	45	37	17.7	22	45	22.5	30	50.4	25.7	35.4	63.8	33.8	48.8	82.5	45	67.5
2	37.5	28.1	56.3	-	-	-	-	-	-	42.9	20.1	24.1	56.3	28.1	37.5	75.1	39.4	56.3
3	45	33.9	67.5	-	-	-	-	-	-	-	-	-	48.8	22.6	26.3	67.5	33.9	45
4	60	45	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DAPS-0120																		
1	40	30	60	49.3	23.6	29.3	60	30	40	67.1	34.3	47.1	85	45	65	110	60	90
2	50	37.5	75	-	-	-	-	-	-	57.1	26.8	32.1	75	37.5	50	100	52.5	75
3	60	45	90	-	-	-	-	-	-	-	-	-	65	30	35	90	45	60
4	80	60	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DAPS-0180																		
1	60	45	90	73.9	35.4	43.9	90	45	60	100.7	51.4	70.7	127.5	67.5	97.5	165	90	135
2	75	56.3	112.5	-	-	-	-	-	-	85.7	40.2	48.2	112.5	56.3	75	150	78.8	112.5
3	90	67.5	135	-	-	-	-	-	-	-	-	-	97.5	45	52.5	135	67.5	90
4	120	90	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DAPS-0240																		
1	80	60	120	98.6	47.1	58.6	120	60	80	134.3	68.6	94.3	170	90	130	220	120	180
2	100	75	150	-	-	-	-	-	-	114.3	53.6	64.3	150	75	100	200	105	150
3	120	90	180	-	-	-	-	-	-	-	-	-	130	60	70	180	90	120
4	160	120	240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DAPS-0360																		
1	120	90	180	147.9	70.7	87.9	180	90	120	201.4	102.9	141.1	255	135	195	330	180	270
2	150	112.5	225	-	-	-	-	-	-	171.4	80.4	96.4	225	112.5	150	300	157.5	225
3	180	135	270	-	-	-	-	-	-	-	-	-	195	90	105	270	135	180
4	240	180	360	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Note

The operating torque of the drive must not be higher than the maximum permissible torque listed in ISO 5211, with reference to the size of the mounting flange and of the coupling.

Quarter turn actuators DAPS, single-acting

Technical data

Actual torque [Nm] as a function of operating pressure [bar], spring strength and swivel angle [°]															
Spring strength	Operating pressure [bar]														
	5			5.6			6			7			8		
	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°
DAPS-0015															
1	-			-			-			-			-		
2	16.1	8.7	13	18.8	10.3	15.7	-			-			-		
3	14.9	7.7	11.1	17.6	9.3	13.8	19.4	10.4	15.6	23.8	13.1	20	28.3	15.7	24.5
4	12.3	5.9	7.3	15	7.5	10	16.8	8.6	11.8	21.3	11.3	16.3	25.7	13.9	20.7
DAPS-0030															
1	-			-			-			-			-		
2	32.2	17.5	25.9	37.6	20.7	31.3	-			-			-		
3	29.6	15.6	22.1	35	18.8	27.5	38.6	21	31.1	47.5	26.4	40	56.4	31.7	48.9
4	24.6	11.8	14.6	30	15	20	33.6	17.1	23.6	42.5	22.5	32.5	51.4	27.9	41.4
DAPS-0053															
1	-			-			-			-			-		
2	56.6	30.6	45.6	66	36.3	55	-			-			-		
3	52.6	26.9	38.6	62	32.5	48	68.3	36.2	54.3	84	45.5	70	99.7	54.8	85.7
4	43.6	20.4	25.6	53	26	35	59.3	29.7	41.3	75	39	57	90	48.3	72.7
DAPS-0090															
1	-			-			-			-			-		
2	96.5	52.2	77.7	112.6	61.9	93.8	-			-			-		
3	88.9	46.8	66.4	105	56.5	82.5	115.7	63	93.2	142.5	79.1	120	169.3	95.2	146.8
4	73.9	35.4	43.9	90	45	60	100.7	51.4	70.7	127.5	67.5	97.5	154.3	83.6	124.3
DAPS-0120															
1	-			-			-			-			-		
2	128.6	69.6	103.6	150	82.5	125	-			-			-		
3	118.6	62.1	88.6	140	75	110	154.3	83.6	124.3	190	105	160	225.7	126.4	195.7
4	98.6	47.1	58.6	120	60	80	134.4	68.6	94.3	170	90	130	205.7	111.4	165.7
DAPS-0180															
1	-			-			-			-			-		
2	192.9	104.5	155.4	225	123.8	187.5	-			-			-		
3	177.9	93.2	132.9	210	112.5	165	231.4	125.4	186.4	285	157.5	240	338.6	189.6	293.6
4	147.9	70.7	87.9	180	90	120	201.4	102.9	141.4	255	135	195	308.6	167.6	284.6
DAPS-0240															
1	-			-			-			-			-		
2	257.1	139.3	207.1	300	165	250	-			-			-		
3	237.1	124.3	177.1	280	150	220	308.6	167.1	248.6	380	210	320	451.4	252.9	391.4
4	197.1	94.3	117.1	240	120	160	268.6	137.1	188.6	340	180	260	411.4	222.9	331.4
DAPS-0360															
1	-			-			-			-			-		
2	385.7	208.9	310.7	450	247.5	375	-			-			-		
3	355.7	186.4	265.7	420	225	330	462.9	250.7	372.9	570	315	480	677.1	379.3	587.1
4	295.7	141.4	175.7	360	180	240	402.9	205.7	282.9	510	270	390	617.1	334.3	497.1

Torque for size at 5.6 bar and swivel angle 0°



Note


The operating torque of the drive must not be higher than the maximum permissible torque listed in ISO 5211, with reference to the size of the mounting flange and of the coupling.

Quarter turn actuators DAPS, single-acting

Technical data

Actual torque [Nm] as a function of operating pressure [bar], spring strength and swivel angle [°]

Spring strength	Spring torque [Nm]			Operating pressure [bar]														
				2.5			2.8			3			3.5			4.2		
	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°
DAPS-0480																		
1	160	120	240	197.1	94.3	117.1	240	120	160	268.6	137.1	188.6	340	180	260	440	240	360
2	200	150	300	-	-	-	-	-	-	228.6	107.1	128.6	300	150	200	400	210	300
3	240	180	360	-	-	-	-	-	-	-	-	-	260	120	140	360	180	240
4	320	240	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DAPS-0720																		
1	240	180	360	295.7	141.4	175.7	360	180	240	402.9	205.7	282.9	510	270	390	660	360	540
2	300	225	450	-	-	-	-	-	-	342.9	160.7	192.9	450	225	300	600	315	450
3	360	270	540	-	-	-	-	-	-	-	-	-	390	180	210	540	270	360
4	480	360	720	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DAPS-0960																		
1	320	240	480	394.3	188.6	234.3	480	240	320	537.1	274.3	377.1	680	360	520	880	480	720
2	400	300	600	-	-	-	-	-	-	457.1	214.3	257.1	600	300	400	800	420	600
3	480	360	720	-	-	-	-	-	-	-	-	-	520	240	280	720	360	480
4	640	480	960	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DAPS-1440																		
1	480	360	720	591	282	351	720	360	480	805	411	565	1020	540	780	1320	720	1080
2	600	450	900	-	-	-	-	-	-	685	321	385	900	450	600	1200	630	900
3	720	540	1080	-	-	-	-	-	-	-	-	-	780	360	420	1080	540	720
4	960	720	1440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DAPS-1920																		
1	640	480	960	778	377	468	960	480	640	1074	548	754	1360	720	1040	1760	960	1440
2	800	600	1200	-	-	-	-	-	-	914	428	514	1200	600	800	1600	840	1200
3	960	720	1440	-	-	-	-	-	-	-	-	-	1040	480	560	1440	720	960
4	1280	960	1920	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DAPS-2880																		
1	960	720	1440	1183	566	703	1440	720	960	1611	823	1131	2040	1080	1560	2640	1440	2160
2	1200	900	1800	-	-	-	-	-	-	1370	643	771	1800	900	1200	2400	1260	1800
3	1440	1080	2160	-	-	-	-	-	-	-	-	-	1560	720	840	2160	1080	1440
4	1920	1440	2880	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DAPS-4000																		
1	1333	1000	2000	1524	714	857	2000	1000	1333	2238	1143	1571	2833	1500	2166	3666	2000	2999
2	1666	1250	2500	-	-	-	-	-	-	1905	893	1071	2500	1250	1666	3333	1750	2499
3	1999	1500	3000	-	-	-	-	-	-	-	-	-	2167	1000	1166	3000	1500	1999
4	2666	2000	4000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

 Note

The operating torque of the drive must not be higher than the maximum permissible torque listed in ISO 5211, with reference to the size of the mounting flange and of the coupling.

Quarter turn actuators DAPS, single-acting

Technical data

Actual torque [Nm] as a function of operating pressure [bar], spring strength and swivel angle [°]															
Spring strength	Operating pressure [bar]														
	5			5.6			6			7			8		
	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°
DAPS-0480															
1	-			-			-			-			-		
2	514.3	278.6	414.3	600	330	500	-			-			-		
3	474.3	248.6	354.3	560	300	440	617.1	334.3	497.1	760	420	640	902.9	505.7	782.9
4	394.3	118.6	234.3	480	240	320	537.1	274.3	377.1	680	360	520	822.9	445.7	662.9
DAPS-0720															
1	-			-			-			-			-		
2	771.4	417.9	621.4	900	495	750	-			-			-		
3	711.4	372.9	531.4	840	450	660	925.7	501.4	745.7	1140	630	960	1354	758.6	1174
4	591.4	282.9	351.4	720	360	480	805.7	411.4	565.7	1020	540	780	1234	668.6	994.3
DAPS-0960															
1	-			-			-			-			-		
2	1028.6	557.1	828.6	1200	660	1000	-			-			-		
3	948.6	497.1	708.6	1120	600	880	1234.3	668.6	994.3	1520	840	1280	1805.7	1011.4	1565.7
4	788.6	377.1	468.6	960	480	640	1074.3	548.6	754.3	1360	720	1040	1645.7	891.4	1325.7
DAPS-1440															
1	-			-			-			-			-		
2	1542	835	1242	1800	990	1500	-			-			-		
3	1422	745	1062	1680	900	1320	1851	1002	1491	2280	1260	1920	2708	1517	2348
4	1182	565	702	1440	720	960	1611	822	1131	2040	1080	1560	2468	1337	1988
DAPS-1920															
1	-			-			-			-			-		
2	2057	1114	1657	2400	1320	2000	-			-			-		
3	1897	994	1417	2240	1200	1760	2468	1337	1988	3040	1680	2560	3611	2022	3131
4	1577	754	937	1920	960	1280	2148	1097	1508	2720	1440	2080	3291	1782	2651
DAPS-2880															
1	-			-			-			-			-		
2	3085	1671	2485	3600	1980	3000	-			-			-		
3	2845	1491	2125	3360	1800	2640	3702	2006	2982	4560	2520	3840	5417	3034	4697
4	2365	1131	1405	2880	1440	1920	3222	1645	2262	4080	2160	3120	4937	2674	3977
DAPS-4000															
1	-			-			-			-			-		
2	4285	2321	3451	5000	2750	4166	-			-			-		
3	3952	2071	2951	4666	2500	3665	5143	2786	4141	6333	3500	5332	7523	4214	6522
4	3286	1571	1952	4000	2000	2666	4476	2286	3142	5666	3000	4332	6857	3714	5523

Torque for size at 5.6 bar and swivel angle 0°



Note

The operating torque of the drive must not be higher than the maximum permissible torque listed in ISO 5211, with reference to the size of the mounting flange and of the coupling.

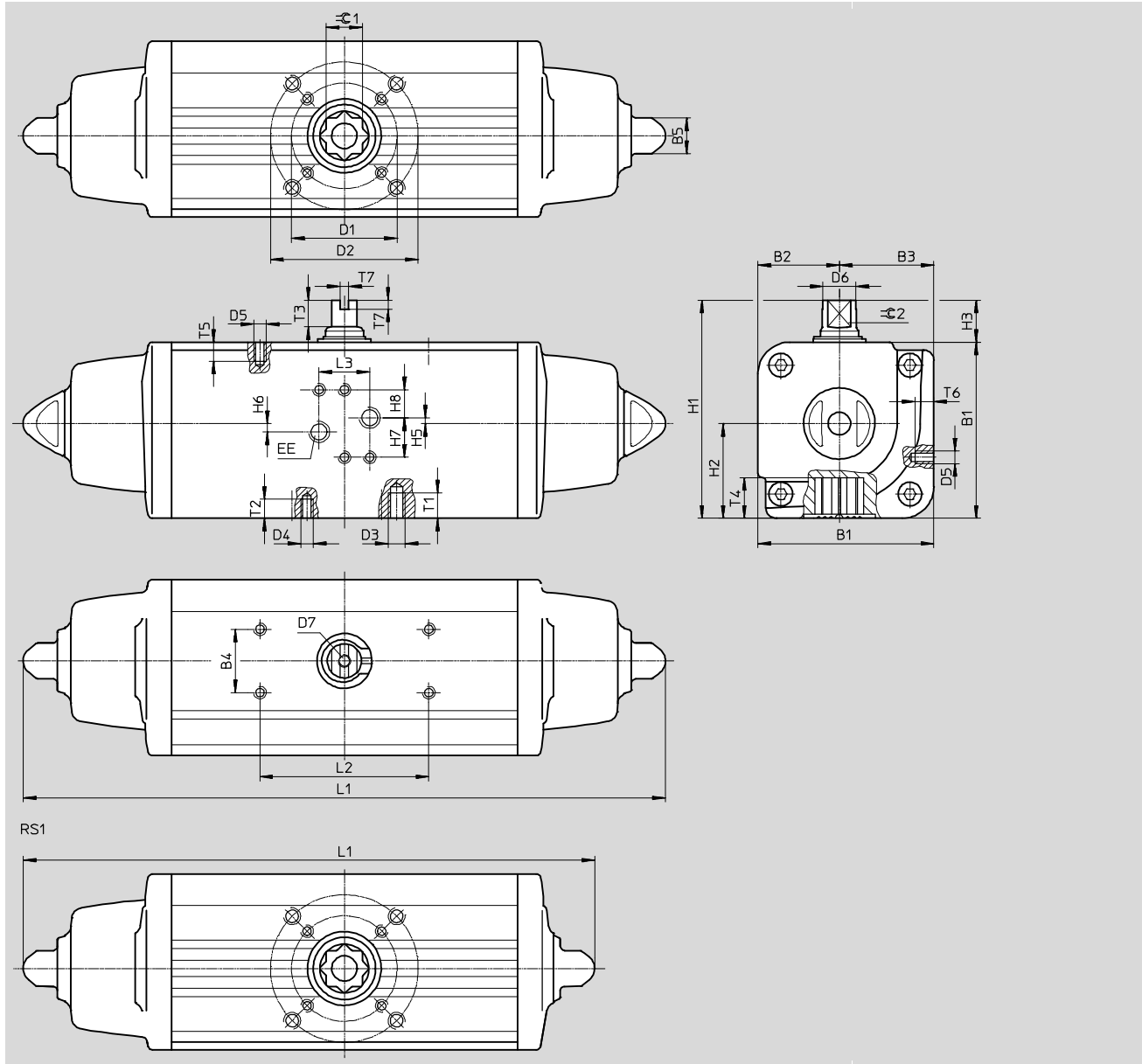
Quarter turn actuators DAPS, single-acting

Technical data

Dimensions

DAPS-0015-090-...-T4

Download CAD data → www.festo.com



05

Quarter turn actuators

Quarter turn actuators DAPS, single-acting

Technical data

Size	B1	B2	B3	B4	B5	D1 ∅ +0.1	D2 ∅ ±0.1	D3	D4	D5	D6 ∅	D7	EE	H1	H2	H3	H5
DAPS-0015-...-F0305	59.2	27.7	31.5	30	13	36	50	M6	M5	M5	10.9	M6	G1/8	79.2	31.5	20	0.8
DAPS-0015-...-F04						42	-	-									
DAPS-0030-...-F04	70.4	32.7	37.7		13	42	-	-	M5		14.5			90.4	37.7	20	-
DAPS-0030-...-F0507						50	70	M8	M6								
DAPS-0053-...-F0507	83.3	38.5	44.8		17	50	70	M8	M6		16.2			103.3	44.8	20	-
DAPS-0090-...-F0710	107.5	51	56.5		22	70	102	M10	M8		20.2			137.5	56.5	30	-
DAPS-0120-...-F0710	111.1	51	60.1		22	70	102	M10	M8		22.5			141.1	60.1	30	-
DAPS-0180-...-F0710	118	56	62		22	70	102	M10	M8		25.5			148	62	30	-

Size	H6	H7	H8	L1		L2	L3	T1	T2	T3	T4	T5	T6	T7	⌀ 1	⌀ 2
				RS1	RS...											
DAPS-0015-...-F0305	3.2	18	14	203.8	233.3	80	24	9	8	10	13.2	6	7	4	11	9
DAPS-0015-...-F04								-								
DAPS-0030-...-F04	4			228.5	259			-	8	13	16.5				14	10
DAPS-0030-...-F0507								12	9							
DAPS-0053-...-F0507	4			270.7	304.3			12	9	13	19.3				17	12
DAPS-0090-...-F0710	4			341.8	393.7			15	12	16	24.8				22	15
DAPS-0120-...-F0710	4			361.6	409.6			15	12	17	24.8				22	15
DAPS-0180-...-F0710	4			406.6	474			15	12	19	24.3				22	19

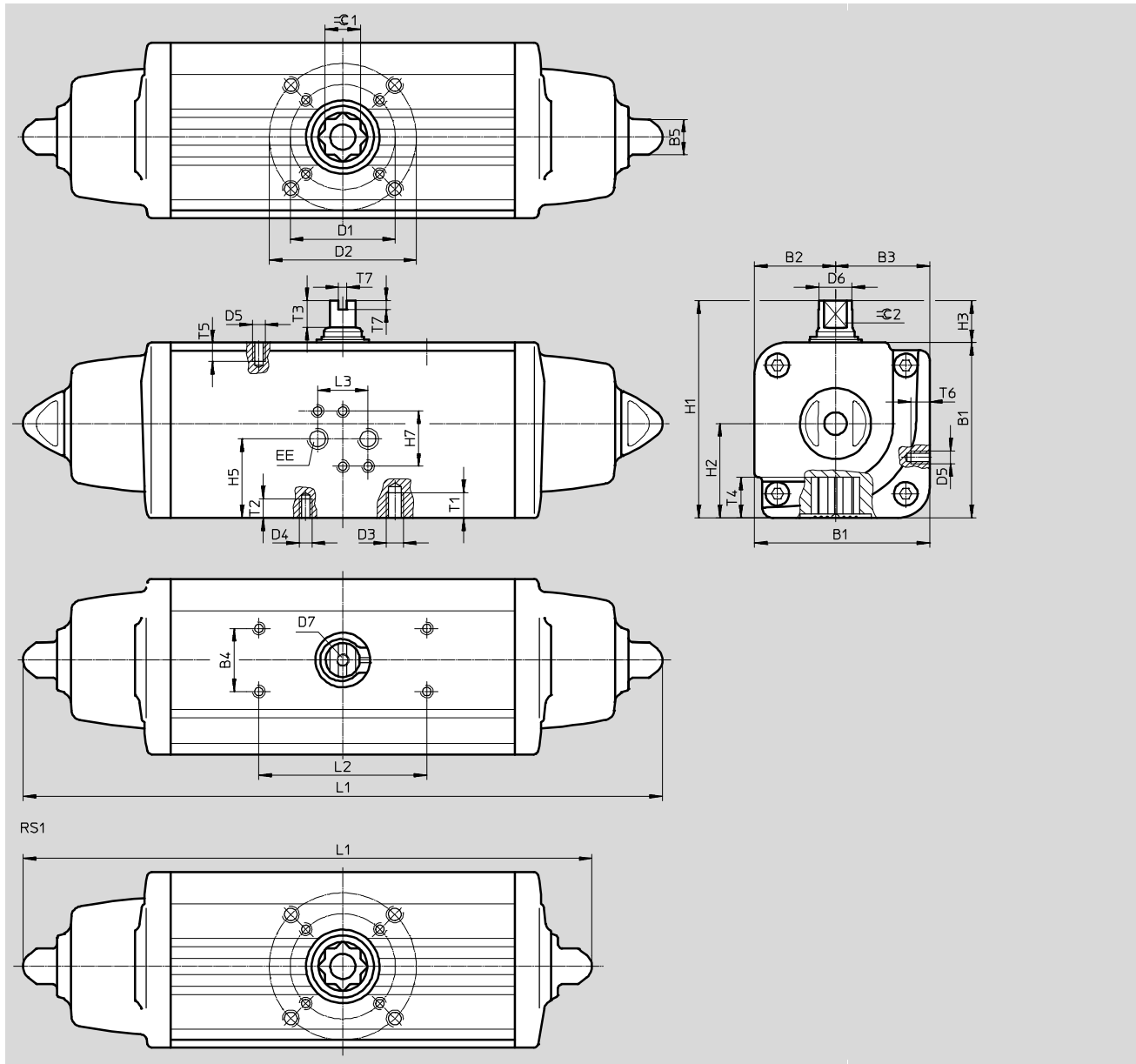
Quarter turn actuators DAPS, single-acting

Technical data

Dimensions

Size 0015 ... 0960

Download CAD data → www.festo.com



Quarter turn actuators DAPS, single-acting

Technical data

Size	B1	B2	B3	B4	B5	D1 ∅ ±0.1	D2 ∅ ±0.1	D3	D4	D5	D6 ∅	D7	EE	H1	H2	H3
DAPS-0015-...-F0305	59.2	27.7	31.5	30	13	36	50	M6	M5	M5	10.9	M6	G1/8	79.2	31.5	20
DAPS-0015-...-F04						42	-	-								
DAPS-0030-...-F04	70.4	32.7	37.7		13	42	-	-	M5							
DAPS-0030-...-F0507						50	70	M8	M6		14.5					
DAPS-0053-...-F0507	83.3	38.5	44.8		17	50	70	M8	M6		16.2			103.3	44.8	20
DAPS-0090-...-F0710	107.5	51	56.5		22	70	102	M10	M8		20.2			137.5	56.5	30
DAPS-0120-...-F0710	111.1	51	60.1		22	70	102	M10	M8		22.5			141.1	60.1	30
DAPS-0180-...-F0710	118	56	62		22	70	102	M10	M8		25.5			148	62	30

Size	H5	H7	L1		L2	L3	T1	T2	T3	T4	T5	T6	T7	≈C1	≈C2
			RS1	RS...											
DAPS-0015-...-F0305	32.3	32	203.8	233.3	80	24	9	8	10	13.2	6	7	4	11	9
DAPS-0015-...-F04							-								
DAPS-0030-...-F04	37.7		228.5	259			-	8	13	16.5				14	10
DAPS-0030-...-F0507							12	9							
DAPS-0053-...-F0507	44.8		270.7	304.3			12	9	13	19.3				17	12
DAPS-0090-...-F0710	56.5		341.8	393.7			15	12	16	24.8				22	15
DAPS-0120-...-F0710	60.1		361.6	409.6			15	12	17	24.8				22	15
DAPS-0180-...-F0710	62		406.6	474			15	12	19	24.3				22	19

Size	B1	B2	B3	B4	B5	D1 ∅	D2 ∅	D3	D4	D5	D6 ∅	D7	EE	H1	H2	H3
DAPS-0240-...-F1012	134.9	62	72.9	30	27	102	125	M12	M10	M5	29	M6	G1/4	164.9	72.9	30
DAPS-0360-...-F1012	148	69.5	78.5		27	102	125	M12	M10		31.8			178	78.5	
DAPS-0480-...-F1012	168	74.5	93.5		27	102	125	M12	M10		36.5			198	93.5	
DAPS-0480-...-F14					140	-	-	M16								
DAPS-0720-...-F12	186	84.5	101.5		36	125	-	-	M12		41			216	101.5	
DAPS-0720-...-F14					140	-	-	M16								
DAPS-0960-...-F14	207.7	93	114.7		36	140	-	-	M16		46			237.7	114.7	
DAPS-0960-...-F1216					125	165	M20	M12								

Size	H5	H7	L1		L2	L3	T1	T2	T3	T4	T5	T6	T7	≈C1	≈C2
			RS1	RS...											
DAPS-0240-...-F1012	57.4	32	454	520.5	80	24	18	15	19	29.5	6	7	4	27	19
DAPS-0360-...-F1012	61.5		523	613			18	15	19.5	29.5				27	22
DAPS-0480-...-F1012	78		563.8	648.2			18	15	19.5	38.5				36	24
DAPS-0480-...-F14							-	24							
DAPS-0720-...-F12	86.5		683	798			-	18	19.5	38.5				36	27
DAPS-0720-...-F14							24								
DAPS-0960-...-F14	99.2		714.4	828			-	24	18.5	48.5				46	32
DAPS-0960-...-F1216							30	18							

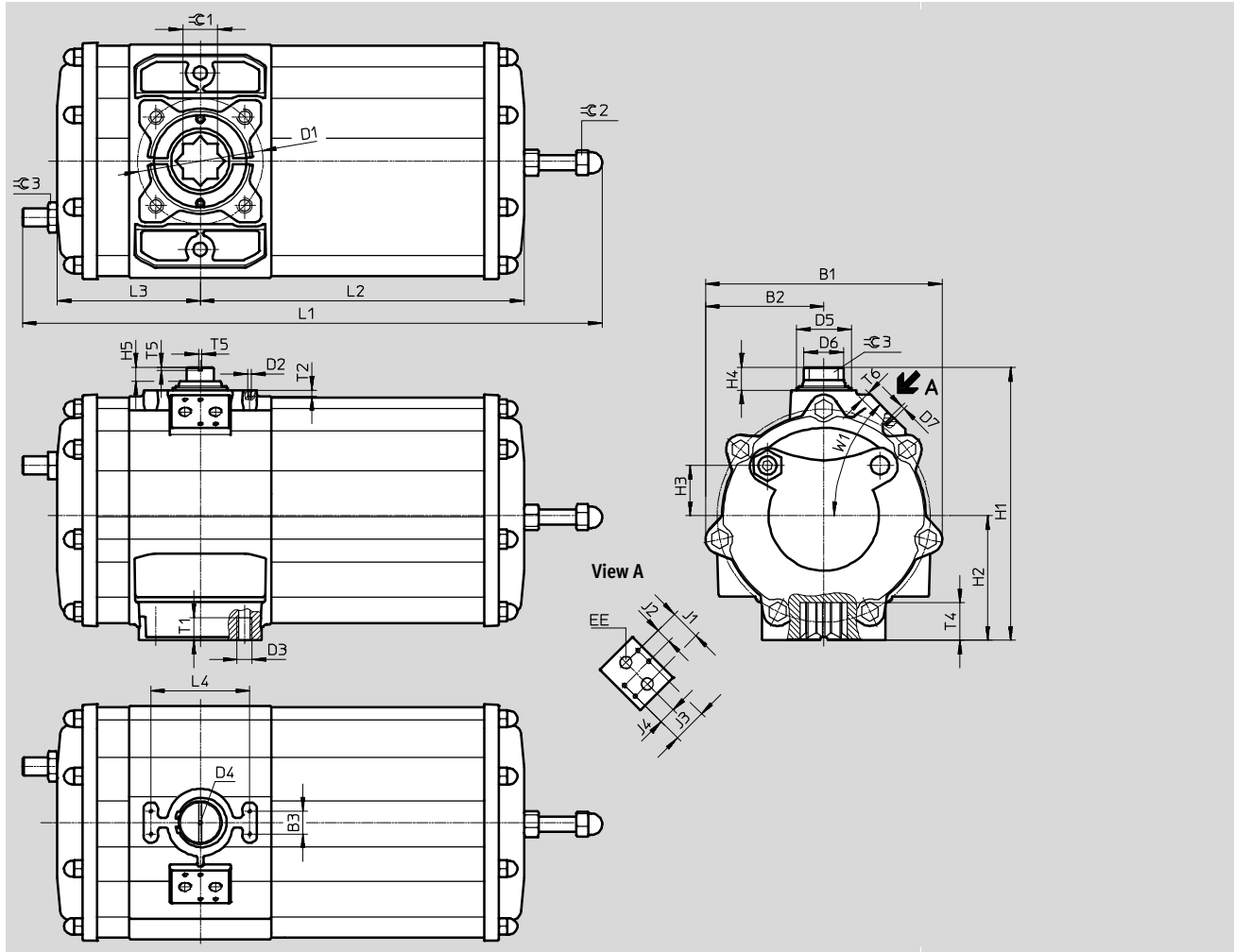
Quarter turn actuators DAPS, single-acting

Technical data

Dimensions

Size 1440

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05

Quarter turn actuators

Size	B1	B2	B3	D1 ∅	D2	D3	D4	D5 ∅	D6 ∅	D7	EE	H1	H2	H3	H4	H5	J1
DAPS-1440-...	311	155	30	165	M5	M20	M6	72	52	M6	G3/8	359	164	66	30	18	40

Size	J2	J3	J4	L1 ±3	L2	L3	L4	T1	T2	T4 ±0.8	T5	T6	W1	$\varnothing 1$	$\varnothing 2$	$\varnothing 3$
DAPS-1440-...	20	45	22.5	834	498	188	130	30	8	49.5	4	10	45°	46	30	36

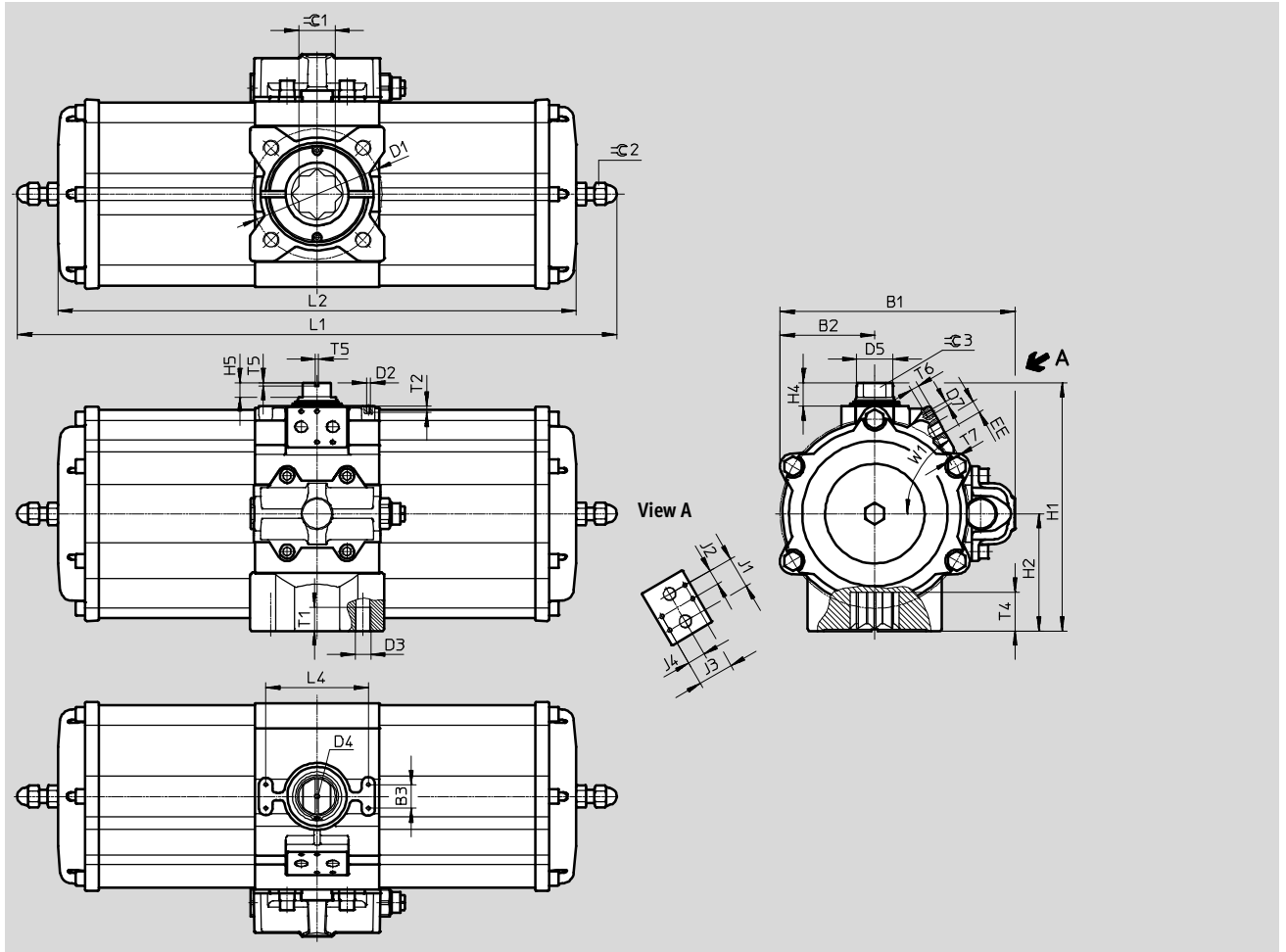
Quarter turn actuators DAPS, single-acting

Technical data

Dimensions

Size 1920

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Size	B1	B2	B3	D1 ∅	D2	D3	D4	D5 ∅	D7	EE	H1	H2	H4	H5	J1	J2
DAPS-1920-...	298	120	30	165	M5	M20	M6	46	M6	G3/8	314	148.5	30	18.5	40	20

Size	J3	J4	L1 ±3	L2	L4	T1	T2	T4 ±1	T5	T6	T7	W1	≅ 1	≅ 2	≅ 3
DAPS-1920-...	45	22.5	1001	857	130	30	8	49	4	10	13	60°	46	24	32

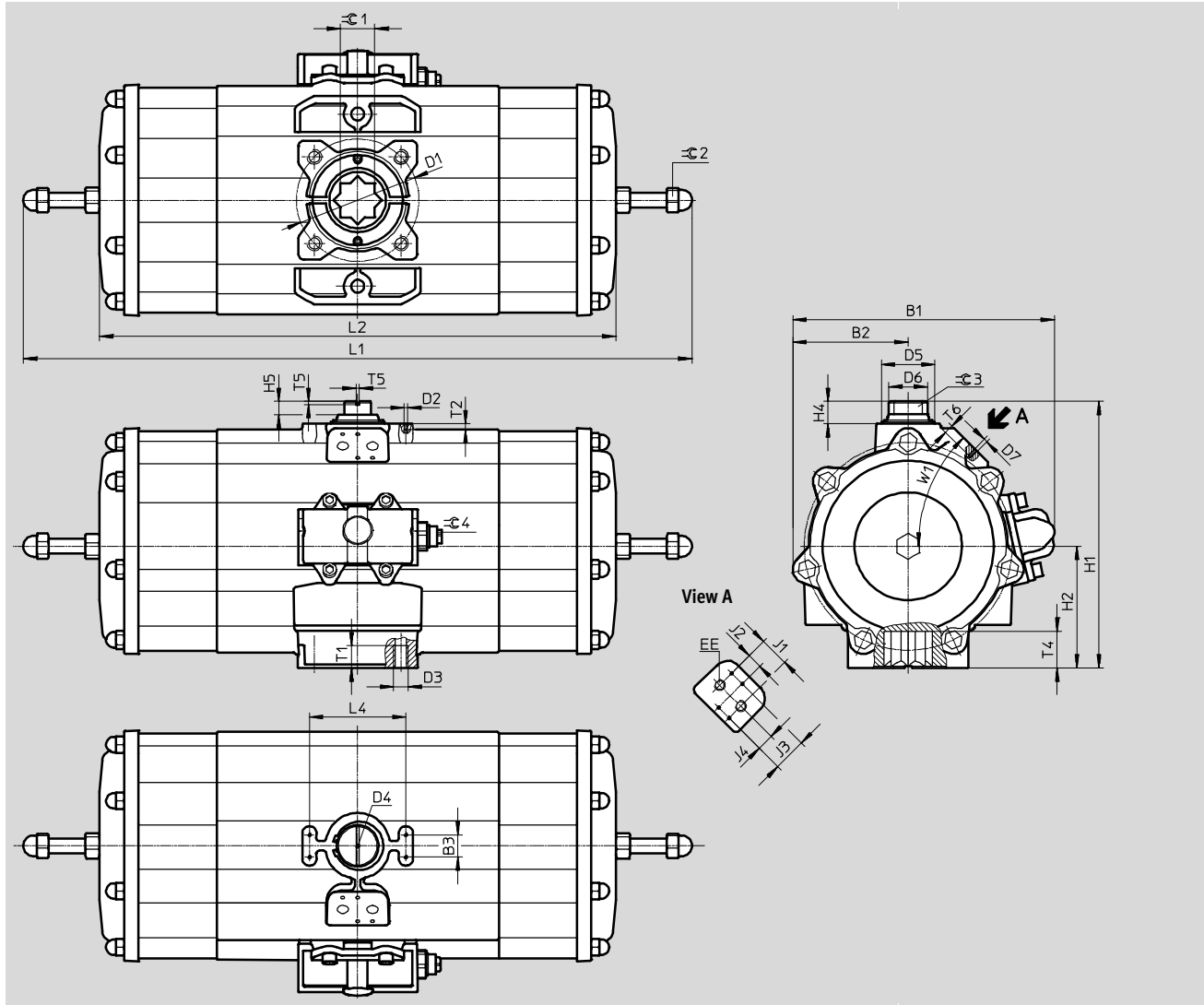
Quarter turn actuators DAPS, single-acting

Technical data

Dimensions

Size 2880

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Size	B1	B2	B3	D1 ∅	D2	D3	D4	D5 ∅	D6 ∅	D7	EE	H1	H2	H4	H5	J1
DAPS-2880-...	361	155	30	165	M5	M20	M6	72	52	M6	G3/8	359	164	30	18	40

Size	J2	J3	J4	L1 ±3	L2	L4	T1	T2	T4	T5	T6	W1	$\varnothing 1$	$\varnothing 2$	$\varnothing 3$	$\varnothing 4$
DAPS-2880-...	20	45	22.5	1201	996	130	30	8	49.5	4	10	45°	46	30	36	15

05

Quarter turn actuators

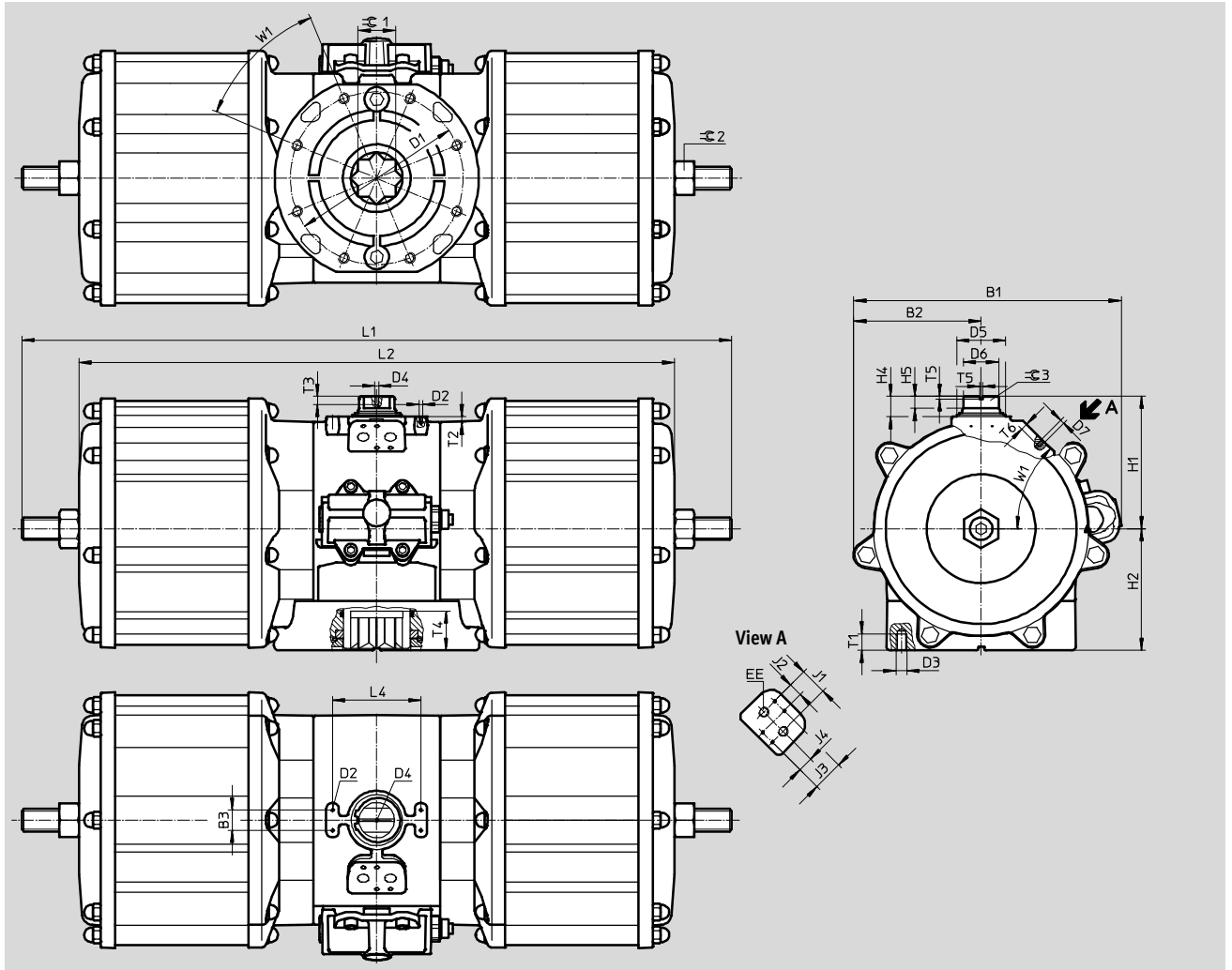
Quarter turn actuators DAPS, single-acting

Technical data

Dimensions

Size 4000

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Size	B1	B2	B3	D1 ∅	D2	D3	D4	D5 ∅	D6 ∅	D7	EE	H1	H2	H4	H5	J1
DAPS-4000-...	394	188	30	254	M5	M16	M6	72	52	M6	G3/8	195	179	30	18	40

Size	J2	J3	J4	L1	L2	L4	T1	T2	T3	T4	T5	T6	W1	≈C 1	≈C 2	≈C 3
DAPS-4000-...	20	45	22.5	1370	1184	130	24	8	12	58	4	10	45°	55	50	36

Quarter turn actuators DAPS, single-acting

Technical data

Ordering data

Part No.	Type
Size 0015	
533427	DAPS-0015-090-RS1-F0305
533480	DAPS-0015-090-RS1-F04
533428	DAPS-0015-090-RS2-F0305
533481	DAPS-0015-090-RS2-F04
533429	DAPS-0015-090-RS3-F0305
533482	DAPS-0015-090-RS3-F04
533430	DAPS-0015-090-RS4-F0305
533483	DAPS-0015-090-RS4-F04
Size 0030	
533431	DAPS-0030-090-RS1-F04
533484	DAPS-0030-090-RS1-F0507
533432	DAPS-0030-090-RS2-F04
533485	DAPS-0030-090-RS2-F0507
533433	DAPS-0030-090-RS3-F04
533486	DAPS-0030-090-RS3-F0507
533434	DAPS-0030-090-RS4-F04
533487	DAPS-0030-090-RS4-F0507
Size 0053	
533435	DAPS-0053-090-RS1-F0507
533436	DAPS-0053-090-RS2-F0507
533437	DAPS-0053-090-RS3-F0507
533438	DAPS-0053-090-RS4-F0507
Size 0090	
533439	DAPS-0090-090-RS1-F0710
533440	DAPS-0090-090-RS2-F0710
533441	DAPS-0090-090-RS3-F0710
533442	DAPS-0090-090-RS4-F0710
Size 0120	
533443	DAPS-0120-090-RS1-F0710
533444	DAPS-0120-090-RS2-F0710
533445	DAPS-0120-090-RS3-F0710
533446	DAPS-0120-090-RS4-F0710
Size 0180	
533447	DAPS-0180-090-RS1-F0710
533448	DAPS-0180-090-RS2-F0710
533449	DAPS-0180-090-RS3-F0710
533450	DAPS-0180-090-RS4-F0710
Size 0240	
533451	DAPS-0240-090-RS1-F1012
533452	DAPS-0240-090-RS2-F1012
533453	DAPS-0240-090-RS3-F1012
533454	DAPS-0240-090-RS4-F1012
Size 0360	
549673	DAPS-0360-090-RS1-F1012
549674	DAPS-0360-090-RS2-F1012
549675	DAPS-0360-090-RS3-F1012
549676	DAPS-0360-090-RS4-F1012

Part No.	Type
Size 0480	
533455	DAPS-0480-090-RS1-F1012
533488	DAPS-0480-090-RS1-F14
533456	DAPS-0480-090-RS2-F1012
533489	DAPS-0480-090-RS2-F14
533457	DAPS-0480-090-RS3-F1012
533490	DAPS-0480-090-RS3-F14
533458	DAPS-0480-090-RS4-F1012
533491	DAPS-0480-090-RS4-F14
Size 0720	
549677	DAPS-0720-090-RS1-F12
549681	DAPS-0720-090-RS1-F14
549678	DAPS-0720-090-RS2-F12
549682	DAPS-0720-090-RS2-F14
549679	DAPS-0720-090-RS3-F12
549683	DAPS-0720-090-RS3-F14
549680	DAPS-0720-090-RS4-F12
549684	DAPS-0720-090-RS4-F14
Size 0960	
533459	DAPS-0960-090-RS1-F14
533492	DAPS-0960-090-RS1-F1216
533460	DAPS-0960-090-RS2-F14
533493	DAPS-0960-090-RS2-F1216
533461	DAPS-0960-090-RS3-F14
533494	DAPS-0960-090-RS3-F1216
533462	DAPS-0960-090-RS4-F14
533495	DAPS-0960-090-RS4-F1216
Size 1440	
549685	DAPS-1440-090-RS1-F16
549686	DAPS-1440-090-RS2-F16
549687	DAPS-1440-090-RS3-F16
549688	DAPS-1440-090-RS4-F16
Size 1920	
549689	DAPS-1920-090-RS1-F16
549690	DAPS-1920-090-RS2-F16
549691	DAPS-1920-090-RS3-F16
549692	DAPS-1920-090-RS4-F16
Size 2880	
549693	DAPS-2880-090-RS1-F16
549694	DAPS-2880-090-RS2-F16
549695	DAPS-2880-090-RS3-F16
549696	DAPS-2880-090-RS4-F16
Size 4000	
560856	DAPS-4000-090-RS1-F25
561694	DAPS-4000-090-RS2-F25
561695	DAPS-4000-090-RS3-F25
561696	DAPS-4000-090-RS4-F25

Quarter turn actuators DAPS, single-acting

Technical data

Ordering data – Wearing parts kits

Part No.	Type
Size 0015	
397471	DAPS-0030/S0015
Size 0030	
397472	DAPS-0060/S0030
Size 0053	
397473	DAPS-0106/S0053
Size 0090	
397474	DAPS-0180/S0090
Size 0120	
397475	DAPS-0240/S0120

Part No.	Type
Size 0180	
397476	DAPS-0360/S0180
Size 0240	
397477	DAPS-0480/S0240
Size 0480	
397478	DAPS-0960/S0480
Size 0960	
397479	DAPS-1920/S0960

Ordering data – Drives for variant T4

Part No.	Type
Size 0015	
8030613	DAPS-0015-090-RS4-F0305-T4
8030614	DAPS-0015-090-RS4-F04-T4
Size 0030	
8030615	DAPS-0030-090-RS4-F04-T4
8030616	DAPS-0030-090-RS4-F0507-T4
Size 0053	
8030617	DAPS-0053-090-RS4-F0507-T4
Size 0090	
8030618	DAPS-0090-090-RS4-F0710-T4
Size 0120	
8030619	DAPS-0120-090-RS4-F0710-T4

Part No.	Type
Size 0180	
8030620	DAPS-0180-090-RS4-F0710-T4
Size 0240	
8030621	DAPS-0240-090-RS4-F1012-T4
Size 0360	
8030622	DAPS-0360-090-RS4-F1012-T4
Size 0480	
8030623	DAPS-0480-090-RS4-F1012-T4
8030624	DAPS-0480-090-RS4-F14-T4

Quarter turn actuators DAPS, single-acting

Technical data

Ordering data – Drives for variant T6

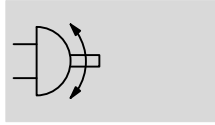
Part No.	Type
Size 0015	
553191	DAPS-0015-090-RS2-F0305-T6
553192	DAPS-0015-090-RS2-F04-T6
553210	DAPS-0015-090-RS3-F0305-T6
553211	DAPS-0015-090-RS3-F04-T6
553229	DAPS-0015-090-RS4-F0305-T6
553230	DAPS-0015-090-RS4-F04-T6
Size 0030	
553193	DAPS-0030-090-RS2-F04-T6
553194	DAPS-0030-090-RS2-F0507-T6
553212	DAPS-0030-090-RS3-F04-T6
553213	DAPS-0030-090-RS3-F0507-T6
553231	DAPS-0030-090-RS4-F04-T6
553232	DAPS-0030-090-RS4-F0507-T6
Size 0053	
553195	DAPS-0053-090-RS2-F0507-T6
553214	DAPS-0053-090-RS3-F0507-T6
553233	DAPS-0053-090-RS4-F0507-T6
Size 0090	
553196	DAPS-0090-090-RS2-F0710-T6
553215	DAPS-0090-090-RS3-F0710-T6
553234	DAPS-0090-090-RS4-F0710-T6
Size 0120	
553197	DAPS-0120-090-RS2-F0710-T6
553216	DAPS-0120-090-RS3-F0710-T6
553235	DAPS-0120-090-RS4-F0710-T6
Size 0180	
553198	DAPS-0180-090-RS2-F0710-T6
553217	DAPS-0180-090-RS3-F0710-T6
553236	DAPS-0180-090-RS4-F0710-T6
Size 0240	
553199	DAPS-0240-090-RS2-F1012-T6
553218	DAPS-0240-090-RS3-F1012-T6
553237	DAPS-0240-090-RS4-F1012-T6
Size 0360	
553200	DAPS-0360-090-RS2-F1012-T6
553219	DAPS-0360-090-RS3-F1012-T6
553238	DAPS-0360-090-RS4-F1012-T6


Part No.	Type
Size 0480	
553201	DAPS-0480-090-RS2-F12-T6
553202	DAPS-0480-090-RS2-F14-T6
553220	DAPS-0480-090-RS3-F12-T6
553221	DAPS-0480-090-RS3-F14-T6
553239	DAPS-0480-090-RS4-F12-T6
553240	DAPS-0480-090-RS4-F14-T6
Size 0720	
553203	DAPS-0720-090-RS2-F12-T6
553204	DAPS-0720-090-RS2-F14-T6
553222	DAPS-0720-090-RS3-F12-T6
553223	DAPS-0720-090-RS3-F14-T6
553241	DAPS-0720-090-RS4-F12-T6
553242	DAPS-0720-090-RS4-F14-T6
Size 0960	
553205	DAPS-0960-090-RS2-F14-T6
553206	DAPS-0960-090-RS2-F1216-T6
553224	DAPS-0960-090-RS3-F14-T6
553225	DAPS-0960-090-RS3-F1216-T6
553243	DAPS-0960-090-RS4-F14-T6
553244	DAPS-0960-090-RS4-F1216-T6
Size 1440	
553207	DAPS-1440-090-RS2-F16-T6
553245	DAPS-1440-090-RS4-F16-T6
Size 1920	
553208	DAPS-1920-090-RS2-F16-T6
553227	DAPS-1920-090-RS3-F16-T6
553246	DAPS-1920-090-RS4-F16-T6
Size 2880	
553209	DAPS-2880-090-RS2-F16-T6
553228	DAPS-2880-090-RS3-F16-T6
553247	DAPS-2880-090-RS4-F16-T6

Quarter turn actuators DAPS CR, double-acting



Technical data

Function



 Swivel angle
0 ... 90°



-  Size
0015 ... 0480
-  Torque
15 ... 480 Nm

General technical data

Size	0015	0030	0060	0120	0240	0480
Pneumatic connection	G1/8					
Design	Scotch yoke system					
Mode of operation	Double-acting					
Mounting position	Any					
Position sensing	None					
Cushioning	No cushioning					
Swivel angle [°]	90					
Closing direction	Closes to right					

Operating and environmental conditions

Size	0015	0030	0060	0120	0240	0480
Operating pressure [bar]	2.5 ... 8.4					
Nominal operating pressure [bar]	5.6					
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]					
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)					
Ambient temperature [°C]	-20 ... +80					
Corrosion resistance class CRC ¹⁾	3					
Connection to process valve as per standard	-			ISO 5211		
Valve connection as per standard	-			VDI/VDE 3845 (NAMUR)		
Safety Integrity Level (SIL)	Up to SIL 2 High Demand mode					
	Up to SIL 2 Low Demand mode					

- 1) Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

ATEX

ATEX category for gas	II 2G
Explosion ignition protection type for gas	Ex h IIC T6 ... T3 Gb X
ATEX category for dust	II 2D
Explosion ignition protection type for dust	c TX X
Explosion-proof temperature rating	Ex h IIIC T85°C ... T200°C Db X
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

Quarter turn actuators DAPS CR, double-acting

Technical data

Air consumption [l/cycle 0°-90°-0°] at 6 bar

Size	
DAPS-0015	0.55
DAPS-0030	1.04
DAPS-0060	1.96

Size	
DAPS-0120	4.06
DAPS-0240	8.26
DAPS-0480	16.66

Weight [g]

Size	
DAPS-0015	800
DAPS-0030	1200
DAPS-0060	1800

Size	
DAPS-0120	3300
DAPS-0240	5600
DAPS-0480	9500

Materials

Quarter turn actuators		Material number
Housing	High-alloy stainless steel	1.4408
Cover	High-alloy stainless steel	1.4408
Shaft	High-alloy stainless steel	1.4301
External screws	High-alloy stainless steel	-
Seals	FPM, NBR, PUR	-
Note on materials	Conforms to RoHS	-

Actual torque [Nm] as a function of operating pressure [bar] and swivel angle [°]

Size	Swivel angle [°]	Operating pressure [bar]							
		2.5	3	4	5	5.6	6	7	8
DAPS-0015	0	6.7	8	10.7	13.4	15	16.1	18.8	21.4
	50	3.3	4	5.4	6.7	7.5	8	9.4	10.7
	90	5	6.1	8.1	10.1	11.3	12.1	14.1	16.1
DAPS-0030	0	13.4	16.1	21.4	26.8	30	32.1	37.5	42.9
	50	6.7	8	10.7	13.4	15	16.1	18.8	21.4
	90	10	12.1	16.1	20.1	22.5	24.1	28.1	32.1
DAPS-0060	0	26.8	32.1	42.9	53.6	60	64.3	75	85.7
	50	13.4	16.1	21.4	26.8	30	32.1	37.5	42.9
	90	20.1	24.1	32.1	40.2	45	48.2	56.3	64.3
DAPS-0120	0	53.6	64.3	85.7	107.1	120	128.6	150	171.4
	50	26.8	32.1	42.9	53.6	60	64.3	75	85.7
	90	40.2	48.2	64.3	80.4	90	96.4	112.5	128.6
DAPS-0240	0	107.1	128.6	171.4	214.3	240	257.1	300	342.9
	50	53.6	64.3	85.7	107.1	120	128.6	150	171.4
	90	80.4	96.4	128.6	160.7	180	192.9	225	257.1
DAPS-0480	0	214.3	257.1	342.9	428.6	480	514.3	600	685.7
	50	107.1	128.6	171.4	214.3	240	257.1	300	342.9
	90	160.7	192.9	257.1	321.4	360	385.7	450	514.3

Torque for size at 5.6 bar and swivel angle 0°



Note

The operating torque of the drive must not be higher than the maximum permissible torque listed in ISO 5211, with reference to the size of the mounting flange and of the coupling.

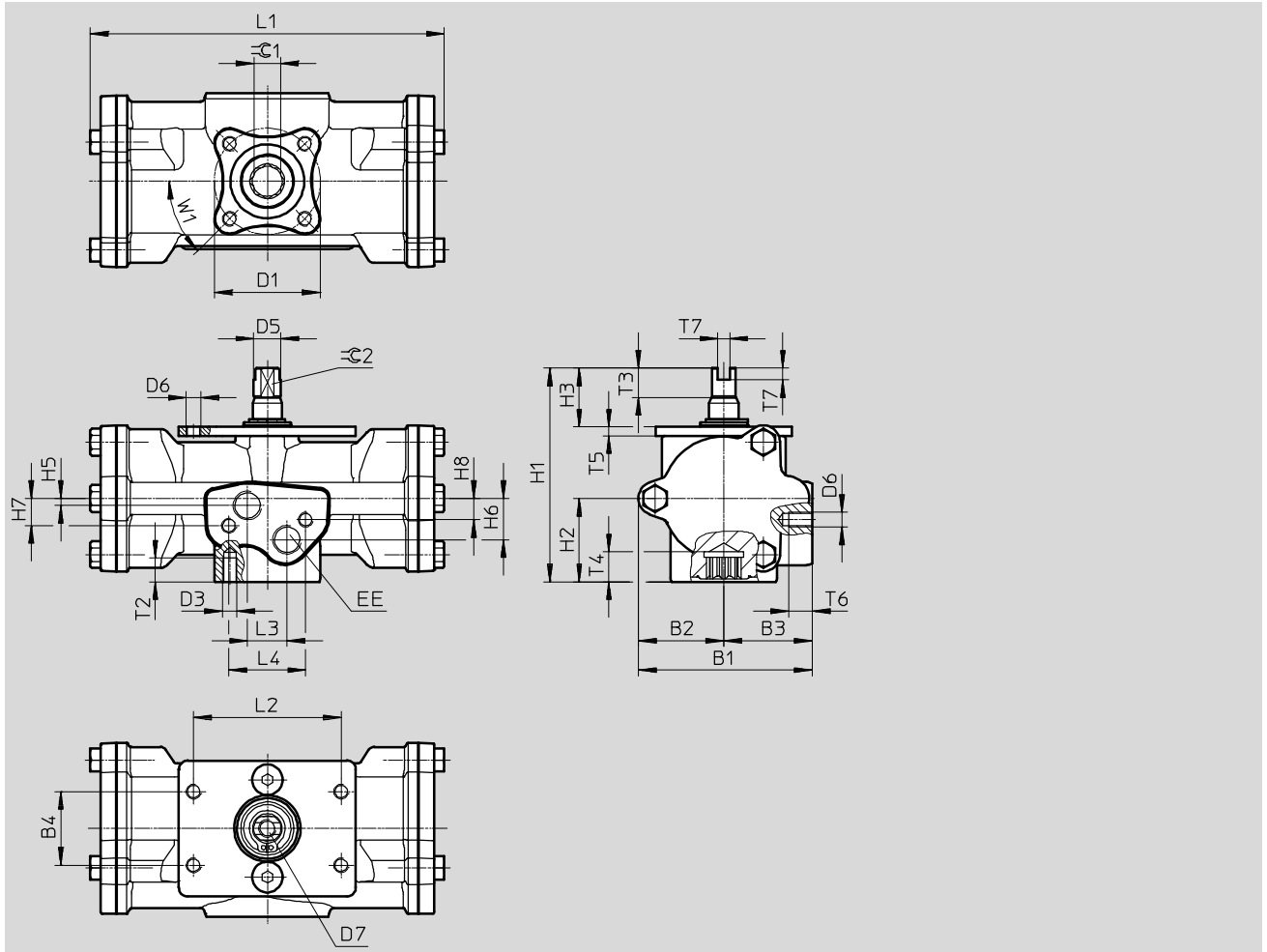
Quarter turn actuators DAPS CR, double-acting

Technical data

Dimensions

DAPS...-090-R-F03-CR

Download CAD data → www.festo.com



Size	B1	B2	B3	B4	D1 Ø	D3	D5 Ø	D6	D7	EE	H1	H2	H3	H5	H6
DAPS-0015-090-R-F03-CR	59	29	30	25	36	M5	9.2	M5	M6	G1/8	72.4	28.2	20	2.4	14
DAPS-0030-090-R-F03-CR	68.1	34.1	34	25	36	M5	10.9	M5	M6	G1/8	80.4	32.7	20	3	16

Size	H7	H8	L1 ±2	L2	L3	L4	T2	T3	T4 ±0.4	T5	T6	T7	⌀ 1 H11	⌀ 2 h11	W1
DAPS-0015-090-R-F03-CR	9.2	7.2	120	50	13.4	26	8	10	10.1	3	8	4	9	8	45°
DAPS-0030-090-R-F03-CR	10.5	8.5	134.6	50	12	26	8	10	10.2	3	8	4	9	9	45°

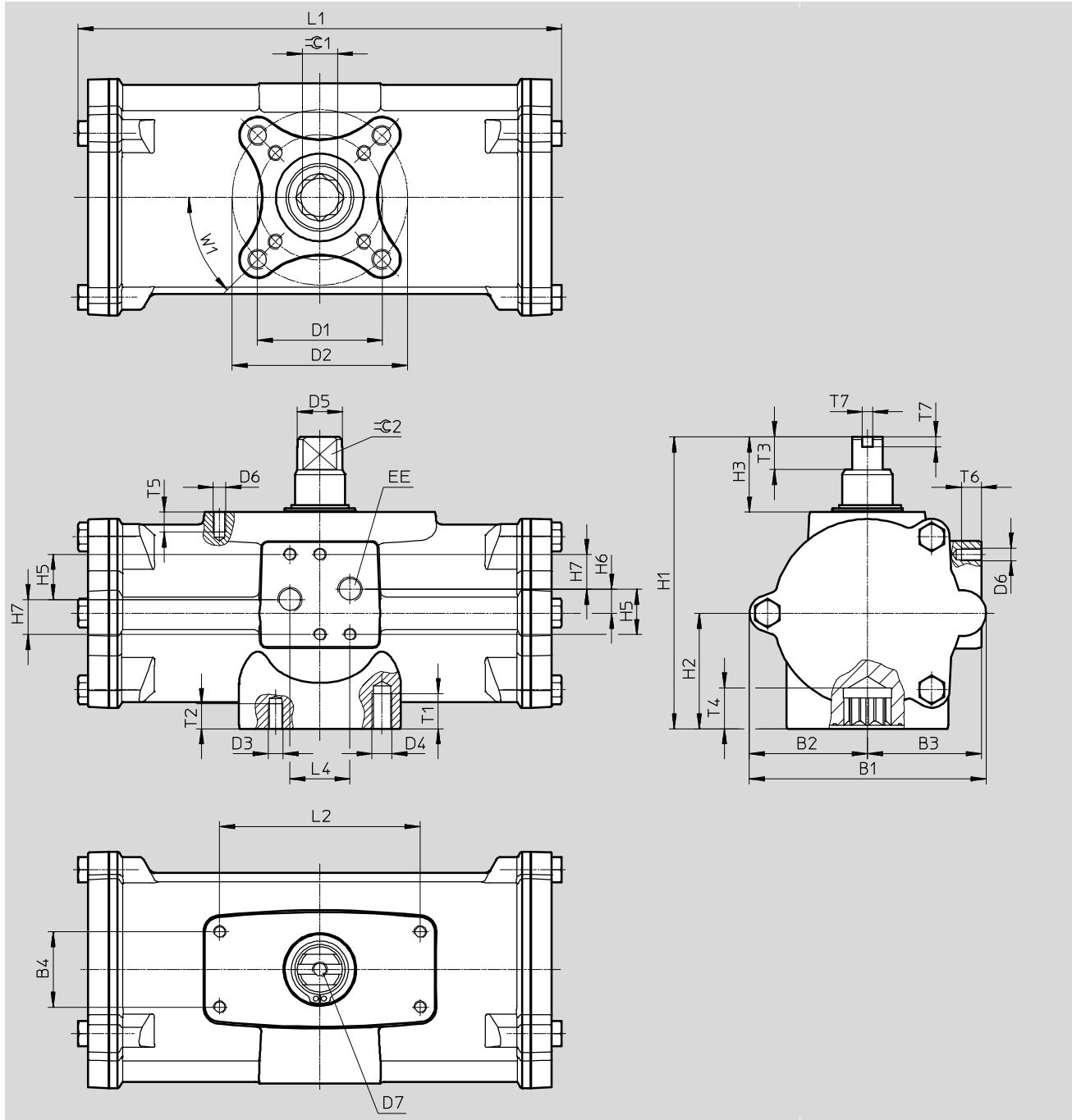
Quarter turn actuators DAPS CR, double-acting

Technical data

Dimensions

DAPS...-090-R...-CR

Download CAD data → www.festo.com



Quarter turn actuators DAPS CR, double-acting

Technical data

Size	B1	B2	B3	B4	D1 ∅ ±0.1	D2 ∅ ±0.1	D3	D4	D5 ∅	D6	D7	EE	H1	H2	H3	H5
DAPS-0060-...-R-F0305-CR	80.3	41.1	39.2	25	36	50	M5	M6	14.5	M5	M6	G1/8	92.4	37.6	20	18
DAPS-0120-...-R-F0507-CR	94.4	47	45.5	30	50	70	M6	M8	18	M5	M6	G1/8	116.5	46.1	30	18
DAPS-240-...-R-F0507-CR	117	60.2	54.5	30	50	70	M6	M8	22.5	M5	M6	G1/8	136.4	56.1	30	18
DAPS-480-...-R-F0710-CR	139.7	71	67	30	70	102	M8	M10	29	M5	M6	G1/8	160	68	30	18

Size	H6	H7	L1 ±2	L2	L4	T1	T2	T3	T4 ±0.4	T5	T6	T7	≈C 1 H11	≈C 2 h11	W1
DAPS-0060-...-R-F0305-CR	9.6	14	158.4	50	24	10	8	13	12.1	8	8	4	11	10	45°
DAPS-0120-...-R-F0507-CR	9.6	14	192.9	80	24	14	10	13	16.3	8	8	4	14	12	45°
DAPS-240-...-R-F0507-CR	10	14	246.7	80	24	14	10	17	19.3	8	8	4	17	15	45°
DAPS-480-...-R-F0710-CR	10	14	298.4	80	24	16	14	19	24.3	8	8	4	22	19	45°

Ordering data

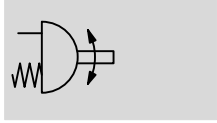
Part No.	Type
Size 0015	
552869	DAPS-0015-090-R-F03-CR
Size 0030	
552870	DAPS-0030-090-R-F03-CR
Size 0060	
552871	DAPS-0060-090-R-F0305-CR


Part No.	Type
Size 0120	
552872	DAPS-0120-090-R-F0507-CR
Size 0240	
552873	DAPS-0240-090-R-F0507-CR
Size 0480	
552874	DAPS-0480-090-R-F0710-CR

Quarter turn actuators DAPS CR, single-acting



Technical data

Function



 Swivel angle
0 ... 90°



-  Size
0015 ... 0240
-  Torque
15 ... 240 Nm

General technical data

Size	0015	0030	0060	0120	0240
Pneumatic connection	G1/8				
Design	Scotch yoke system				
Mode of operation	Single-acting				
Mounting position	Any				
Position sensing	None				
Cushioning	No cushioning				
Swivel angle [°]	90				
Closing direction	Closes to right				

Operating and environmental conditions

Size	0015	0030	0060	0120	0240
Nominal operating pressure [bar]	5.6				
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]				
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)				
Ambient temperature [°C]	-20 ... +80				
Corrosion resistance class CRC ¹⁾	3				
Connection to process valve as per standard	-		ISO 5211		
Valve connection as per standard	-		VDI/VDE 3845 (NAMUR)		
Safety Integrity Level (SIL)	Up to SIL 2 High Demand mode				
	Up to SIL 2 Low Demand mode				

1) Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

ATEX

ATEX category for gas	II 2G
Explosion ignition protection type for gas	Ex h IIC T6 ... T3 Gb X
ATEX category for dust	II 2D
Explosion ignition protection type for dust	Ex h IIIC T85°C ... T200°C Db X
Explosion-proof temperature rating	-20 °C ≤ Ta ≤ +60 °C
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

Quarter turn actuators DAPS CR, single-acting

Technical data

Pressure ranges [bar]			Type		
Type	Connection pressure	Operating pressure	Type	Connection pressure	Operating pressure
Size 0015			Size 0120		
DAPS-0015-090-RS1-F03-CR	2.8	2.8 ... 8.4	DAPS-0120-090-RS1-F0507-CR	2.8	2.8 ... 8.4
DAPS-0015-090-RS2-F03-CR	3.5	3.5 ... 8.4	DAPS-0120-090-RS2-F0507-CR	3.5	3.5 ... 8.4
DAPS-0015-090-RS3-F03-CR	4.2	4.2 ... 8.4	DAPS-0120-090-RS3-F0507-CR	4.2	4.2 ... 8.4
DAPS-0015-090-RS4-F03-CR	5.6	5.6 ... 8.4	DAPS-0120-090-RS4-F0507-CR	5.6	5.6 ... 8.4
Size 0030			Size 0240		
DAPS-0030-090-RS1-F0305-CR	2.8	2.8 ... 8.4	DAPS-0240-090-RS1-F0710-CR	2.8	2.8 ... 8.4
DAPS-0030-090-RS2-F0305-CR	3.5	3.5 ... 8.4	DAPS-0240-090-RS2-F0710-CR	3.5	3.5 ... 8.4
DAPS-0030-090-RS3-F0305-CR	4.2	4.2 ... 8.4	DAPS-0240-090-RS3-F0710-CR	4.2	4.2 ... 8.4
DAPS-0030-090-RS4-F0305-CR	5.6	5.6 ... 8.4	DAPS-0240-090-RS4-F0710-CR	5.6	5.6 ... 8.4
Size 0060			Size 0240		
DAPS-0060-090-RS1-F0507-CR	2.8	2.8 ... 8.4	DAPS-0240-090-RS1-F0710-CR	2.8	2.8 ... 8.4
DAPS-0060-090-RS2-F0507-CR	3.5	3.5 ... 8.4	DAPS-0240-090-RS2-F0710-CR	3.5	3.5 ... 8.4
DAPS-0060-090-RS3-F0507-CR	4.2	4.2 ... 8.4	DAPS-0240-090-RS3-F0710-CR	4.2	4.2 ... 8.4
DAPS-0060-090-RS4-F0507-CR	5.6	5.6 ... 8.4	DAPS-0240-090-RS4-F0710-CR	5.6	5.6 ... 8.4
Air consumption [l/cycle] at 6 bar			Size		
Size			Size		
DAPS-0015	0.6		DAPS-0120	4.9	
DAPS-0030	1.12		DAPS-0240	9.66	
DAPS-0060	2.31				
Weight [g]			Size		
Size			Size		
DAPS-0015	1600		DAPS-0120	7600	
DAPS-0030	2400		DAPS-0240	12900	
DAPS-0060	4500				
Materials			Material number		
Quarter turn actuators			Material number		
Housing	High-alloy stainless steel			1.4408	
Cover	High-alloy stainless steel			1.4408	
Shaft	High-alloy stainless steel			1.4301	
External screws	High-alloy stainless steel			-	
Seals	FPM, NBR, PUR			-	
Note on materials	Conforms to RoHS			-	

Quarter turn actuators DAPS CR, single-acting

Technical data

Actual torque [Nm] as a function of operating pressure [bar], spring strength and swivel angle [°]																		
Spring strength	Spring torque [Nm]			Operating pressure [bar]														
				2.5			2.8			3			3.5			4.2		
	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°
DAPS-0015																		
1	5.0	3.7	7.5	6.2	2.9	3.7	7.5	3.7	5	8.4	4.2	5.9	10.6	5.6	8.1	13.8	7.4	11.3
2	6.3	4.7	9.4	-			-			7.2	3.3	4	9.4	4.7	6.3	12.6	6.5	9.4
3	7.5	5.6	11.3	-			-			-			8.2	3.7	4.4	11.3	5.6	7.5
4	10.0	7.5	15	-			-			-			-			-		
DAPS-0030																		
1	10.0	7.5	15	12.3	5.9	7.3	15	7.5	10	16.8	8.6	11.8	21.3	11.3	16.3	27.5	15	22.5
2	12.5	9.4	18.8	-			-			14.3	6.7	8	18.8	9.4	12.5	25.1	13.2	18.8
3	15.0	11.3	22.5	-			-			-			16.3	7.5	8.8	22.5	11.3	15
4	20.0	15	30	-			-			-			-			-		
DAPS-0060																		
1	20	15	30	24.6	11.8	14.6	30	15	20	33.6	17.1	23.6	42.5	22.5	32.5	55	30	45
2	25	18.8	37.5	-			-			28.6	13.4	16.1	37.5	18.8	25	50	26.3	37.5
3	30	22.5	45	-			-			-			32.5	15	17.5	45	22.5	30
4	40	30	60	-			-			-			-			-		
DAPS-0120																		
1	40	30	60	49.3	23.6	29.3	60	30	40	67.1	34.3	47.1	85	45	65	110	60	90
2	50	37.5	75	-			-			57.1	26.8	32.1	75	37.5	50	100	52.5	75
3	60	45	90	-			-			-			65	30	35	90	45	60
4	80	60	120	-			-			-			-			-		
DAPS-0240																		
1	80	60	120	98.6	47.1	58.6	120	60	80	134.3	68.6	94.3	170	90	130	220	120	180
2	100	75	150	-			-			114.3	53.6	64.3	150	75	100	200	105	150
3	120	90	180	-			-			-			130	60	70	180	90	120
4	160	120	240	-			-			-			-			-		



Note

The operating torque of the drive must not be higher than the maximum permissible torque listed in ISO 5211, with reference to the size of the mounting flange and of the coupling.

Quarter turn actuators DAPS CR, single-acting

Technical data

Actual torque [Nm] as a function of operating pressure [bar], spring strength and swivel angle [°]																		
Spring strength	Spring torque [Nm]			Operating pressure [bar]														
				5			5.6			6			7			8		
	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°
DAPS-0015																		
1	5.0	3.7	7.5	–			–			–			–			–		
2	6.3	4.7	9.4	16.1	8.7	13	18.8	10.3	15.7	–			–			–		
3	7.5	5.6	11.3	14.9	7.7	11.1	17.6	9.3	13.8	19.4	10.4	15.6	23.8	13.1	20	28.3	15.7	24.5
4	10.0	7.5	15	12.3	5.9	7.3	15	7.5	10	16.8	8.6	11.8	21.3	11.3	16.3	25.7	13.9	20.7
DAPS-0030																		
1	10.0	7.5	15	–			–			–			–			–		
2	12.5	9.4	18.8	32.2	17.5	25.9	37.6	20.7	31.3	–			–			–		
3	15.0	11.3	22.5	29.6	15.6	22.1	35	18.8	27.5	38.6	21	31.1	47.5	26.4	40	56.4	31.7	48.9
4	20.0	15	30	24.6	11.8	14.6	30	15	20	33.6	17.1	23.6	42.5	22.5	32.5	51.4	27.9	41.4
DAPS-0060																		
1	20	15	30	–			–			–			–			–		
2	25	18.8	37.5	64.3	34.9	51.8	75	41.4	62.5	–			–			–		
3	30	22.5	45	59.3	31.1	44.3	70	37.5	55	77.1	41.8	62.1	95	52.5	80	112.9	63.2	97.9
4	40	30	60	49.3	23.6	29.3	60	30	40	67.1	34.3	47.1	85	45	65	102.9	55.7	82.9
DAPS-0120																		
1	40	30	60	–			–			–			–			–		
2	50	37.5	75	128.6	69.6	103.6	150	82.5	125	–			–			–		
3	60	45	90	118.6	62.1	88.6	140	75	110	154.3	83.6	124.3	190	105	160	225.7	126.4	195.7
4	80	60	120	98.6	47.1	58.6	120	60	80	134.3	68.6	94.3	170	90	130	205.7	111.4	165.7
DAPS-0240																		
1	80	60	120	–			–			–			–			–		
2	100	75	150	257.1	139.3	207.1	300	165	250	–			–			–		
3	120	90	180	237.1	124.3	177.1	280	150	220	308.6	167.1	248.6	380	210	320	451.4	252.9	391.4
4	160	120	240	197.1	94.3	117.1	240	120	160	268.6	137.1	188.6	340	180	260	411.4	222.9	331.4

Torque for size at 5.6 bar and swivel angle 0°



Note

The operating torque of the drive must not be higher than the maximum permissible torque listed in ISO 5211, with reference to the size of the mounting flange and of the coupling.

Quarter turn actuators DAPS CR, single-acting

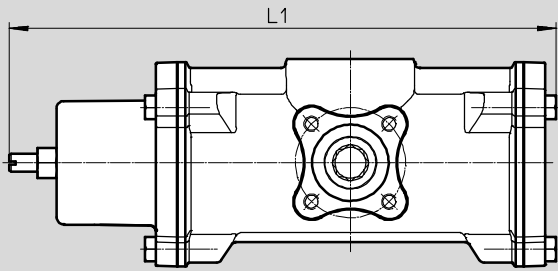
Technical data

Dimensions

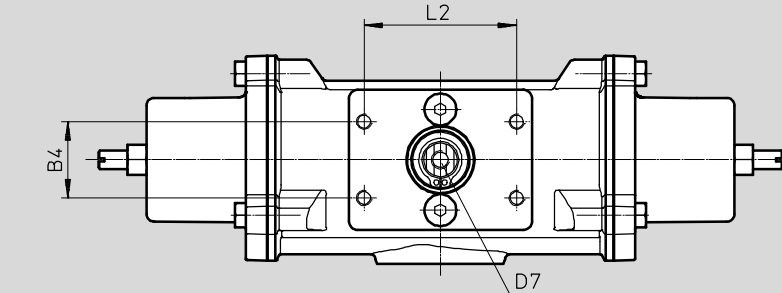
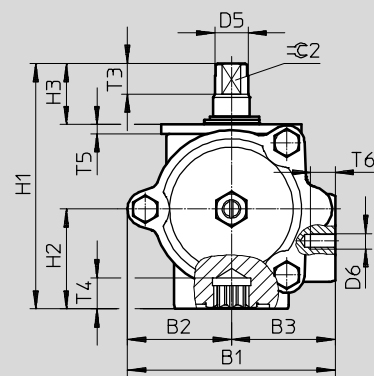
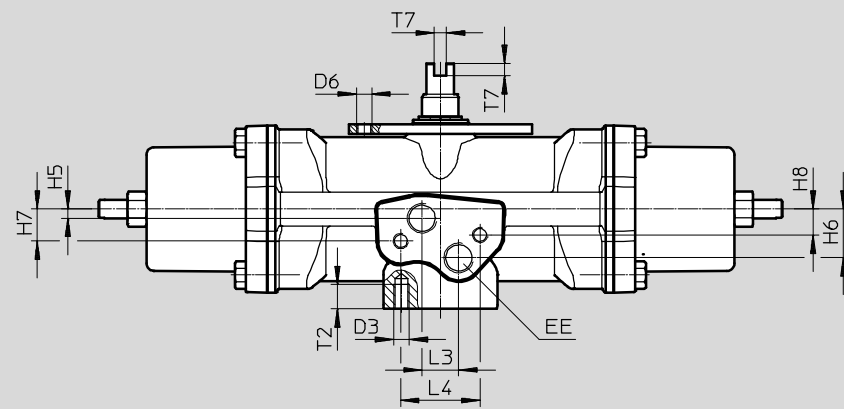
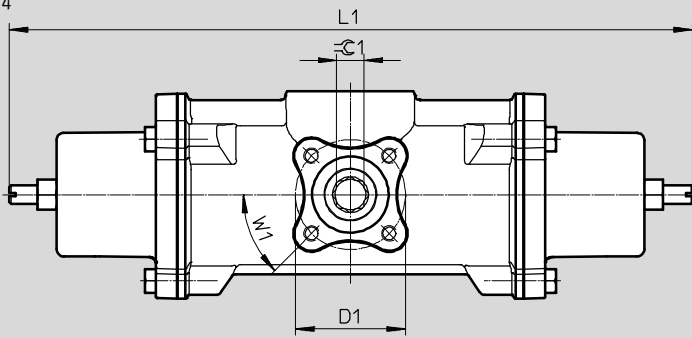
DAPS-0015-090-...-F03-CR

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RS 1



RS 2 ... RS 4



05

Quarter turn actuators

Quarter turn actuators DAPS CR, single-acting

Technical data

Size	B1	B2	B3	B4	D1 ∅	D3	D5 ∅	D6	D7	EE	H1	H2	H3	H5	H6	H7
DAPS-0015-090-RS-F03-CR	68.1	34.1	34	25	36	M5	10.9	M5	M6	G1/8	80.4	32.7	20	3	16	10.5

Size	H8	L1 ±2		L2	L3	L4	T2	T3	T4 ±0.4	T5	T6	T7	≈C 1	≈C 2	W1
		RS 1	RS 2 ... RS 4										H11	h11	
DAPS-0015-090-RS-F03-CR	8.5	179	224	50	12	26	8	10	10.2	3	8	4	9	9	45°

Quarter turn actuators DAPS CR, single-acting

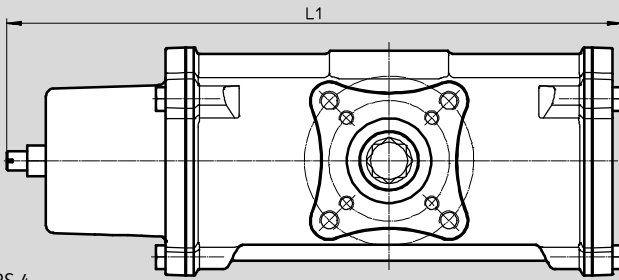
Technical data

Dimensions

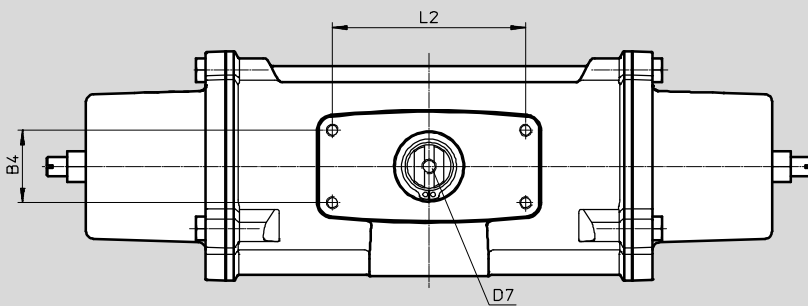
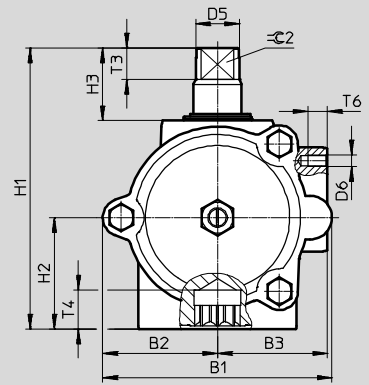
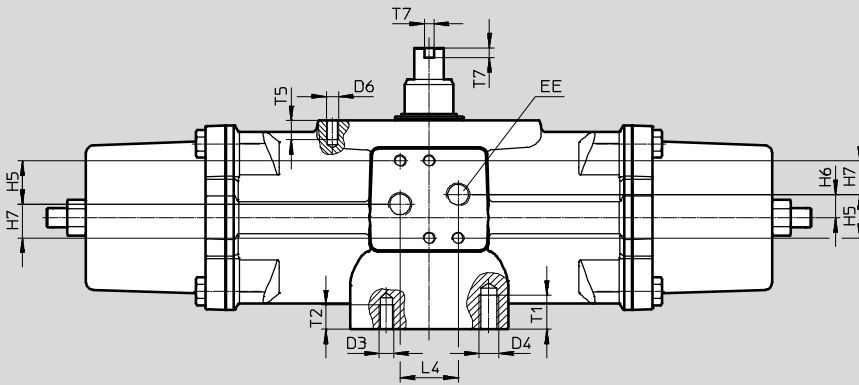
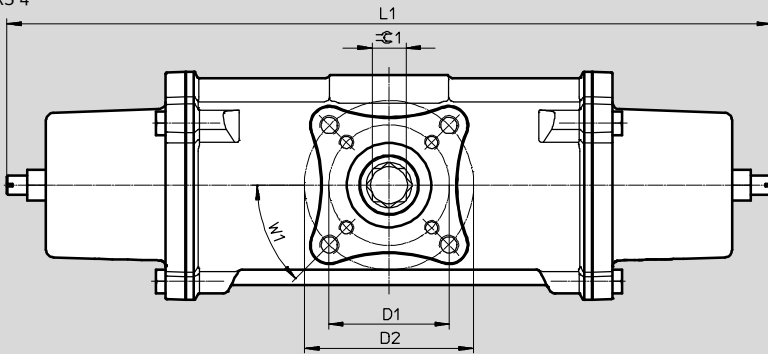
DAPS-...-090-...-CR

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RS 1



RS 2 ... RS 4



Quarter turn actuators

05

Quarter turn actuators DAPS CR, single-acting

Technical data

Size	B1	B2	B3	B4	D1 ∅	D2 ∅	D3	D4	D5 ∅	D6	D7	EE	H1	H2	H3	H5
DAPS-0030- ... -F0305-CR	80.3	41.1	39.2	25	36	50	M5	M6	14.5	M5	M6	G1/8	92.4	37.6	20	18
DAPS-0060- ... -F0507-CR	94.4	47	45.5	30	50	70	M6	M8	18	M5	M6	G1/8	116.4	46.2	30	18
DAPS-0120- ... -F0507-CR	117	60.2	54.5	30	50	70	M6	M8	22.5	M5	M6	G1/8	136.4	56.1	30	18
DAPS-0240- ... -F0710-CR	139.7	70.9	67	30	70	102	M8	M10	29	M5	M6	G1/8	160	67.9	30	18

Size	H6	H7	L1 ±2		L2	L4	T1	T2	T3	T4 ±0.4	T5	T6	T7	⊖ 1	⊖ 2	W1
			RS 1	RS 2 ... RS 4										H11	h11	
DAPS-0030- ... -F0305-CR	9.6	14	202.3	246.2	50	24	10	8	13	12.1	8	8	4	11	10	45°
DAPS-0060- ... -F0507-CR	9.5	14	254.7	316.5	80	24	14	10	13	16.3	8	8	4	14	12	45°
DAPS-0120- ... -F0507-CR	10	14	311.5	376.2	80	24	14	10	17	19.3	8	8	4	17	15	45°
DAPS-0240- ... -F0710-CR	10	14	381	464	80	24	16	14	19	24.3	8	8	4	22	19	45°

Ordering data

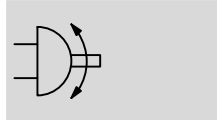
Part No.	Type
Size 0015	
552875	DAPS-0015-090-RS1-F03-CR
552876	DAPS-0015-090-RS2-F03-CR
552877	DAPS-0015-090-RS3-F03-CR
552878	DAPS-0015-090-RS4-F03-CR
Size 0030	
552879	DAPS-0030-090-RS1-F0305-CR
552880	DAPS-0030-090-RS2-F0305-CR
552881	DAPS-0030-090-RS3-F0305-CR
552882	DAPS-0030-090-RS4-F0305-CR
Size 0060	
552883	DAPS-0060-090-RS1-F0507-CR
552884	DAPS-0060-090-RS2-F0507-CR
552885	DAPS-0060-090-RS3-F0507-CR
552886	DAPS-0060-090-RS4-F0507-CR


Part No.	Type
Size 0120	
552887	DAPS-0120-090-RS1-F0507-CR
552888	DAPS-0120-090-RS2-F0507-CR
552889	DAPS-0120-090-RS3-F0507-CR
552890	DAPS-0120-090-RS4-F0507-CR
Size 0240	
552891	DAPS-0240-090-RS1-F0710-CR
552892	DAPS-0240-090-RS2-F0710-CR
552893	DAPS-0240-090-RS3-F0710-CR
552894	DAPS-0240-090-RS4-F0710-CR

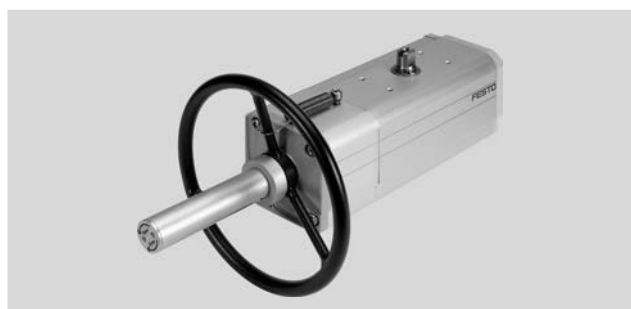
Quarter turn actuators DAPS with handwheel, double-acting



Technical data

Function



 Swivel angle
92°



-  Size
0106 ... 1920
-  Torque
0106 ... 1920 Nm

General technical data		0106	0180	0240	0360	0480
Size						
Pneumatic connection		G1/8				G1/4
Shaft connection depth		19.3	24.8	24.8	24.3	29.5
Design		Scotch yoke system				
Mode of operation		Double-acting				
Mounting position		Any				
Position sensing		None				
Cushioning		No cushioning				
Swivel angle	[°]	92				
Closing direction		Closes to the right				

		0720	0960	1440	1920
Size					
Pneumatic connection		G1/4			
Shaft connection depth		29.5	38.5	38.5	48.5
Design		Scotch yoke system			
Mode of operation		Double-acting			
Mounting position		Any			
Position sensing		None			
Cushioning		No cushioning			
Swivel angle	[°]	92			
Closing direction		Closes to the right			

05

Quarter turn actuators

Quarter turn actuators DAPS with handwheel, double-acting

Technical data

Operating and environmental conditions		0106	0180	0240	0360	0480
Size						
Operating pressure ¹⁾	[bar]	1 ... 8.4				
Nominal operating pressure	[bar]	5.6				
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]				
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)				
Ambient temperature	[°C]	-20 ... +80				
Ambient temperature for variant T6	[°C]	-50 ... +60				
Corrosion resistance class CRC ²⁾		2				
Connection to process valve as per standard		ISO 5211				
Valve connection conforms to standard		VDI/VDE 3845 (NAMUR)				
Safety Integrity Level (SIL)		Up to SIL 2 High Demand mode Up to SIL 2 Low Demand mode				

		0720	0960	1440	1920
Size					
Operating pressure ¹⁾	[bar]	1 ... 8.4			
Nominal operating pressure	[bar]	5.6			
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]			
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)			
Ambient temperature	[°C]	-20 ... +80			
Ambient temperature for variant T6	[°C]	-50 ... +60			
Corrosion resistance class CRC ²⁾		2			
Connection to process valve as per standard		ISO 5211			
Valve connection conforms to standard		VDI/VDE 3845 (NAMUR)			
Safety Integrity Level (SIL)		Up to SIL 2 High Demand mode Up to SIL 2 Low Demand mode			

1) Operating pressure for variant T6 3...8.4 bar

2) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

ATEX	
ATEX category for gas	II 2G
Explosion ignition protection type for gas	Ex h IIC T6 ... T3 Gb X
ATEX category for dust	II 2D
Explosion ignition protection type for dust	Ex h IIIC T85°C ... T200°C Db X
Explosion-proof temperature	-20 °C ≤ Ta ≤ +60 °C
Explosion-proof temperature [T6]	-50 °C ≤ Ta ≤ +60 °C
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

Quarter turn actuators DAPS with handwheel, double-acting

Technical data

Air consumption [l/cycle 0°-90°-0°] at 6 bar

Size	
0106	3.85
0180	8.4
0240	11.55
0360	16.1
0480	22.4

Size	
0720	32.2
0960	42.35
1440	67.9
1920	90.3

Weight [g]

Size	
0106	4000
0180	6000
0240	8000
0360	10200
0480	13200

Size	
0720	17800
0960	23800
1440	33600
1920	43000

Materials


Quarter turn actuators		Material number
Housing	Wrought aluminium alloy	-
Cover	Wrought aluminium alloy	-
	[T6] Wrought aluminium alloy	-
Shaft	High-alloy steel	1.4305
Screws	High-alloy steel	-
Seals	NBR, PUR, FPM	-
	[T6] PTFE reinforced, FVMQ	-
Note on materials	Conforms to RoHS	-
	[T6] Contains PWIS (paint-wetting impairment substances), conforms to RoHS	-

Quarter turn actuators DAPS with handwheel, double-acting

Technical data

Actual torque [Nm] as a function of operating pressure [bar] and swivel angle [°]

Size	Swivel angle [°]	Operating pressure [bar]							
		2.5	3	4	5	5.6	6	7	8
DAPS-0106	0°	47.3	56.8	75.7	94.6	106	113.6	132.5	151.4
	50°	23.7	28.4	37.9	47.3	53	56.8	66.3	75.7
	90°	35.7	72.9	57.1	71.4	80	85.7	100	114.3
DAPS-0180	0°	80.4	96.4	128.6	160.7	180	192.9	225	257.1
	50°	40.2	48.2	64.3	80.4	90	96.4	112.5	128.6
	90°	60.3	72.3	96.4	120.5	135	144.6	168.8	192.9
DAPS-0240	0°	107.1	128.6	171.4	214.3	240	257.1	300	342.9
	50°	53.6	64.3	85.7	107.1	120	128.6	150	171.4
	90°	80.4	96.4	128.6	160.7	180	192.9	225	257.1
DAPS-0360	0°	160.7	192.9	257.1	321.4	360	385.7	450	514.3
	50°	80.4	96.4	128.6	160.7	180	192.9	225	257.1
	90°	120.5	144.6	192.9	241.1	270	289.3	337.5	385.7
DAPS-0480	0°	214.3	257.1	342.9	428.6	480	514.3	600	685.7
	50°	107.1	128.6	171.4	214.3	240	257.1	300	342.9
	90°	160.7	192.9	257.1	321.4	360	385.7	450	514.3
DAPS-0720	0°	321.4	385.7	514.3	642.9	720	771.4	900	1028.6
	50°	160.7	192.9	257.1	321.4	360	385.7	450	514.3
	90°	241.1	289.3	385.7	482.1	540	578.6	675	771.4
DAPS-0960	0°	428.6	514.3	685.7	857.1	960	1028.6	1200	1371.4
	50°	214.3	257.1	342.9	428.6	480	514.3	600	685.7
	90°	321.4	385.7	514.3	642.9	720	771.4	900	1028.6
DAPS-1440	0°	642.9	771.4	1028.6	1285.7	1440	1542.9	1800	2057.1
	50°	321.4	385.7	514.3	642.9	720	771.4	900	1028.6
	90°	482.1	578.6	771.4	964.3	1080	1157.1	1350	1542.9
DAPS-1920	0°	857.1	1028.6	1371.4	1714.3	1920	2057.1	2400	2742.9
	50°	428.6	514.3	685.7	857.1	960	1028.6	1200	1371.4
	90°	642.9	771.4	1028.6	1285.7	1440	1542.9	1800	2057.1

 Torque for size at 5.6 bar and swivel angle 0°



Note

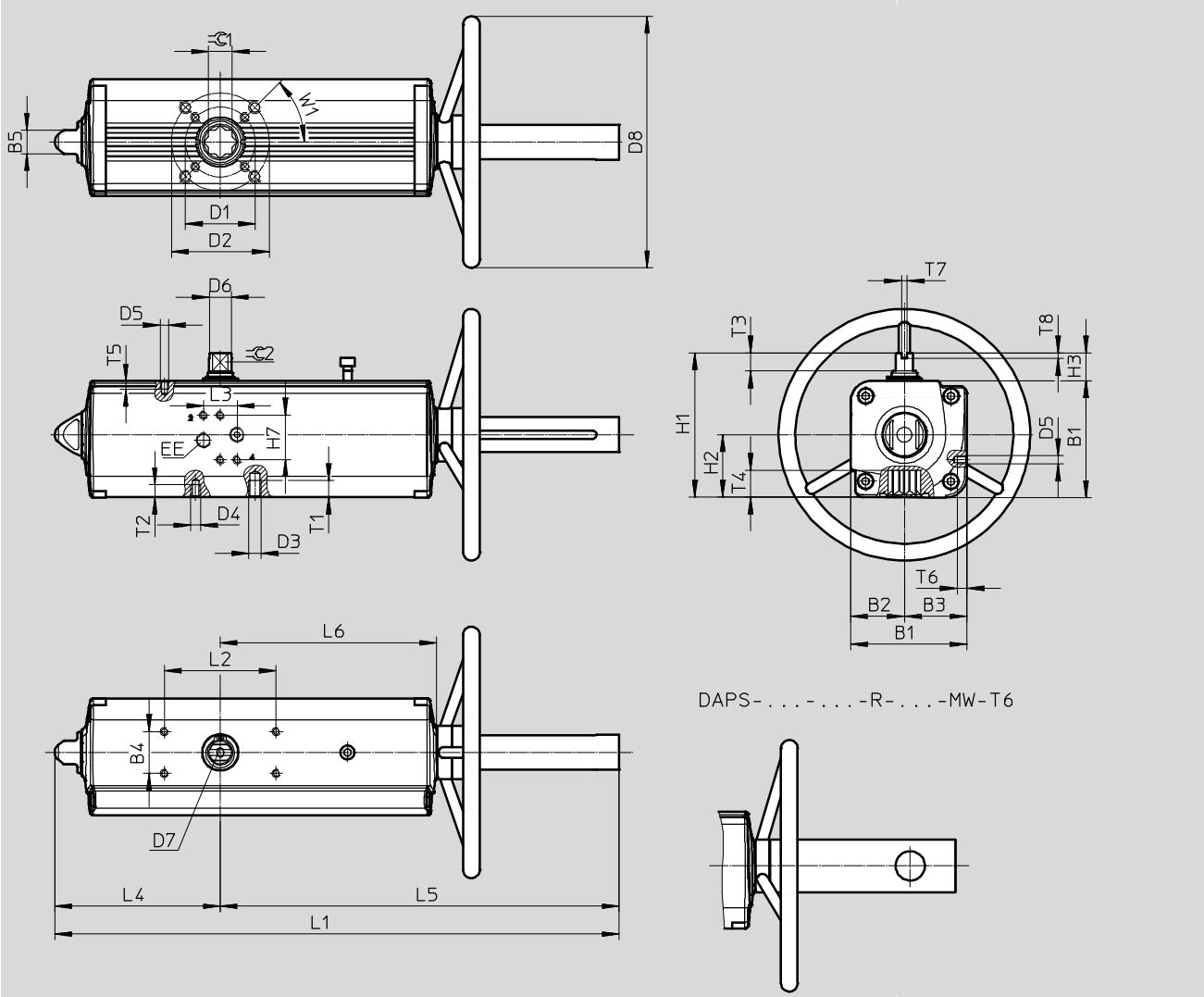
The operating torque of the drive must not be higher than the maximum permissible torque listed in ISO 5211, with reference to the size of the mounting flange and of the coupling.

Quarter turn actuators DAPS with handwheel, double-acting

Technical data

Dimensions

Download CAD data → www.festo.com



Quarter turn actuators DAPS with handwheel, double-acting

Technical data

Size	B1 ±0.4	B2	B3	B4	B5	D1 ∅	D2 ∅	D3	D4	D5	D6 ∅	D7
DAPS-0106-...-F0507-...	83.3	38.5	44.8	30	17	50	70	M8	M6	M5	16.2	M6x12
DAPS-0180-...-F0710-...	107.5	51	56.5	30	22	70	102	M10	M8	M5	20.2	M6x12
DAPS-0240-...-F0710-...	111.1	51	60.1	30	22	70	102	M10	M8	M5	22.5	M6x12
DAPS-0360-...-F0710-...	118	56	62	30	22	70	102	M10	M8	M5	25.5	M6x12
DAPS-0480-...-F1012-...	134.9	62	72.9	30	27	102	125	M12	M10	M5	29	M6x12
DAPS-0720-...-F1012-...	148	69.5	78.5	30	27	102	125	M12	M10	M5	31.8	M6x12
DAPS-0960-...-F1012-...	168	74.5	93.5	30	27	102	125	M12	M10	M5	36.5	M6x12
DAPS-0960-...-F14-...	168	74.5	93.5	30	27	-	140	M16	-	M5	36.5	M6x12
DAPS-1440-...-F12-...	186	84.5	101.5	30	36	-	125	M12	-	M5	41	M6x12
DAPS-1440-...-F14-...	186	84.5	101.5	30	36	-	140	M16	-	M5	41	M6x12
DAPS-1920-...-F14-...	207.7	93	114.7	30	36	-	140	M16	-	M5	46	M6x12
DAPS-1920-...-F1216-...	207.7	93	114.7	30	36	125	165	M20	M12	M5	46	M6x12

Size	D8 ∅	EE	H1	H2	H3	H7	L1 ±2	L2	L3	L4	L5	L6
DAPS-0106-...-F0507-...	180	G1/8	103.3	44.8	20±0.4	32	403.9	80	24	118.5	285.4	154.8
DAPS-0180-...-F0710-...	220	G1/8	137.5	56.5	30±0.4	32	493.2	80	24	144.9	348.3	183.5
DAPS-0240-...-F0710-...	220	G1/8	141.1	60.1	30±0.4	32	520.6	80	24	156.8	363.9	199.1
DAPS-0360-...-F0710-...	300	G1/8	148	62	30±0.4	32	578.8	80	24	169.6	409.1	220.8
DAPS-0480-...-F1012-...	300	G1/4	164.9	72.9	30±0.4	32	618.8	80	24	193.8	425	236.4
DAPS-0720-...-F1012-...	350	G1/4	178	78.5	30±0.4	32	732.8	80	24	216.6	516.2	282.3
DAPS-0960-...-F1012-...	350	G1/4	198	93.5	30±0.5	32	770.2	80	24	239.7	530.5	297.1
DAPS-0960-...-F14-...	350	G1/4	198	93.5	30±0.5	32	770.2	80	24	239.7	530.5	297.1
DAPS-1440-...-F12-...	400	G1/4	216	101.5	30±0.5	32	936.9	80	24	283.5	653.4	365.6
DAPS-1440-...-F14-...	400	G1/4	216	101.5	30±0.5	32	936.9	80	24	283.5	653.4	365.6
DAPS-1920-...-F14-...	400	G1/4	237.7	114.7	30±0.8	32	970.3	80	24	300.4	670	382.9
DAPS-1920-...-F1216-...	400	G1/4	237.7	114.7	30±0.8	32	970.3	80	24	300.4	670	382.9

Size	T1	T2	T3	T4	T5	T6	T7 +0.1	T8 +0.3	≈C 1 H11	≈C 2 h11	W1
DAPS-0106-...-F0507-...	12	9	13	19.3±0.4	6	7	4	4	17	12	45°
DAPS-0180-...-F0710-...	15	12	16	24.8±0.4	6	7	4	4	22	15	45°
DAPS-0240-...-F0710-...	15	12	17	24.8±0.4	6	7	4	4	22	15	45°
DAPS-0360-...-F0710-...	15	12	19	24.3±0.4	6	7	4	4	22	19	45°
DAPS-0480-...-F1012-...	18	15	19	29.5±0.4	6	7	4	4	27	19	45°
DAPS-0720-...-F1012-...	18	15	19.5	29.5±0.4	6	7	4	4	27	22	45°
DAPS-0960-...-F1012-...	18	15	19.5	38.5±0.5	6	7	4	4	36	24	45°
DAPS-0960-...-F14-...	24	-	19.5	38.5±0.5	6	7	4	4	36	24	45°
DAPS-1440-...-F12-...	18	-	19.5	38.5±0.5	6	7	4	4	36	27	45°
DAPS-1440-...-F14-...	24	-	19.5	38.5±0.5	6	7	4	4	36	27	45°
DAPS-1920-...-F14-...	24	-	18.5	48.5±0.8	6	7	4	4	46	32	45°
DAPS-1920-...-F1216-...	30	18	18.5	48.5±0.8	6	7	4	4	46	32	45°

Quarter turn actuators DAPS with handwheel, double-acting

Technical data

Ordering data – Double-acting

Part No.	Type
Size 0106	
8005002	DAPS-0106-090-R-F0507-MW
Size 0180	
8005003	DAPS-0180-090-R-F0710-MW
Size 0240	
8005004	DAPS-0240-090-R-F0710-MW
Size 0360	
8005005	DAPS-0360-090-R-F0710-MW
Size 0480	
8005006	DAPS-0480-090-R-F1012-MW
Size 0720	
8005007	DAPS-0720-090-R-F1012-MW

Part No.	Type
Size 0960	
8005008	DAPS-0960-090-R-F1012-MW
8005009	DAPS-0960-090-R-F14-MW
Size 1440	
8005010	DAPS-1440-090-R-F12-MW
8005011	DAPS-1440-090-R-F14-MW
Size 1920	
8005013	DAPS-1920-090-R-F1216-MW
8005012	DAPS-1920-090-R-F14-MW

Ordering data – Double-acting T6

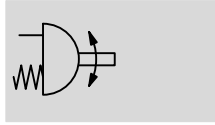
Part No.	Type
Size 0106	
8005014	DAPS-0106-090-R-F0507-MW-T6
Size 0180	
8005015	DAPS-0180-090-R-F0710-MW-T6
Size 0240	
8005016	DAPS-0240-090-R-F0710-MW-T6
Size 0360	
8005017	DAPS-0360-090-R-F0710-MW-T6
Size 0480	
8005018	DAPS-0480-090-R-F1012-MW-T6
Size 0720	
8005019	DAPS-0720-090-R-F1012-MW-T6


Part No.	Type
Size 0960	
8005020	DAPS-0960-090-R-F1012-MW-T6
8005021	DAPS-0960-090-R-F14-MW-T6
Size 1440	
8005022	DAPS-1440-090-R-F12-MW-T6
8005023	DAPS-1440-090-R-F14-MW-T6
Size 1920	
8005024	DAPS-1920-090-R-F14-MW-T6
8005025	DAPS-1920-090-R-F1216-MW-T6

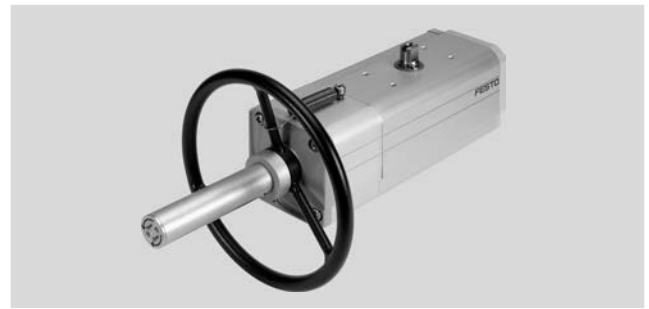
Quarter turn actuators DAPS with handwheel, single-acting



Technical data

Function



 Swivel angle
0 ... 92°



-  Size
0053 ... 0960
-  Torque
0053 ... 0960 Nm

General technical data

Size	0053	0090	0120	0180	0240
Pneumatic connection	G1/8				G1/4
Shaft connection depth [mm]	19.3	24.8	24.8	24.3	29.5
Note regarding the end-position adjusting range	Optionally one end position adjustable				
Design	Scotch yoke system				
Mode of operation	Single-acting				
Mounting position	Any				
Position sensing	None				
Cushioning	No cushioning				
Swivel angle [°]	92				
Closing direction	Closes to the right				

Size	0360	0480	0720	0960
Pneumatic connection	G1/4			
Shaft connection depth [mm]	29.5	38.5	38.5	48.5
Note regarding the end-position adjusting range	Optionally one end position adjustable			
Design	Scotch yoke system			
Mode of operation	Single-acting			
Mounting position	Any			
Position sensing	None			
Cushioning	No cushioning			
Swivel angle [°]	92			
Closing direction	Closes to the right			

Quarter turn actuators DAPS with handwheel, single-acting

Technical data

Operating and environmental conditions		0053	0090	0120	0180	0240
Size						
Nominal operating pressure	[bar]	5.6				
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]				
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)				
Ambient temperature	[°C]	-20 ... +80				
Corrosion resistance class CRC ¹⁾		2				
Connection to process valve as per standard		ISO 5211				
Valve connection conforms to standard		VDI/VDE 3845 (NAMUR)				
Safety Integrity Level (SIL)		Up to SIL 2 High Demand mode				
		Up to SIL 2 Low Demand mode				

		0360	0480	0720	0960
Size					
Nominal operating pressure	[bar]	5.6			
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]			
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)			
Ambient temperature	[°C]	-20 ... +80			
Corrosion resistance class CRC ¹⁾		2			
Connection to process valve as per standard		ISO 5211			
Valve connection conforms to standard		VDI/VDE 3845 (NAMUR)			
Safety Integrity Level (SIL)		Up to SIL 2 High Demand mode			
		Up to SIL 2 Low Demand mode			

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

ATEX	
ATEX category for gas	II 2G
Explosion ignition protection type for gas	Ex h IIC T6 ... T3 Gb X
ATEX category for dust	II 2D
Explosion ignition protection type for dust	Ex h IIIC T85°C ... T200°C Db X
Explosion-proof temperature	-50°C ≤ Ta ≤ +60°C
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

Materials		
Quarter turn actuators		Material number
Housing	Wrought aluminium alloy	-
Cover	Wrought aluminium alloy	-
Shaft	High-alloy steel	1.4305
External screws	High-alloy steel	-
Seals	FPM, NBR, PUR	-
Note on materials	Conforms to RoHS	-

Quarter turn actuators DAPS with handwheel, single-acting

Technical data

Pressure ranges [bar]		
Type	Connection pressure	Operating pressure
Size 0053		
DAPS-0053-090-RS1-F0507-MW	2.8	2.8 ... 8.4
DAPS-0053-090-RS2-F0507-MW	3.5	3.5 ... 8.4
DAPS-0053-090-RS3-F0507-MW	4.2	4.2 ... 8.4
DAPS-0053-090-RS4-F0507-MW	5.6	5.6 ... 8.4
Size 0090		
DAPS-0090-090-RS1-F0710-MW	2.8	2.8 ... 8.4
DAPS-0090-090-RS2-F0710-MW	3.5	3.5 ... 8.4
DAPS-0090-090-RS3-F0710-MW	4.2	4.2 ... 8.4
DAPS-0090-090-RS4-F0710-MW	5.6	5.6 ... 8.4
Size 0120		
DAPS-0120-090-RS1-F0710-MW	2.8	2.8 ... 8.4
DAPS-0120-090-RS2-F0710-MW	3.5	3.5 ... 8.4
DAPS-0120-090-RS3-F0710-MW	4.2	4.2 ... 8.4
DAPS-0120-090-RS4-F0710-MW	5.6	5.6 ... 8.4
Size 0180		
DAPS-0180-090-RS1-F0710-MW	2.8	2.8 ... 8.4
DAPS-0180-090-RS2-F0710-MW	3.5	3.5 ... 8.4
DAPS-0180-090-RS3-F0710-MW	4.2	4.2 ... 8.4
DAPS-0180-090-RS4-F0710-MW	5.6	5.6 ... 8.4
Size 0240		
DAPS-0240-090-RS1-F1012-MW	2.8	2.8 ... 8.4
DAPS-0240-090-RS2-F1012-MW	3.5	3.5 ... 8.4
DAPS-0240-090-RS3-F1012-MW	4.2	4.2 ... 8.4
DAPS-0240-090-RS4-F1012-MW	5.6	5.6 ... 8.4
Size 0360		
DAPS-0360-090-RS1-F1012-MW	2.8	2.8 ... 8.4
DAPS-0360-090-RS2-F1012-MW	3.5	3.5 ... 8.4
DAPS-0360-090-RS3-F1012-MW	4.2	4.2 ... 8.4
DAPS-0360-090-RS4-F1012-MW	5.6	5.6 ... 8.4

Air consumption [l/cycle 0°-90°-0°] at 6 bar

Size	
0053	2.1
0090	3.9
0120	5.6
0180	7
0240	10.5

Weight [g]

Size	
0053	4500
0090	6800
0120	9000
0180	11700
0240	15200

Type	Connection pressure	Operating pressure
Size 0480		
DAPS-0480-090-RS1-F1012-MW	2.8	2.8 ... 8.4
DAPS-0480-090-RS1-F14-MW	2.8	2.8 ... 8.4
DAPS-0480-090-RS2-F1012-MW	3.5	3.5 ... 8.4
DAPS-0480-090-RS2-F14-MW	3.5	3.5 ... 8.4
DAPS-0480-090-RS3-F1012-MW	4.2	4.2 ... 8.4
DAPS-0480-090-RS3-F14-MW	4.2	4.2 ... 8.4
DAPS-0480-090-RS4-F1012-MW	5.6	5.6 ... 8.4
DAPS-0480-090-RS4-F14-MW	5.6	5.6 ... 8.4
Size 0720		
DAPS-0720-090-RS1-F12-MW	2.8	2.8 ... 8.4
DAPS-0720-090-RS1-F14-MW	2.8	2.8 ... 8.4
DAPS-0720-090-RS2-F12-MW	3.5	3.5 ... 8.4
DAPS-0720-090-RS2-F14-MW	3.5	3.5 ... 8.4
DAPS-0720-090-RS3-F12-MW	4.2	4.2 ... 8.4
DAPS-0720-090-RS3-F14-MW	4.2	4.2 ... 8.4
DAPS-0720-090-RS4-F12-MW	5.6	5.6 ... 8.4
DAPS-0720-090-RS4-F14-MW	5.6	5.6 ... 8.4
Size 0960		
DAPS-0960-090-RS1-F1216-MW	2.8	2.8 ... 8.4
DAPS-0960-090-RS1-F14-MW	2.8	2.8 ... 8.4
DAPS-0960-090-RS2-F1216-MW	3.5	3.5 ... 8.4
DAPS-0960-090-RS2-F14-MW	3.5	3.5 ... 8.4
DAPS-0960-090-RS3-F1216-MW	4.2	4.2 ... 8.4
DAPS-0960-090-RS3-F14-MW	4.2	4.2 ... 8.4
DAPS-0960-090-RS4-F1216-MW	5.6	5.6 ... 8.4
DAPS-0960-090-RS4-F14-MW	5.6	5.6 ... 8.4

Size	
0360	14
0480	19.6
0720	29.4
0960	41.3

Size	
0360	19500
0480	28100
0720	38800
0960	50600

Quarter turn actuators DAPS with handwheel, single-acting

Technical data

Actual torque [Nm] as a function of operating pressure [bar], spring strength and swivel angle [°]																			
Spring strength	Spring torque [Nm]			Operating pressure [bar]															
				2.5			2.8			3			3.5			4.2			
	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	
DAPS-0053																			
1	17.5	13	26.5	20.2	9.3	11.2	26.5	13	17.5	29.6	14.9	20.6	37.5	19.5	28.5	48.5	26	39.5	
2	22	16.5	33	-			-			25.1	11.8	14.1	33	16.5	22	44	23.1	33	
3	26	19.5	40	-			-			-			29	13	15	40	19.5	26	
4	35	26	53	-			-			-			-			-			
DAPS-0090																			
1	30	22.5	45	34.3	16.1	19.3	45	22.5	30	50.4	25.7	35.4	63.8	33.8	48.8	82.5	45	67.5	
2	37.5	28.1	56.3	-			-			42.9	20.1	24.1	56.3	28.1	37.5	75.1	39.4	56.3	
3	45	33.9	67.5	-			-			-			48.8	22.6	26.3	67.5	33.9	45	
4	60	45	90	-			-			-			-			-			
DAPS-0120																			
1	40	30	60	45.7	21.4	25.7	60	30	40	67.1	34.3	47.1	85	45	65	110	60	90	
2	50	37.5	75	-			-			57.1	26.8	32.1	75	37.5	50	100	52.5	75	
3	60	45	90	-			-			-			65	30	35	90	45	60	
4	80	60	120	-			-			-			-			-			
DAPS-0180																			
1	60	45	90	68.6	32.1	38.6	90	45	60	100.7	51.4	70.7	127.5	67.5	97.5	165	90	135	
2	75	56.3	112.5	-			-			85.7	40.2	48.2	112.5	56.3	75	150	78.8	112.5	
3	90	67.5	135	-			-			-			97.5	45	52.5	135	67.5	90	
4	120	90	180	-			-			-			-			-			
DAPS-0240																			
1	80	60	120	91.4	42.9	51.4	120	60	80	134.3	68.6	94.3	170	90	130	220	120	180	
2	100	75	150	-			-			114.3	53.6	64.3	150	75	100	200	105	150	
3	120	90	180	-			-			-			130	60	70	180	90	120	
4	160	120	240	-			-			-			-			-			



Note

The operating torque of the drive must not be higher than the maximum permissible torque listed in ISO 5211, with reference to the size of the mounting flange and of the coupling.

Quarter turn actuators DAPS with handwheel, single-acting

Technical data

Actual torque [Nm] as a function of operating pressure [bar], spring strength and swivel angle [°]																		
Spring strength	Spring torque [Nm]			Operating pressure [bar]														
				5			5.6			6			7			8		
	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°
DAPS-0053																		
1	17.5	13	26.5	–			–			–			–			–		
2	22	16.5	33	56.6	30.6	45.6	66	36.3	55	–			–			–		
3	26	19.5	40	52.6	26.9	38.6	62	32.5	48	68.3	36.2	54.3	84	45.5	70	99.7	54.8	85.7
4	35	26	53	43.6	20.4	25.6	53	26	35	59.3	29.7	41.3	75	39	57	90.7	48.3	72.7
DAPS-0090																		
1	30	22.5	45	–			–			–			–			–		
2	37.5	28.1	56.3	96.5	52.2	77.7	112.6	61.9	93.8	–			–			–		
3	45	33.9	67.5	88.9	46.8	66.4	105	56.5	82.5	115.7	63	93.2	142.5	79.1	120	169.3	95.2	146.8
4	60	45	90	73.9	35.4	43.9	90	45	60	100.7	51.4	70.7	127.5	67.5	97.5	154.3	83.6	124.3
DAPS-0120																		
1	40	30	60	–			–			–			–			–		
2	50	37.5	75	128.6	69.6	103.6	150	82.5	125	–			–			–		
3	60	45	90	118.6	62.1	88.6	140	75	110	154.3	83.6	124.3	190	105	160	225.7	126.4	195.7
4	80	60	120	98.6	47.1	58.6	120	60	80	134.3	68.6	94.3	170	90	130	205.7	111.4	165.7
DAPS-0180																		
1	60	45	90	–			–			–			–			–		
2	75	56.3	112.5	192.9	104.5	155.4	225	123.8	187.5	–			–			–		
3	90	67.5	135	177.9	93.2	132.9	210	112.5	165	231.4	125.4	186.4	285	157.5	240	338.6	189.6	293.6
4	120	90	180	147.9	70.7	87.9	180	90	120	201.4	102.9	141.4	255	135	195	308.6	167.1	248.6
DAPS-0240																		
1	80	60	120	–			–			–			–			–		
2	100	75	150	257.1	139.3	207.1	300	165	250	–			–			–		
3	120	90	180	237.1	124.3	177.1	280	150	220	308.6	167.1	248.6	380	210	320	451.4	252.9	391.4
4	160	120	240	197.1	94.3	117.1	240	120	160	268.6	137.1	188.6	340	180	260	411.4	222.9	331.4

Torque for size at 5.6 bar and swivel angle 0°




Note

The operating torque of the drive must not be higher than the maximum permissible torque listed in ISO 5211, with reference to the size of the mounting flange and of the coupling.

Quarter turn actuators DAPS with handwheel, single-acting

Technical data

Actual torque [Nm] as a function of operating pressure [bar], spring strength and swivel angle [°]																		
Spring strength	Spring torque [Nm]			Operating pressure [bar]														
				2.5			2.8			3			3.5			4.2		
	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°
DAPS-0360																		
1	120	90	180	137.1	64.3	77.1	180	90	120	201.4	102.9	141.4	255	135	195	330	180	270
2	150	112.5	225	-			-			171.4	80.4	96.4	225	112.5	150	300	157.5	225
3	180	135	270	-			-			-			195	90	105	270	135	180
4	240	180	360	-			-			-			-			-		
DAPS-0480																		
1	160	120	240	182.9	85.7	102.9	240	120	160	268.6	137.1	188.6	340	180	260	440	240	360
2	200	150	300	-			-			228.6	107.1	128.6	300	150	200	400	210	300
3	240	180	360	-			-			-			260	120	140	360	180	240
4	320	240	480	-			-			-			-			-		
DAPS-0720																		
1	240	180	360	274.3	128.6	154.3	360	180	240	402.9	205.7	282.9	510	270	390	660	360	540
2	300	225	450	-			-			342.9	160.7	192.9	450	225	300	600	315	450
3	360	270	540	-			-			-			390	180	210	540	270	360
4	480	360	720	-			-			-			-			-		
DAPS-0960																		
1	320	240	480	366	171	206	480	240	320	537	274	377	680	360	520	880	480	720
2	400	300	600	-			-			457	214	257	600	300	400	800	420	600
3	480	360	720	-			-			-			520	240	280	720	360	480
4	640	480	960	-			-			-			-			-		

 - Note
The operating torque of the drive must not be higher than the maximum permissible torque listed in ISO 5211, with reference to the size of the mounting flange and of the coupling.

Quarter turn actuators DAPS with handwheel, single-acting

Technical data

Actual torque [Nm] as a function of operating pressure [bar], spring strength and swivel angle [°]																		
Spring strength	Spring torque [Nm]			Operating pressure [bar]														
				5			5.6			6			7			8		
	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°
DAPS-0360																		
1	120	90	180	–			–			–			–			–		
2	150	112.5	225	385.7	208.9	310.7	450	247.5	375	–			–			–		
3	180	135	270	355.7	186.4	265.7	420	225	330	462.9	250.7	372.9	570	315	480	677.1	379.3	587.1
4	240	180	360	295.7	141.4	175.7	360	180	240	402.9	205.7	282.9	510	270	390	617.1	334.3	497.1
DAPS-0480																		
1	160	120	240	–			–			–			–			–		
2	200	150	300	514.3	278.6	414.3	600	330	500	–			–			–		
3	240	180	360	474.3	248.6	354.3	560	300	440	617.1	334.3	497.1	760	420	640	902.9	505.7	782.9
4	320	240	480	394.3	188.6	234.3	480	240	320	537.1	274.3	377.1	680	360	520	822.9	445.7	662.9
DAPS-0720																		
1	240	180	360	–			–			–			–			–		
2	300	225	450	771.4	417.9	621.4	900	495	750	–			–			–		
3	360	270	540	711.4	372.9	531.4	840	450	660	925.7	501.4	745.7	1140	630	960	1354	758.6	1,174
4	480	360	720	591.4	282.9	351.4	720	360	480	805.7	411.4	565.7	1020	540	780	1234	668.6	994.3
DAPS-0960																		
1	320	240	480	–			–			–			–			–		
2	400	300	600	1029	557	829	1200	660	1000	–			–			–		
3	480	360	720	949	497	709	1120	600	880	1234	669	994	1520	840	1280	1806	1011	1566
4	640	480	960	789	377	469	960	480	640	1074	549	754	1360	720	1040	1646	891	1326

Torque for size at 5.6 bar and swivel angle 0°



Note

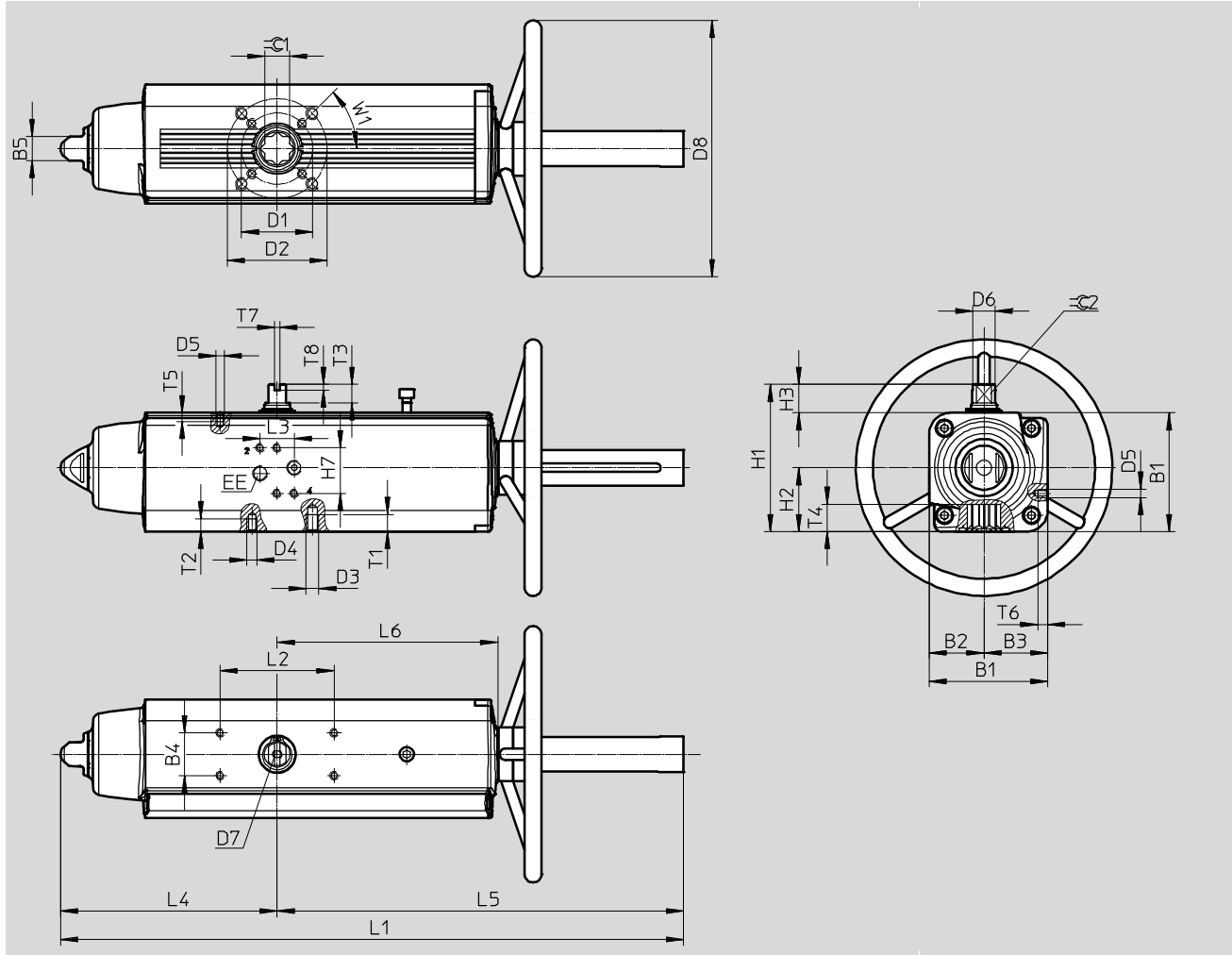
The operating torque of the drive must not be higher than the maximum permissible torque listed in ISO 5211, with reference to the size of the mounting flange and of the coupling.

Quarter turn actuators DAPS with handwheel, single-acting

Technical data

Dimensions

Download CAD data → www.festo.com



Quarter turn actuators DAPS with handwheel, single-acting

Technical data

Size	B1 ±0.4	B2	B3	B4	B5	D1 ∅	D2 ∅	D3	D4	D5	D6 ∅	D7
DAPS-0053-...-F0507-...	83.3	38.5	44.8	30	17	50	70	M8	M6	M5	16.2	M6x12
DAPS-0090-...-F0710-...	107.5	51	56.5	30	22	70	102	M10	M8	M5	20.2	M6x12
DAPS-0120-...-F0710-...	111.1	51	60.1	30	22	70	102	M10	M8	M5	22.5	M6x12
DAPS-0180-...-F0710-...	118	56	62	30	22	70	102	M10	M8	M5	25.5	M6x12
DAPS-0240-...-F1012-...	134.9	62	72.9	30	27	102	125	M12	M10	M5	29	M6x12
DAPS-0360-...-F1012-...	148	69.5	78.5	30	27	102	125	M12	M10	M5	31.8	M6x12
DAPS-0480-...-F1012-...	168	74.5	93.5	30	27	102	125	M12	M10	M5	36.5	M6x12
DAPS-0480-...-F14-...	168	74.5	93.5	30	27	–	140	M16	–	M5	36.5	M6x12
DAPS-0720-...-F12-...	186	84.5	101.5	30	36	–	125	M12	–	M5	41	M6x12
DAPS-0720-...-F14-...	186	84.5	101.5	30	36	–	140	M16	–	M5	41	M6x12
DAPS-0960-...-F14-...	207.7	93	114.7	30	36	–	140	M16	–	M5	46	M6x12
DAPS-0960-...-F1216-...	207.7	93	114.7	30	36	125	165	M20	M12	M5	46	M6x12

Size	D8 ∅	EE	H1	H2	H3	H7	L1 ±2	L2	L3	L4	L5	L6
DAPS-0053-...-F0507-...	180	G1/8	103.3	44.8	20±0.4	32	437.5	80	24	152.1	285.4	154.8
DAPS-0090-...-F0710-...	220	G1/8	137.5	56.5	30±0.4	32	545.1	80	24	196.8	348.3	183.5
DAPS-0120-...-F0710-...	220	G1/8	141.1	60.1	30±0.4	32	568.6	80	24	204.8	363.9	199.1
DAPS-0180-...-F0710-...	300	G1/8	148	62	30±0.4	32	646.1	80	24	237	409.1	220.8
DAPS-0240-...-F1012-...	300	G1/4	164.9	72.9	30±0.4	32	685.2	80	24	260.2	425	236.4
DAPS-0360-...-F1012-...	350	G1/4	178	78.5	30±0.4	32	822.8	80	24	306.6	516.2	282.3
DAPS-0480-...-F1012-...	350	G1/4	198	93.5	30±0.5	32	854.6	80	24	324.1	530.5	297.1
DAPS-0480-...-F14-...	350	G1/4	198	93.5	30±0.5	32	854.6	80	24	324.1	530.5	297.1
DAPS-0720-...-F12-...	400	G1/4	216	101.5	30±0.5	32	1052.4	80	24	399	653.4	365.6
DAPS-0720-...-F14-...	400	G1/4	216	101.5	30±0.5	32	1052.4	80	24	399	653.4	365.6
DAPS-0960-...-F14-...	400	G1/4	237.7	114.7	30±0.8	32	1084	80	24	414	670	382.9
DAPS-0960-...-F1216-...	400	G1/4	237.7	114.7	30±0.8	32	1084	80	24	414	670	382.9

Size	T1	T2	T3	T4	T5	T6	T7 +0.1	T8 +0.3	≈C 1 H11	≈C 2 h11	W1
DAPS-0053-...-F0507-...	12	9	13	19.3±0.4	6	7	4	4	17	12	45°
DAPS-0090-...-F0710-...	15	12	16	24.8±0.4	6	7	4	4	22	15	45°
DAPS-0120-...-F0710-...	15	12	17	24.8±0.4	6	7	4	4	22	15	45°
DAPS-0180-...-F0710-...	15	12	19	24.3±0.4	6	7	4	4	22	19	45°
DAPS-0240-...-F1012-...	18	15	19	29.5±0.4	6	7	4	4	27	19	45°
DAPS-0360-...-F1012-...	18	15	19.5	29.5±0.4	6	7	4	4	27	22	45°
DAPS-0480-...-F1012-...	18	15	19.5	38.5±0.5	6	7	4	4	36	24	45°
DAPS-0480-...-F14-...	24	–	19.5	38.5±0.5	6	7	4	4	36	24	45°
DAPS-0720-...-F12-...	18	–	19.5	38.5±0.5	6	7	4	4	36	27	45°
DAPS-0720-...-F14-...	24	–	19.5	38.5±0.5	6	7	4	4	36	27	45°
DAPS-0960-...-F14-...	24	–	18.5	48.5±0.8	6	7	4	4	46	32	45°
DAPS-0960-...-F1216-...	30	18	18.5	48.5±0.8	6	7	4	4	46	32	45°

Quarter turn actuators DAPS with handwheel, single-acting

Technical data

Ordering data – Single-acting

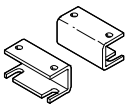
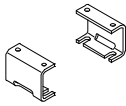
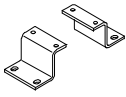
Part No.	Type
Size 0053	
8005026	DAPS-0053-090-RS1-F0507-MW
8005027	DAPS-0053-090-RS2-F0507-MW
8005028	DAPS-0053-090-RS3-F0507-MW
8005029	DAPS-0053-090-RS4-F0507-MW
Size 0090	
8005030	DAPS-0090-090-RS1-F0710-MW
8005031	DAPS-0090-090-RS2-F0710-MW
8005032	DAPS-0090-090-RS3-F0710-MW
8005033	DAPS-0090-090-RS4-F0710-MW
Size 0120	
8005034	DAPS-0120-090-RS1-F0710-MW
8005035	DAPS-0120-090-RS2-F0710-MW
8005036	DAPS-0120-090-RS3-F0710-MW
8005037	DAPS-0120-090-RS4-F0710-MW
Size 0180	
8005038	DAPS-0180-090-RS1-F0710-MW
8005039	DAPS-0180-090-RS2-F0710-MW
8005040	DAPS-0180-090-RS3-F0710-MW
8005041	DAPS-0180-090-RS4-F0710-MW
Size 0240	
8005042	DAPS-0240-090-RS1-F1012-MW
8005043	DAPS-0240-090-RS2-F1012-MW
8005044	DAPS-0240-090-RS3-F1012-MW
8005045	DAPS-0240-090-RS4-F1012-MW
Size 0360	
8005046	DAPS-0360-090-RS1-F1012-MW
8005047	DAPS-0360-090-RS2-F1012-MW
8005048	DAPS-0360-090-RS3-F1012-MW
8005049	DAPS-0360-090-RS4-F1012-MW

Part No.	Type
Size 0480	
8005050	DAPS-0480-090-RS1-F1012-MW
8005051	DAPS-0480-090-RS1-F14-MW
8005052	DAPS-0480-090-RS2-F1012-MW
8005053	DAPS-0480-090-RS2-F14-MW
8005054	DAPS-0480-090-RS3-F1012-MW
8005055	DAPS-0480-090-RS3-F14-MW
8005056	DAPS-0480-090-RS4-F1012-MW
8005057	DAPS-0480-090-RS4-F14-MW
Size 0720	
8005058	DAPS-0720-090-RS1-F12-MW
8005059	DAPS-0720-090-RS1-F14-MW
8005060	DAPS-0720-090-RS2-F12-MW
8005061	DAPS-0720-090-RS2-F14-MW
8005062	DAPS-0720-090-RS3-F12-MW
8005063	DAPS-0720-090-RS3-F14-MW
8005064	DAPS-0720-090-RS4-F12-MW
8005065	DAPS-0720-090-RS4-F14-MW
Size 0960	
8005067	DAPS-0960-090-RS1-F1216-MW
8005066	DAPS-0960-090-RS1-F14-MW
8005069	DAPS-0960-090-RS2-F1216-MW
8005068	DAPS-0960-090-RS2-F14-MW
8005071	DAPS-0960-090-RS3-F1216-MW
8005070	DAPS-0960-090-RS3-F14-MW
8005073	DAPS-0960-090-RS4-F1216-MW
8005072	DAPS-0960-090-RS4-F14-MW

Quarter turn actuators DAPS

Accessories

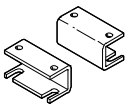
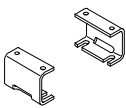
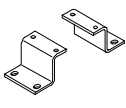
Ordering data – Adapter kits for mounting the sensor boxes SRBP, SRAP

	Size	Dimensions [mm]	CRC ¹⁾	Part No.	Type
DAPS – Double-acting					
	DAPS-0015- ... -F03	20x30x80	3	568275	DASB-P1-HA-SB
	DAPS-0015- ... -F04				
	DAPS-0030- ... -F0305				
	DAPS-0030- ... -F04				
	DAPS-0060- ... -F04				
	DAPS-0060- ... -F0507				
	DAPS-0106- ... -F0507				
	DAPS-0180- ... -F0710	30x30x80		572418	DASB-P1-HB-SB
	DAPS-0240- ... -F0710				
	DAPS-0360- ... -F0710				
	DAPS-0480- ... -F1012				
	DAPS-0720- ... -F1012				
	DAPS-0960- ... -F12				
	DAPS-0960- ... -F14				
	DAPS-1440- ... -F12				
	DAPS-1440- ... -F14				
	DAPS-1920- ... -F14				
	DAPS-1920- ... -F1216				
	DAPS-2880- ... -F16	30x30x130		572419	DASB-P1-HC-SB
	DAPS-3840- ... -F16				
	DAPS-5760- ... -F25				
	DAPS-8000- ... -F25				

1) Corrosion resistance class CRC 3 to Festo standard FN 940070

High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Ordering data – Adapter kits for mounting the sensor boxes SRBP, SRAP

	Size	Dimensions [mm]	CRC ¹⁾	Part No.	Type
DAPS – Single-acting					
	DAPS-0015- ... -F0305	20x30x80	3	568275	DASB-P1-HA-SB
	DAPS-0015- ... -F04				
	DAPS-0030- ... -F04				
	DAPS-0030- ... -F0507				
	DAPS-0053- ... -F0507				
	DAPS-0090- ... -F0710	30x30x80		572418	DASB-P1-HB-SB
	DAPS-0120- ... -F0710				
	DAPS-0180- ... -F0710				
	DAPS-0240- ... -F1012				
	DAPS-0360- ... -F1012				
	DAPS-0480- ... -F12				
	DAPS-0480- ... -F14				
	DAPS-0720- ... -F12				
	DAPS-0720- ... -F14				
	DAPS-0960- ... -F14				
	DAPS-0960- ... -F1216				
	DAPS-1440- ... -F16	30x30x130		572419	DASB-P1-HC-SB
	DAPS-1920- ... -F16				
	DAPS-2880- ... -F16				
	DAPS-4000- ... -F25				

1) Corrosion resistance class CRC 3 to Festo standard FN 940070

High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

06 Ball valves and ball valve units

Brass and stainless steel ball valves as single components or ready assembled with a pneumatic actuator





VZBA

Ball valves

- + 2-way, stainless steel
- + 3-way, stainless steel
- + Thread and weld-on ends

→ page 495, 511



VZBD

Ball valves

- + 2-way, stainless steel
- + Long weld-on ends and clamp ferrules
- + Electroplated surface

→ page 523



VZBF

Ball valves

- + With flange to ANSI B16.5 class 150
- + 2-way, stainless steel

→ page 530



VAPB

Ball valves

- + 2-way, brass

→ page 542



QH

Ball valves

- + 2-way, manual, brass

→ page 563



VZBA

Ball valve actuator units

- + 2-way, stainless steel
- + 3-way, stainless steel

→ page 576, 590

Contents

Ball valves – Key features and product range overview	490
Ball valves VZBA, 2-way, stainless steel	495
Ball valves VZBE, 2-way, stainless steel	501
Ball valves VZBA, 3-way, stainless steel	511
Ball valves VZBE, 3-way, stainless steel	517
Ball valves VZBD, 2-way, stainless steel	523
Ball valves VZBF, 2-way, stainless steel	530
Ball valves VZBC, 2-way, stainless steel	536
Ball valves VAPB, 2-way, brass	542
Ball valves VZBM, 2-way, brass	547
Ball valves VZBM, 3-way, brass	553
Ball valves VZBM, 2-way, manual, brass	559
Ball valves QH, 2-way, manual, brass	563
Ball valve actuator units – Key features and product range overview	570
Ball valve actuator units VZBA, 2-way, stainless steel	576
Ball valve actuator units VZBC, 2-way, stainless steel	584
Ball valve actuator units VZBA, 3-way, stainless steel	590
Ball valve actuator units VZBM, 2-way, brass	596
Ball valve actuator units VZBM, 3-way, brass	602
Ball valve actuator units VZPR, 2-way, brass	607

Ball valves, mechanically actuated VZB..., VAPB, QH



Overview, configuration and ordering
→ www.festo.com/catalogue/vzba



Additional information, support and user documentation
→ www.festo.com/sp/vzba

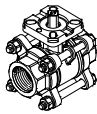
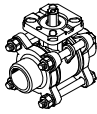
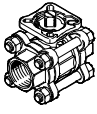
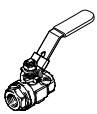


- + Process valve connection: thread, weld-on end, clamp ferrule, ring housing with threaded flange
- + Nominal width DN 8 ... 100, 1/2" ... 8"
- + Nominal pressure process valve PN 0 ... 63

- + Flange hole pattern to ISO 5211
- + Corrosion-resistant and acid-resistant versions

Ball valves





Key features and product range overview

Version	Type	Process valve connection	Nominal width DN	Flange hole pattern to ISO 5211	Process valve nominal pressure PN	→ Page/Internet	
Stainless steel	2-way, with pipe thread to EN 10226-1						
		VZBA-...-GG	Rp1/4	8	F0304	63	495
			Rp3/8	10	F0304		
			Rp1/2	15	F0304		
			Rp3/4	20	F0304		
			Rp1	25	F0405		
			Rp1 1/4	32	F0405		
			Rp1 1/2	40	F0507		
			Rp2	50	F0507		
			Rp2 1/2	65	F0710		
Rp3			80	F0710			
Rp4	100	F10					
Stainless steel	2-way, with welded ends to EN 12627						
		VZBA-...-WW	Welded end	8	F0304	63	495
				10	F0304		
				15	F0304		
				20	F0304		
				25	F0405		
				32	F0405		
				40	F0507		
				50	F0507		
				65	F0710		
80				F0710			
100	F10						
Stainless steel	2-way, with pipe thread to ASME B1.201						
		VZBE	1/4 NPT	8	F0304	63	501
			3/8 NPT	10	F0304		
			1/2 NPT	15	F0304		
			3/4 NPT	20	F0304		
			1 NPT	25	F0405		
			1 1/4 NPT	32	F0405		
			1 1/2 NPT	40	F0507		
			2 NPT	50	F0507		
			2 1/2 NPT	65	F0710		
3 NPT			80	F0710			
4 NPT	100	F1012					
Stainless steel	2-way, manual, with pipe thread to ASME B1.201						
		VZBE	1/4 NPT	8	-	63	507
			3/8 NPT	10			
			1/2 NPT	15			
			3/4 NPT	20			
			1 NPT	25			
			1 1/4 NPT	32			
			1 1/2 NPT	40			
			2 NPT	50			
			2 1/2 NPT	65			
3 NPT			80				

06







Ball valves and ball valve units

Key features and product range overview

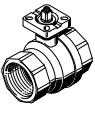



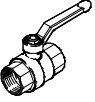
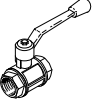
Version		Type	Process valve connection	Nominal width DN	Flange hole pattern to ISO 5211	Process valve nominal pressure PN	→ Page/Internet	
Stainless steel		3-way, L-shaped bore, with pipe thread to EN 10226-1						511
		VZBA	Rp1/4	8	F0304	63		
			Rp3/8	10	F0304			
			Rp1/2	15	F0304			
			Rp3/4	20	F0405			
			Rp1	25	F0405			
			Rp1 1/4	32	F0405			
			Rp1 1/2	40	F0405			
	Rp2		50	F05				
		3-way, T-shaped bore, with pipe thread to EN 10226-1						511
		VZBA	Rp1/4	8	F0304	63		
			Rp3/8	10	F0304			
			Rp1/2	15	F0304			
			Rp3/4	20	F0405			
			Rp1	25	F0405			
			Rp1 1/4	32	F0405			
			Rp1 1/2	40	F0405			
	Rp2		50	F05				
		3-way, L-shaped bore, with pipe thread to ASME B1.201						517
		VZBE	1/4 NPT	8	F04	-		
			3/8 NPT	10	F04			
			1/2 NPT	15	F04			
			3/4 NPT	20	F04			
			1 NPT	25	F05			
			1 1/4 NPT	32	F05			
			1 1/2 NPT	40	F0507			
	2 NPT		50	F0507				
		3-way, T-shaped bore, with pipe thread to ASME B1.201						517
VZBE		1/4 NPT	8	F04	-			
		3/8 NPT	10	F04				
		1/2 NPT	15	F04				
		3/4 NPT	20	F04				
		1 NPT	25	F05				
		1 1/4 NPT	32	F05				
		1 1/2 NPT	40	F0507				
	2 NPT	50	F0507					

Ball valves

Key features and product range overview

Version		Type	Process valve connection	Nominal width DN	Flange hole pattern to ISO 5211	Process valve nominal pressure PN	→ Page/Internet
Stainless steel	2-way, with extended welded ends to EN 1127						
		VZBD	Welded end	15	F0304	16	523
				20	F0304		
				25	F0405		
				32	F0405		
				40	F0507		
				50	F0507		
				65	F0710		
	2-way, with extended welded ends to ASME-BPE						
		VZBD	Welded end	15	F0304	16	523
20				F0304			
25				F0405			
40				F0507			
50				F0507			
65				F0710			
80				F0710			
100	F1012						
2-way, with clamp ferrule to DIN 32676-B							
	VZBD	Clamp ferrule	15	F0304	16	523	
			20	F0304			
			25	F0405			
			32	F0405			
			40	F0507			
			50	F0507			
			65	F0710			
2-way, with clamp ferrule to ASME-BPE							
	VZBD	Clamp ferrule	15	F0304	16	523	
			20	F0304			
			25	F0405			
			40	F0507			
			50	F0507			
			65	F0710			
			80	F0710			
100	F1012						
2-way, with flange to ANSI B16.5 class 150							
	VZBF	Ring housing with threaded flange	1/2"	F0304	20	530	
			3/4"	F0304			
			1"	F0405			
			1 1/4"	F0405			
			1 1/2"	F0507			
			2"	F0507			
			2 1/2"	F0710			
			3"	F0710			
			4"	F1012			
			6"	F1012			
8"	F14						
2-way, compact design with flange to DIN EN 1092-1							
	VZBC....FF	Ring housing with threaded flange	15	F0304	40	536	
			20	F0304			
			25	F0405			
			32	F0405			
			40	F0507			
			50	F0507			
			65	F07	16		
			80	F07			
			100	F0710			

Key features and product range overview

Version		Type	Process valve connection	Nominal width DN	Flange hole pattern to ISO 5211	Process valve nominal pressure PN	→ Page/Internet		
Brass		VAPB	2-way, with pipe thread to EN 10226-1					40	542
			Rp1/4	8	F03				
			Rp3/8	10	F03				
			Rp1/2	15	F03				
			Rp3/4	20	F03				
			Rp1	25	F0304				
			Rp1 1/4	32	F0405				
			Rp1 1/2	40	F0405				
	Rp2	50	F05						
	Rp2 1/2	65	F07						
		VZBM	2-way, with pipe thread to EN 10226-1					40	547
			Rp1/4	8	F03				
			Rp3/8	10	F03				
			Rp1/2	15	F03				
			Rp3/4	20	F03				
			Rp1	25	F03				
			Rp1 1/4	32	F03				
			Rp1 1/2	40	F0305				
	Rp2	50	F0305						
		VZBM	3-way, L-shaped bore, with pipe thread to EN 10226-1					40	553
			Rp1/4	8	F03				
			Rp3/8	10	F03				
			Rp1/2	15	F03				
			Rp3/4	20	F03				
			Rp1	25	F0304				
			Rp1 1/4	32	F0405				
			Rp1 1/2	40	F0405				
	Rp2	50	F05						
	VZBM	3-way, T-shaped bore, with pipe thread to EN 10226-1					40	553	
		Rp1/4	8	F03					
		Rp3/8	10	F03					
		Rp1/2	15	F03					
		Rp3/4	20	F03					
		Rp1	25	F0304					
		Rp1 1/4	32	F0405					
		Rp1 1/2	40	F0405					
Rp2	50	F05							
	VZBM	2-way, manual, with pipe thread to EN 10226-1					50	559	
		Rp1/4	8	-					
		Rp3/8	10	-					
		Rp1/2	15	-					
		Rp3/4	20	-					
		Rp1	25	-					
		Rp1 1/4	32	-					
Rp1 1/2	40	-							
	QH	2-way, manual, with pipe thread to ISO 228-1					-	564	
		G1/4	10	-					
		G3/8	10	-					
		G1/2	15	-					
		G3/4	20	-					
		G1	25	-					
G1 1/2	40	-							

Ball valves VZBA, 2-way

Type codes

VZBA - 1/4" - G G - 63 - T - 22 - F0304 - V4 V4 - T

Type	
VZBA	Ball valve

Nominal width DN	
1/4"	DN8
3/8"	DN10
1/2"	DN15
3/4"	DN20
1"	DN25
1 1/4"	DN32
1 1/2"	DN40
2"	DN50
2 1/2"	DN65
3"	DN80
4"	DN100

Connection type 1	
G	Pipe thread to EN 10226-1
W	Welded end to EN 12627

Connection type 2	
G	Pipe thread to EN 10226-1
W	Welded end to EN 12627

Process valve nominal pressure PN	
63	63 bar

Design	
T	Three parts

Valve function	
22	2/2-way

Flanged connection to ISO 5211	
F0304	Hole pattern 03 and 04
F0405	Hole pattern 04 and 05
F0507	Hole pattern 05 and 07
F07	Hole pattern 07
F0710	Hole pattern 07 and 10
F10	Hole pattern 10

Housing material	
V4	Stainless steel 1.4408

Shut-off element material	
V4	Stainless steel 1.4408



Sealing material	
T	PTFE

06

Ball valves and ball valve units

Technical data



-  - Connecting thread
Rp1/4 ... Rp4
-  - Flow rate
7 ... 1414 m³/h

- With pipe thread or welded end



General technical data												
Process valve pipe thread connection	Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp11/4	Rp11/2	Rp2	Rp21/2	Rp3	Rp4	
Nominal width DN	8	10	15	20	25	32	40	50	65	80	100	
Valve function	2/2											
Design	2-way ball valve											
Sealing principle	Soft											
Actuation type	Mechanical											
Manual override	None											
Switching position indication	Slot direction = flow direction											
Flow direction	Reversible											
Type of mounting	In-line installation											
Assembly position	Any											
Based on standard	ISO 5211											
	EN 10226-1											
	EN 558											
	EN 12627											
Actuating torque [Nm]	6	6	10	14	17	24	29	44	78	112	140	
Internal diameter [mm]	10	12	16	20	25	32	38	50	65	80	100	
Flow rate Kv [m ³ /h]	7	10	19.4	45.6	71.5	105	170	275	507	905	1414	

Operating and environmental conditions												
Process valve pipe thread connection	Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp11/4	Rp11/2	Rp2	Rp21/2	Rp3	Rp4	
Medium ¹⁾	Compressed air to ISO 8573-1:2010 [-:::]											
	Neutral liquids											
	Inert gases											
	Water – no water vapour											
Process valve nominal pressure	PN 63											
Temperature of medium [°C]	-10 ... +200											
Corrosion resistance class CRC ²⁾	3											
CE marking (see declaration of conformity)	-					To EU Pressure Equipment Directive						
→ www.festo.com												

1) Other media on request

2) Corrosion resistance class CRC 3 to Festo standard FN 940070

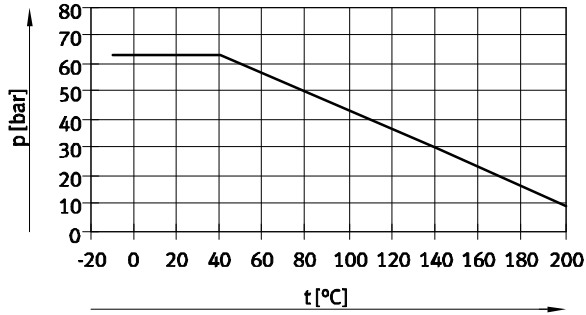
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Ball valves VZBA, 2-way

Technical data

Materials		Material number
Housing	High-alloy stainless steel	1.4408
Ball		1.4408
Shaft		1.4401
Seals	PTFE	
	PTFE-reinforced	
Note on materials	RoHS compliant	
	Contains paint-wetting impairment substances	

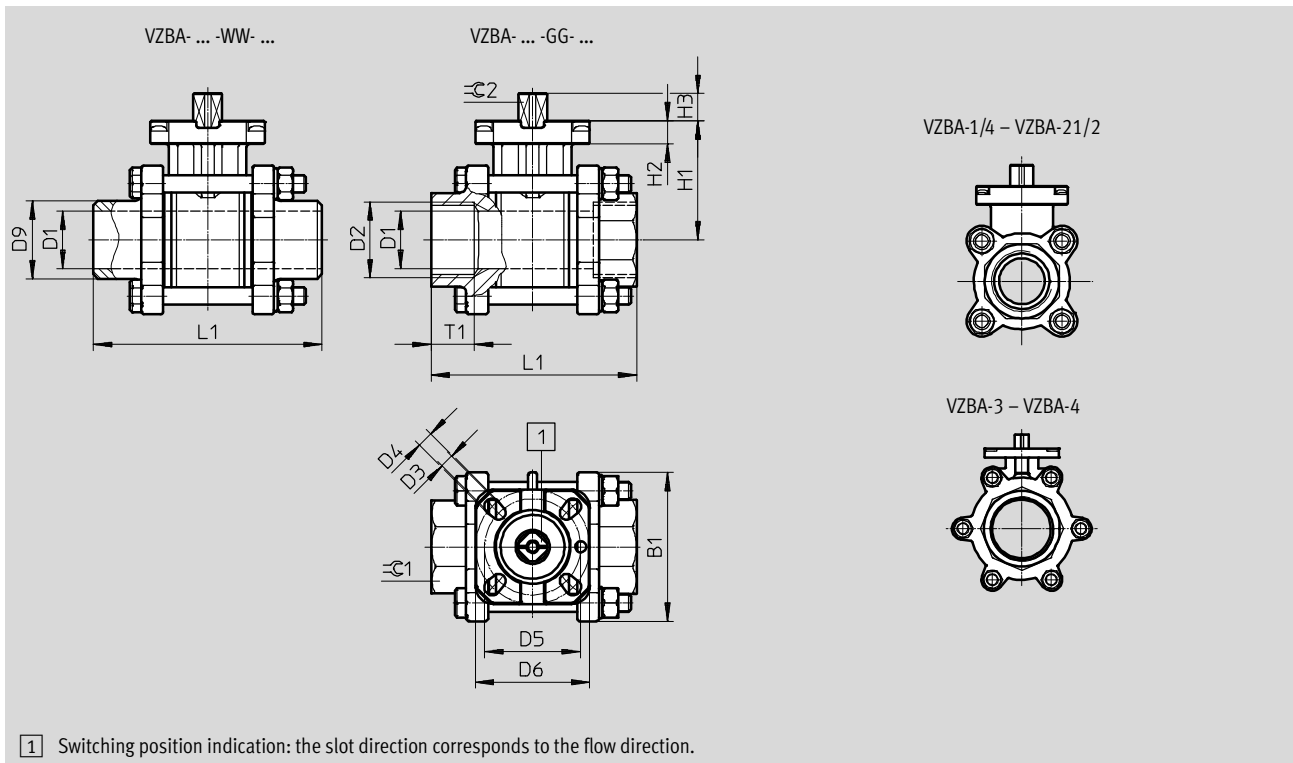
Permissible operating pressure p as a function of the temperature of the medium t



Technical data

Dimensions

Download CAD data → www.festo.com

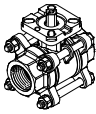
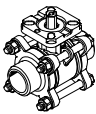


1 Switching position indication: the slot direction corresponds to the flow direction.

Type	B1	D1 ∅ ±0.15	D2	D3 ∅	D4 ∅	D5 ∅	D6 ∅	D9 ∅	H1	H2	H3 ±0.5	L1 ±2	T1	⌀1	⌀2
VZBA-1/4"-GG-63-T-22-F0304-V4V4T	42	10	Rp1/4	6	6	36	42	-	40	9	8.5	65	14.5	24	9
VZBA-3/8"-GG-63-T-22-F0304-V4V4T	42	12	Rp3/8	6	6	36	42	-	40	9	8.5	65	14.5	24	9
VZBA-1/2"-GG-63-T-22-F0304-V4V4T	49	16	Rp1/2	6	6	36	42	-	40	9	8.5	75	16	29	9
VZBA-3/4"-GG-63-T-22-F0304-V4V4T	54	20	Rp3/4	6	6	36	42	-	44	9	8.5	80	17	35	9
VZBA-1"-GG-63-T-22-F0405-V4V4T	60.5	25	Rp1	6	7	42	50	-	52	10	11.5	90	19	41	11
VZBA-1 1/4"-GG-63-T-22-F0405-V4V4T	71.5	32	Rp1 1/4	6	7	42	50	-	58	10	11.5	110	23	50	11
VZBA-1 1/2"-GG-63-T-22-F0507-V4V4T	80.5	38	Rp1 1/2	7	9	50	70	-	68	13	15.5	120	24	58	14
VZBA-2"-GG-63-T-22-F0507-V4V4T	99.5	50	Rp2	7	9	50	70	-	77	13	15.5	140	25.8	73	14
VZBA-2 1/2"-GG-63-T-22-F0710-V4V4T	127	65	Rp2 1/2	9	11	70	102	-	98	13	18.5	185	34	90	17
VZBA-3"-GG-63-T-22-F0710-V4V4T	191	80	Rp3	9	11	70	102	-	110	13	18.5	205	36	105	17
VZBA-4"-GG-63-T-22-F10-V4V4T	222	100	Rp4	-	11	-	102	-	138	16	23.5	240	38	135	22
VZBA-1/4"-WW-63-T-22-F0304-V4V4T	42	10	-	6	6	36	42	16	40	9	8.5	70	-	-	9
VZBA-3/8"-WW-63-T-22-F0304-V4V4T	42	12	-	6	6	36	42	18	40	9	8.5	70	-	-	9
VZBA-1/2"-WW-63-T-22-F0304-V4V4T	49	16	-	6	6	36	42	22	40	9	8.5	75	-	-	9
VZBA-3/4"-WW-63-T-22-F0304-V4V4T	54	20	-	6	6	36	42	28	44	9	8.5	90	-	-	9
VZBA-1"-WW-63-T-22-F0405-V4V4T	60.5	25	-	6	7	42	50	35	52	10	11.5	100	-	-	11
VZBA-1 1/4"-WW-63-T-22-F0405-V4V4T	71.5	32	-	6	7	42	50	44	58	10	11.5	110	-	-	11
VZBA-1 1/2"-WW-63-T-22-F0507-V4V4T	80.5	38	-	7	9	50	70	50	68	13	15.5	125	-	-	14
VZBA-2"-WW-63-T-22-F0507-V4V4T	99.5	50	-	7	9	50	70	62	77	13	15.5	150	-	-	14
VZBA-2 1/2"-WW-63-T-22-F0710-V4V4T	127	65	-	9	11	70	102	77	98	13	18.5	190	-	-	17
VZBA-3"-WW-63-T-22-F0710-V4V4T	191	80	-	9	11	70	102	91	110	13	18.5	220	-	-	17
VZBA-4"-WW-63-T-22-F10-V4V4T	222	100	-	-	11	-	102	117	138	16	23.5	270	-	-	22

Ball valves VZBA, 2-way

Technical data

Ordering data		Version	Process valve connection	Weight [g]	Part No.	Type
	With pipe thread	Rp1/4	650	1686625	VZBA-1/4"-GG-63-T-22-F0304-V4V4T	
		Rp3/8	650	1686632	VZBA-3/8"-GG-63-T-22-F0304-V4V4T	
		Rp1/2	650	1686636	VZBA-1/2"-GG-63-T-22-F0304-V4V4T	
		Rp3/4	850	1686639	VZBA-3/4"-GG-63-T-22-F0304-V4V4T	
		Rp1	1250	1686640	VZBA-1"-GG-63-T-22-F0405-V4V4T	
		Rp11/4	1850	1686641	VZBA-1 1/4"-GG-63-T-22-F0405-V4V4T	
		Rp11/2	2800	1686643	VZBA-1 1/2"-GG-63-T-22-F0507-V4V4T	
		Rp2	4550	1686646	VZBA-2"-GG-63-T-22-F0507-V4V4T	
		Rp2 1/2	9200	1686648	VZBA-2 1/2"-GG-63-T-22-F0710-V4V4T	
		Rp3	13950	1686651	VZBA-3"-GG-63-T-22-F0710-V4V4T	
	With welded ends	Welded end	650	1686656	VZBA-1/4"-WW-63-T-22-F0304-V4V4T	
		650	1686662	VZBA-3/8"-WW-63-T-22-F0304-V4V4T		
		650	1686663	VZBA-1/2"-WW-63-T-22-F0304-V4V4T		
		850	1686665	VZBA-3/4"-WW-63-T-22-F0304-V4V4T		
		1250	1686689	VZBA-1"-WW-63-T-22-F0405-V4V4T		
		1850	1686696	VZBA-1 1/4"-WW-63-T-22-F0405-V4V4T		
		2800	1686697	VZBA-1 1/2"-WW-63-T-22-F0507-V4V4T		
		4550	1686699	VZBA-2"-WW-63-T-22-F0507-V4V4T		
		9200	1686702	VZBA-2 1/2"-WW-63-T-22-F0710-V4V4T		
		13950	1686704	VZBA-3"-WW-63-T-22-F0710-V4V4T		
22300	1686705	VZBA-4"-WW-63-T-22-F10-V4V4T				

Accessories

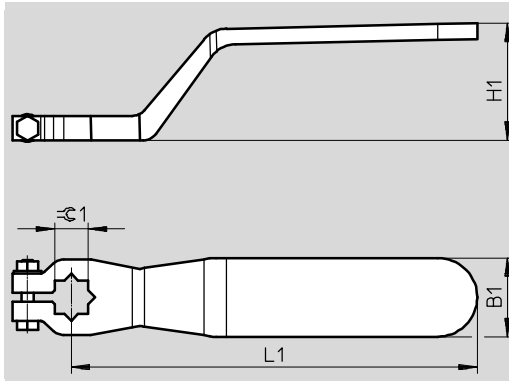
Hand lever VAOH

Information on materials:

- High-alloy stainless steel
- Free of copper and PTFE
- Contains paint-wetting impairment substances



Dimensions and ordering data

Download CAD data → www.festo.com

For connection	B1 ±5	H1 ±5	L1 ±10	≈1 ±0.5	Weight [g]	Part No.	Type
Rp1/4 ... Rp3/4	21	36	120	9	100	542702	VAOH-9-H9
Rp1 ... Rp11/4	26	40	140	11	200	542703	VAOH-11-H9
Rp11/2 ... Rp2	31	46	180	14	300	542704	VAOH-14-H9
Rp21/2 ... Rp3	36	55	240	17	450	542705	VAOH-17-H9
Rp4	36	70	280	22	750	542706	VAOH-22-H9

Ball valves VZBE, 2-way

Type codes

VZBE - 1/4 - T - 63 - T - 2 - F0304 - - V15 V15

Type	
VZBE	Ball valve

Nominal width DN	
1/4	1/4"
3/8	3/8"
1/2	1/2"
3/4	3/4"
1	1"
1 1/4	1 1/4"
1 1/2	1 1/2"
2	2"
2 1/2	2 1/2"
3	3"
4	4"

Process valve connection type	
T	NPT female thread

Nominal pressure	
63	63 bar

Design	
T	Three parts

Valve function	
2	2/2-way

Flanged connection to ISO 5211	
F0304	Hole pattern 03 and 04
F0405	Hole pattern 04 and 05
F0507	Hole pattern 05 and 07
F0710	Hole pattern 07 and 10
F1012	Hole pattern 10 and 12

Actuation type	
-	Via drive

Housing material	
V15	Stainless steel ASTM A351-CF8M/1.4408

Shut-off element material	
V15	Stainless steel ASTM A351-CF8M/1.4408
V16	Stainless steel ASTM A240-316/1.4401


Technical data


Function



- 2-way ball valve made from stainless steel
- NPT version



-  - Connecting thread
1/4 NPT ... 4 NPT

-  - Flow rate
5.1 ... 435.2 m³/h

General technical data		1/4 NPT	3/8 NPT	1/2 NPT	3/4 NPT	1" NPT	1 1/4 NPT	1 1/2 NPT	2" NPT	2 1/2 NPT	3" NPT	4" NPT
Process valve connection												
Nominal width DN		8	10	15	20	25	32	40	50	65	80	100
Valve function		2/2										
Design		2-way ball valve										
Sealing principle		Soft										
Actuation type		Mechanical										
Switching position indication		Slot direction = flow direction										
Flow direction		Reversible										
Type of mounting		In-line installation										
Mounting position		Any										
Based on standard		ISO 5211 ASME B1.20.1										
Breakaway torque at differential pressure, nominal pressure, process valve PN	[Nm]	7	7	7	9	15	23	30	44	79	140	170
Inside diameter	[mm]	11.6	12.5	15	20	25	32	38	50	63	76	96
Flow rate Kv	[m ³ /h]	5.1	5.8	8.5	15.6	25.1	42.6	61.6	111.8	181.9	264.5	435.2

Operating and environmental conditions

Operating and environmental conditions		1/4 NPT	3/8 NPT	1/2 NPT	3/4 NPT	1" NPT	1 1/4 NPT	1 1/2 NPT	2" NPT	2 1/2 NPT	3" NPT	4" NPT
Process valve connection												
Nominal pressure of process valve PN		63										
Temperature of medium	[°C]	-20 ... +200										
Medium ¹⁾		Compressed air to ISO 8573-1:2010 [-::-] Inert gases Water Vapour Neutral fluids										
Certification		CRN										
Corrosion resistance class CRC ²⁾		4										
CE marking (see declaration of conformity) ³⁾		-						To EU Pressure Equipment Directive				

1) Other media on request

2) Corrosion resistance class CRC 4 to Festo standard FN 940070

Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.

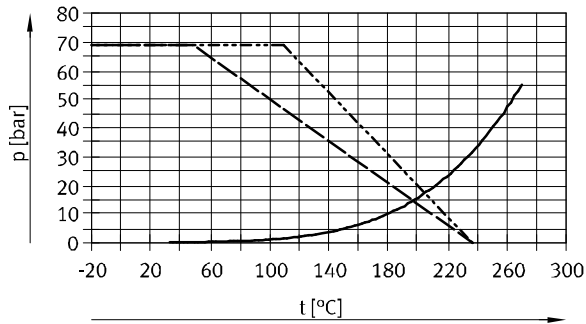
3) Additional information www.festo.com/sp → Certificates.

Ball valves VZBE, 2-way

Technical data

Materials		Material number
Housing	Stainless steel casting	1.4408
Ball	21/2NPT ... 4NPT	High-alloy stainless steel
	1/4NPT ... 2NPT	Stainless steel casting
Shaft	High-alloy stainless steel	1.4401
Seat seal	PTFE	
Seals	FPM	
	PTFE	
Note on materials	RoHS compliant	
	Contains paint-wetting impairment substances	

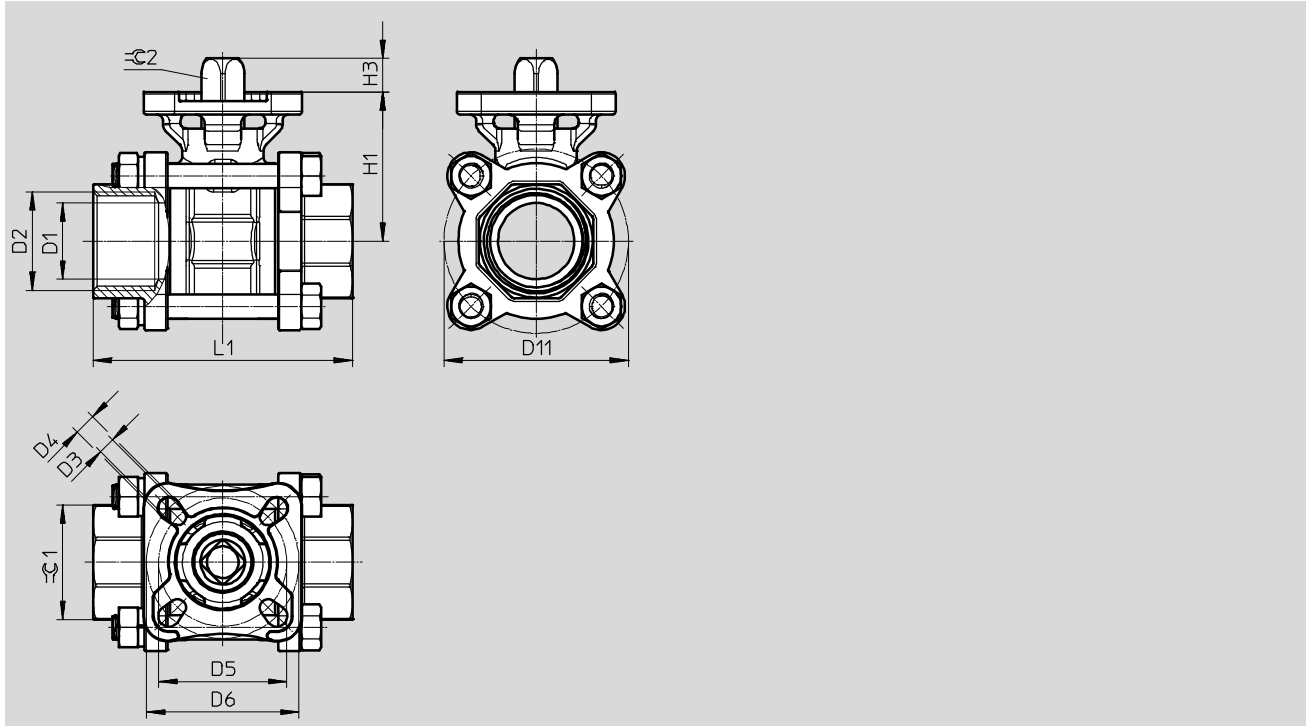
Permissible operating pressure p as a function of the temperature of the medium t



- Saturated water vapour
- - - PTFE-reinforced
- · - PTFE, modified

Technical data

Dimensions

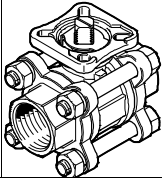
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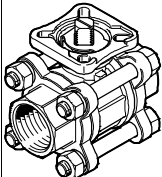
Type	D1 Ø	D2	D3 Ø	D4 Ø	D5 Ø	D6 Ø	D11 Ø	H1	H3	L1	≈1	≈2
VZBE-1/4-...	11.6	1/4 NPT	5.5	5.5	36	42	38	35.3	7.5	65	19.2	9
VZBE-3/8-...	12.5	3/8 NPT	5.5	5.5	36	42	38	35.3	7.5	65	22.5	9
VZBE-1/2-...	15	1/2 NPT	5.5	5.5	36	42	44	36.4	7.1	65	26	9
VZBE-3/4-...	20	3/4 NPT	5.5	5.5	36	42	52	39.5	7.3	75	32	9
VZBE-1-...	25	1" NPT	5.5	7	42	50	60.5	49	11	85	37.5	11
VZBE-11/4-...	32	1 1/4 NPT	5.5	7	42	50	74	54.2	11.5	101	48	11
VZBE-11/2-...	38	1 1/2 NPT	7	9	50	70	86	64.6	12.4	112	55	14
VZBE-2-...	50	2" NPT	7	9	50	70	102.5	72.5	13.6	130	67	14
VZBE-2 1/2-...	63	2 1/2 NPT	9	11	70	102	129	92	16.3	162	85	17
VZBE-3-...	76	3" NPT	9	11	70	102	146.5	100	16.3	188	100	17
VZBE-4-...	96	4" NPT	11	13	102	125	186.4	130	20.5	224	130	22

Ball valves VZBE, 2-way

Technical data

★ Core product range

Ordering data	Process valve connection	Weight [g]	Part No.	Type
	1/2 NPT	560	★ 4809117 ¹⁾	VZBE-1/2-T-63-T-2-F0304-V15V15
	3/4 NPT	660	★ 4809118 ¹⁾	VZBE-3/4-T-63-T-2-F0304-V15V15
	1 NPT	1000	★ 4809119 ¹⁾	VZBE-1-T-63-T-2-F0405-V15V15
	1 1/2 NPT	2420	★ 4809121 ¹⁾	VZBE-11/2-T-63-T-2-F0507-V15V15
	2 NPT	3520	★ 4809122 ¹⁾	VZBE-2-T-63-T-2-F0507-V15V15

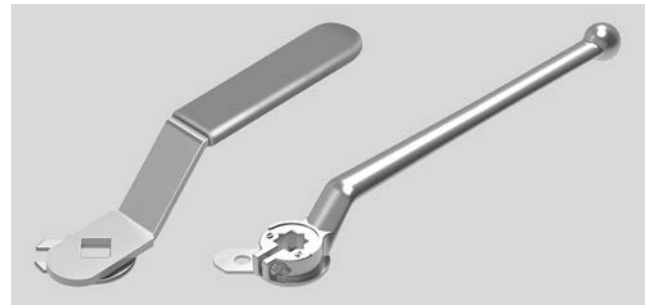
Ordering data	Process valve connection	Weight [g]	Part No.	Type
	1/4 NPT	460	4836917 ¹⁾	VZBE-1/4-T-63-T-2-F0304-V15V15
	3/8 NPT	460	4836918 ¹⁾	VZBE-3/8-T-63-T-2-F0304-V15V15
	1 1/4 NPT	1600	4809120 ¹⁾	VZBE-11/4-T-63-T-2-F0405-V15V15
	2 1/2 NPT	5050	4809123 ¹⁾	VZBE-21/2-T-63-T-2-F0710-V15V1 6
	3 NPT	7750	4809124 ¹⁾	VZBE-3-T-63-T-2-F0710-V15V1 6
	4 NPT	15800	4809126 ¹⁾	VZBE-4-T-63-T-2-F1012-V15V1 6

1) Festo is only a retailer of this product, not the manufacturer.

Accessories

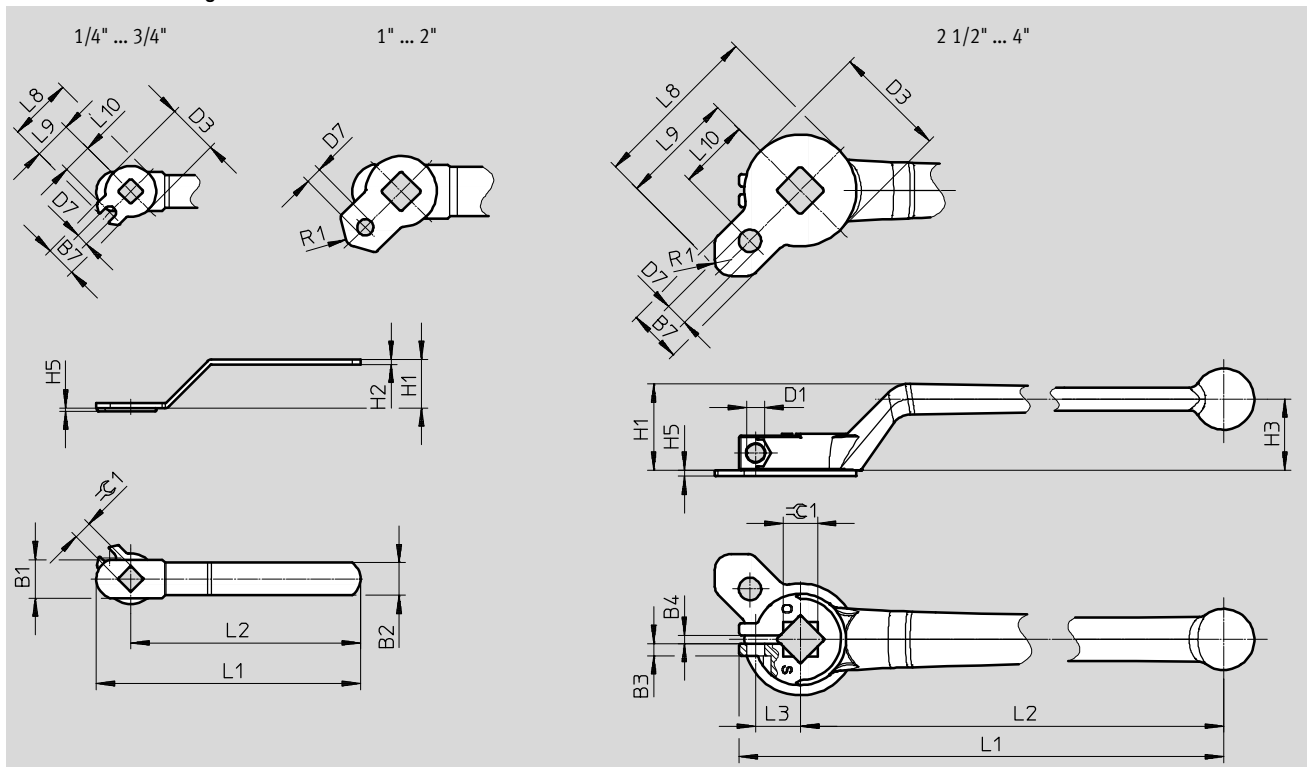
Hand lever VAOH

- High-alloy stainless steel
- Free of copper and PTFE
- RoHS compliant
- Contains paint-wetting impairment substances
- Lockable



Dimensions and ordering data

Download CAD data → www.festo.com



Dimensions and ordering data

For connection	B1	B2	B3	B4	B7	D1 Ø	D3 Ø	D7 Ø	H1	H2	H3	H5	L1
1/4" ... 3/4"	19	16	-	-	15.8	-	25	6	24	2.5	-	1.5	130
1" ... 1 1/4"	22.5	20	-	-	17.8	-	29	7	26	4	-	1.8	160
1 1/2" ... 2"	26.5	24	-	-	26	-	35	8	34.5	5	-	2	194
2 1/2" ... 3"	-	-	6	4	27.5	9	55	11	42.5	-	35	3	355
4"	-	-	6	4	27.5	9	70	12	42.5	-	38	3	355

For connection	L2	L3	L8	L9	L10	R1	±C1 ±0.5	CRC ²⁾	Weight [g]	Part No.	Type
1/4" ... 3/4"	113	-	33.5	21.1	18	-	9	3	40	4895383 ¹⁾	VAOH-F7-9-H9-A-22
1" ... 1 1/4"	138.5	-	41.5	27	21	6	11	3	100	4895384 ¹⁾	VAOH-F7-11-H9-A-22
1 1/2" ... 2"	170	-	54	36.5	25	5	14	3	180	4895385 ¹⁾	VAOH-F7-14-H9-A-22
2 1/2" ... 3"	325	22	83.6	56.1	35	8	17	3	850	4895386 ¹⁾	VAOH-F7-17-H9-A-22
4"	325	22	102.7	67.7	51	7	22	3	900	4895387 ¹⁾	VAOH-F7-22-H9-A-22

1) Festo is only a retailer of this product, not the manufacturer.
 2) Corrosion resistance class CRC 3 to Festo standard FN 940070
 High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Ball valves VZBE, manual

Type codes

VZBE - 1/4 - T - 63 - D - 2 - - M - V15 V15

Type	
VZBE	Ball valve

Nominal width DN	
1/4	1/4"
3/8	3/8"
1/2	1/2"
3/4	3/4"
1	1"
1 1/4	1 1/4"
1 1/2	1 1/2"
2	2"
2 1/2	2 1/2"
3	3"

Process valve connection type	
T	NPT female thread

Nominal pressure	
63	63 bar

Design	
D	Two parts

Valve function	
2	2/2-way

Flanged connection to ISO 5211	
-	Without


Actuation type	
M	With hand lever


Housing material	
V15	Stainless steel ASTM A351-CF8M/1.4408

Shut-off element material	
V15	Stainless steel ASTM A351-CF8M/1.4408
V16	Stainless steel ASTM A240-316/1.4401

Technical data



-  - Connecting thread
1/4NPT ... 3NPT

-  - Flow rate
5 ... 264.5 m³/h

- 2-way ball valve made from stainless steel
- With hand lever
- NPT version



General technical data										
Process valve connection	1/4NPT	3/8NPT	1/2NPT	3/4NPT	1NPT	1 1/4NPT	1 1/2NPT	2NPT	2 1/2NPT	3NPT
Nominal width DN	8	10	15	20	25	32	40	50	65	80
Valve function	2/2									
Design	2-way ball valve									
Sealing principle	Soft									
Actuation type	Mechanical									
Switching position indication	Slot direction = flow direction									
Flow direction	Reversible									
Type of mounting	In-line installation									
Mounting position	Any									
Based on standard	ASME B1.20.1									
Breakaway torque at differential pressure, nominal pressure, process valve PN [Nm]	3.5	4	5.5	7.5	11	15	20	40	60	85
Internal diameter [mm]	11.6	12.5	15	20	25	32	38	50	63	76
Flow rate Kv [m ³ /h]	5	5.8	8.5	15.6	25.1	42.6	61.6	111.8	181.9	264.5

Operating and environmental conditions										
Process valve connection	1/4NPT	3/8NPT	1/2NPT	3/4NPT	1NPT	1 1/4NPT	1 1/2NPT	2NPT	2 1/2NPT	3NPT
Medium ¹⁾	Compressed air to ISO 8573-1:2010 [-:::]									
	Inert gases									
	Water									
	Vapour									
	Neutral liquids									
Process valve nominal pressure PN	63									
Temperature of medium [°C]	-20 ... +200									
Certification	CRN									
Corrosion resistance class CRC ²⁾	3									
CE marking (see declaration of conformity) ³⁾	-					To EU Pressure Equipment Directive				

1) Other media on request

2) Corrosion resistance class CRC 3 to Festo standard FN 940070

High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

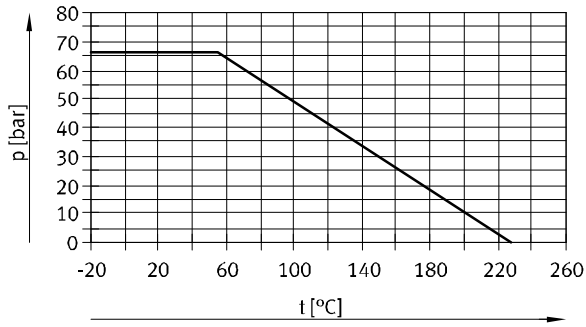
3) Additional information www.festo.com/sp → Certificates.

Ball valves VZBE, manual

Technical data

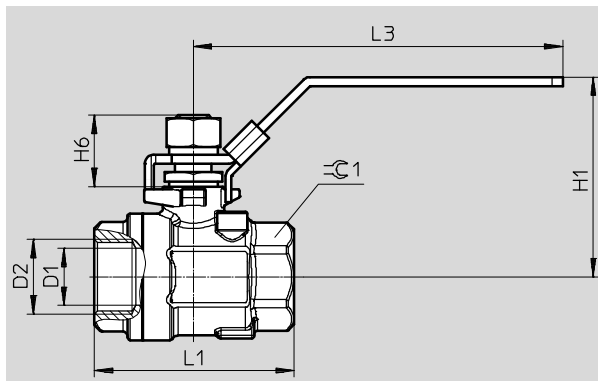
Materials		Material number
Housing	Stainless steel casting	1.4408
Ball	Stainless steel casting	1.4408
	High-alloy stainless steel	1.4401
Shaft	High-alloy stainless steel	1.4401
Seals	PTFE	
Note on materials	RoHS compliant	
	Contains paint-wetting impairment substances	

Permissible operating pressure p as a function of the temperature of the medium t



Technical data

Dimensions

Download CAD data → www.festo.com

Type	D1 ∅	D2	H1	H6	L1 ±2	L3	⊕C1
VZBE-1/4-...	11.6	1/4 NPT	58.5	18.5	50.8	99.5	19
VZBE-3/8-...	12.5	3/8 NPT	58.5	18.5	50.8	99.5	22.5
VZBE-1/2-...	15	1/2 NPT	60.5	18.8	58	99.5	26
VZBE-3/4-...	20	3/4 NPT	63	23.4	65.6	123	32
VZBE-1-...	25	1 NPT	79.5	26.2	78.7	149	38
VZBE-11/4-...	32	1 1/4 NPT	86	23.6	90	149	48
VZBE-11/2-...	38	1 1/2 NPT	101.7	28.2	105	190	54.8
VZBE-2-...	50	2 NPT	109.3	23.4	124	190	67
VZBE-21/2-...	63	2 1/2 NPT	140	39.4	146	247	85
VZBE-3-...	76	3 NPT	148.5	39.4	163.2	247	100

★ Core product range

Ordering data

	Process valve connection	Weight [g]	Part No.	Type
	1/2 NPT	300	★ 4745216 ¹⁾	VZBE-1/2-T-63-D-2-M-V15V15
	3/4 NPT	500	★ 4745218 ¹⁾	VZBE-3/4-T-63-D-2-M-V15V15
	1 NPT	800	★ 4745219 ¹⁾	VZBE-1-T-63-D-2-M-V15V15
	1 1/2 NPT	1800	★ 4745221 ¹⁾	VZBE-11/2-T-63-D-2-M-V15V15
	2 NPT	2700	★ 4745223 ¹⁾	VZBE-2-T-63-D-2-M-V15V15

Ordering data

	Process valve connection	Weight [g]	Part No.	Type
	1/4 NPT	200	4745214 ¹⁾	VZBE-1/4-T-63-D-2-M-V15V15
	3/8 NPT	200	4745215 ¹⁾	VZBE-3/8-T-63-D-2-M-V15V15
	1 1/4 NPT	1100	4745220 ¹⁾	VZBE-11/4-T-63-D-2-M-V15V15
	2 1/2 NPT	5600	4745224 ¹⁾	VZBE-21/2-T-63-D-2-M-V15V16
	3 NPT	7500	4745225 ¹⁾	VZBE-3-T-63-D-2-M-V15V16

1) Festo is only a retailer of this product, not the manufacturer.

Festo core product range

- ★ Generally ready for shipping ex works in 24 hours
- ☆ Generally ready for shipping ex works in 5 days

Ball valves VZBA, 3-way

Type codes

VZBA - 1/4" - G G G - 63 - 32T - F0304 - V4 V4 T

Type	
VZBA	Ball valve

Nominal width DN	
1/4"	DN8
3/8"	DN10
1/2"	DN15
3/4"	DN20
1"	DN25
1 1/4"	DN32
1 1/2"	DN40
2"	DN50

Connection type 1	
G	Pipe thread to EN 10226-1

Connection type 2	
G	Pipe thread to EN 10226-1

Connection type 3	
G	Pipe thread to EN 10226-1

Process valve nominal pressure PN	
63	63 bar

Valve function	
32T	3/2-way, T-shaped bore
32L	3/2-way, L-shaped bore

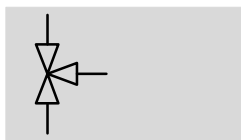
Flanged connection to ISO 5211	
F0304	Hole pattern 03 and 04
F0405	Hole pattern 04 and 05
F0507	Hole pattern 05 and 07


Housing material	
V4	Stainless steel 1.4408


Shut-off element material	
V4	Stainless steel 1.4408

Sealing material	
T	PTFE-reinforced

Technical data



-  - Connecting thread
Rp1/4 ... Rp2

-  - Flow rate
4.5 ... 100 m³/h

- With L-shaped bore or T-shaped bore



General technical data		Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp11/4	Rp11/2	Rp2	
Process valve connection		Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp11/4	Rp11/2	Rp2	
Nominal width DN		8	10	15	20	25	32	40	50	
Valve function		3/2								
Design		3-way ball valve								
Sealing principle		Soft								
Actuation type		Mechanical								
Manual override		None								
Switching position indication		Slot direction = flow direction								
Flow direction		Reversible								
Type of mounting		In-line installation								
Mounting position		Any								
Based on standard		EN 10226-1 ISO 5211								
Actuating torque	[Nm]	13	13	13	18	22	35	42	68	
Internal diameter	[mm]	11.6	12.7	12.7	16	20	25.4	31.8	38.1	
Flow rate Kv	Type L ¹⁾	[m ³ /h]	4.5	4.5	4.7	5.1	11.8	19.6	33.2	53.7
	Type T ²⁾	[m ³ /h]	8	8	8.3	8.3	22.4	36.5	62	100
	Type T ³⁾	[m ³ /h]	4.5	4.5	4.8	4.8	10.9	18	30	48.8
Flow rate tolerance Kv	[%]	± 20								
Product weight	[g]	700	700	700	1000	1600	2800	3800	7400	

- 1) Ball with L-shaped bore
- 2) Ball with T-shaped bore, straight flow
- 3) Ball with T-shaped bore, flow around corner

Operating and environmental conditions		Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp11/4	Rp11/2	Rp2	
Process valve connection		Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp11/4	Rp11/2	Rp2	
Medium ¹⁾		Compressed air to ISO 8573-1:2010 [-:::] Neutral liquids Inert gases Water – no water vapour								
Process valve nominal pressure		PN 63								
Temperature of medium		-10 ... +200								
Corrosion resistance class CRC ²⁾		3								
CE marking (see declaration of conformity)		-						To EU Pressure Equipment Directive		
→ www.festo.com										

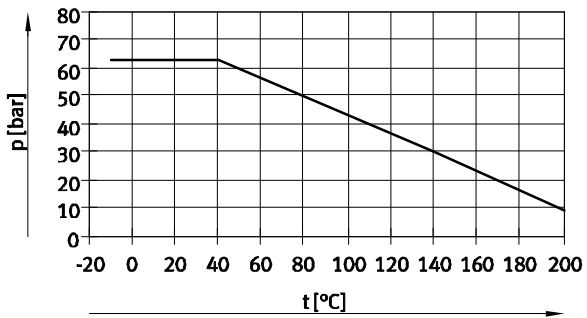
- 1) Other media on request
- 2) Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Ball valves VZBA, 3-way

Technical data

Materials		Material number
Housing	High-alloy stainless steel	1.4408
Ball		1.4408
Shaft		1.4401
Seals	PTFE	
	PTFE-reinforced	
Note on materials	RoHS compliant	
	Contains paint-wetting impairment substances	

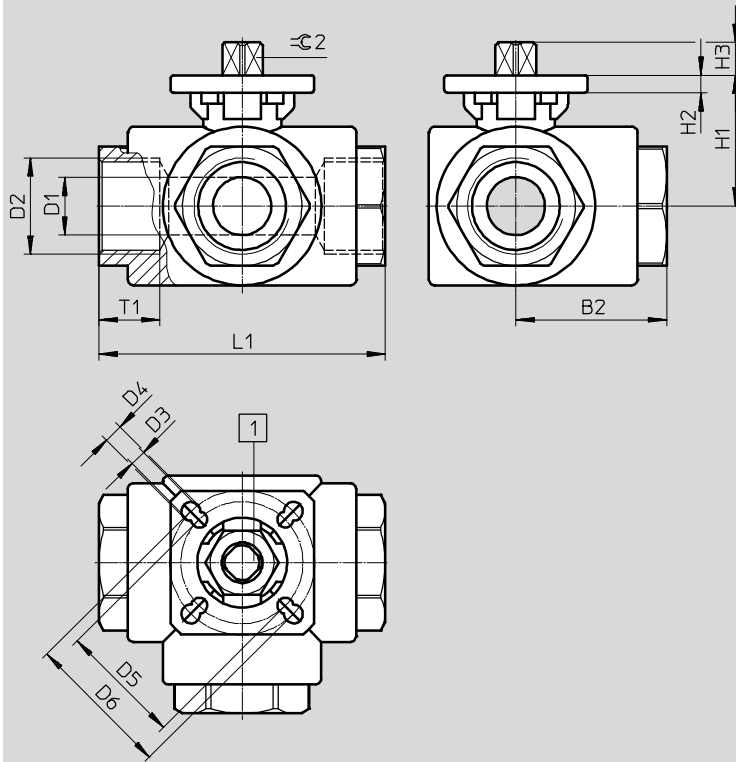
Permissible operating pressure p as a function of the temperature of the medium t



Technical data

Dimensions

Download CAD data → www.festo.com



1 Switching position indication: the slot direction corresponds to the flow direction → page 514

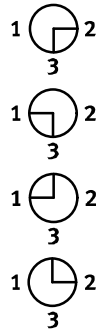
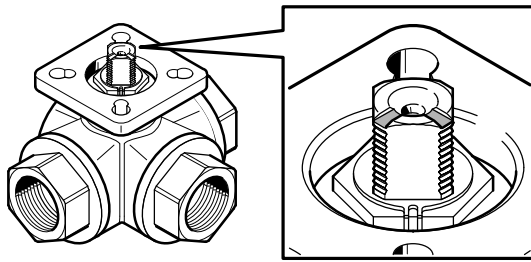
Type	B2	D1 Ø	D2	D3 Ø	D4 Ø	D5 Ø	D6 Ø	H1	H2	H3	L1	T1	⊖ 2
	±2	±0.15							±1		±1		-0.1
VZBA-1/4"-GGG-63-32L-F0304-V4V4T	40	11.6	Rp1/4	5.5	5.5	36	42	35.9	6	7.4	80	15	9
VZBA-1/4"-GGG-63-32T-F0304-V4V4T													
VZBA-3/8"-GGG-63-32L-F0304-V4V4T	40	12.7	Rp3/8	5.5	5.5	36	42	35.9	6	7.4	80	18	9
VZBA-3/8"-GGG-63-32T-F0304-V4V4T													
VZBA-1/2"-GGG-63-32L-F0304-V4V4T	40	12.7	Rp1/2	5.5	5.5	36	42	35.9	6	7.4	80	17.5	9
VZBA-1/2"-GGG-63-32T-F0304-V4V4T													
VZBA-3/4"-GGG-63-32L-F0405-V4V4T	43.8	16	Rp3/4	5.5	6.5	42	50	40.9	6	12.8	87.5	20	11
VZBA-3/4"-GGG-63-32T-F0405-V4V4T													
VZBA-1"-GGG-63-32L-F0405-V4V4T	50	20	Rp1	5.5	6.5	42	50	45.2	6	11.4	100	21	11
VZBA-1"-GGG-63-32T-F0405-V4V4T													
VZBA-1 1/4"-GGG-63-32L-F0405-V4V4T	61.5	25.4	Rp1 1/4	5.5	6.5	42	50	51	6	12.6	123	21	11
VZBA-1 1/4"-GGG-63-32T-F0405-V4V4T													
VZBA-1 1/2"-GGG-63-32L-F0405-V4V4T	71.1	31.8	Rp1 1/2	5.5	6.5	42	50	55.5	6	12.6	142.2	23	11
VZBA-1 1/2"-GGG-63-32T-F0405-V4V4T													
VZBA-2"-GGG-63-32L-F0507-V4V4T	85.3	38.1	Rp2	6.5	8.5	50	70	66	6	14.3	170.6	26	14
VZBA-2"-GGG-63-32T-F0507-V4V4T													

Ball valves VZBA, 3-way

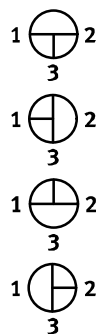
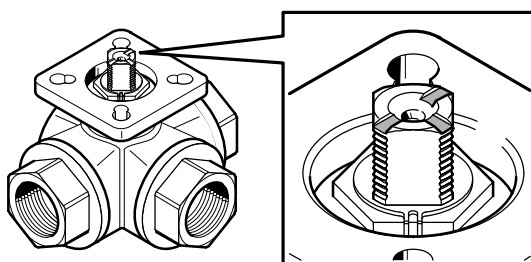
Technical data

Switching position indication

L-shaped bore



T-shaped bore



Ordering data

	Version	Connecting thread	Weight [g]	Part No.	Type
	L-shaped bore	Rp1/4	700	1692210	VZBA-1/4"-GGG-63-32L-F0304-V4V4T
		Rp3/8	700	1692211	VZBA-3/8"-GGG-63-32L-F0304-V4V4T
		Rp1/2	700	1692212	VZBA-1/2"-GGG-63-32L-F0304-V4V4T
		Rp3/4	1000	1692214	VZBA-3/4"-GGG-63-32L-F0405-V4V4T
		Rp1	1600	1692215	VZBA-1"-GGG-63-32L-F0405-V4V4T
		Rp11/4	2800	1692217	VZBA-1 1/4"-GGG-63-32L-F0405-V4V4T
		Rp11/2	3800	1692218	VZBA-1 1/2"-GGG-63-32L-F0405-V4V4T
		Rp2	7400	1692219	VZBA-2"-GGG-63-32L-F0507-V4V4T
	T-shaped bore	Rp1/4	700	1692220	VZBA-1/4"-GGG-63-32T-F0304-V4V4T
		Rp3/8	700	1692221	VZBA-3/8"-GGG-63-32T-F0304-V4V4T
		Rp1/2	700	1692224	VZBA-1/2"-GGG-63-32T-F0304-V4V4T
		Rp3/4	1000	1692226	VZBA-3/4"-GGG-63-32T-F0405-V4V4T
		Rp1	1600	1692227	VZBA-1"-GGG-63-32T-F0405-V4V4T
		Rp11/4	2800	1692228	VZBA-1 1/4"-GGG-63-32T-F0405-V4V4T
		Rp11/2	3800	1692229	VZBA-1 1/2"-GGG-63-32T-F0405-V4V4T
		Rp2	7400	1692230	VZBA-2"-GGG-63-32T-F0507-V4V4T

Accessories

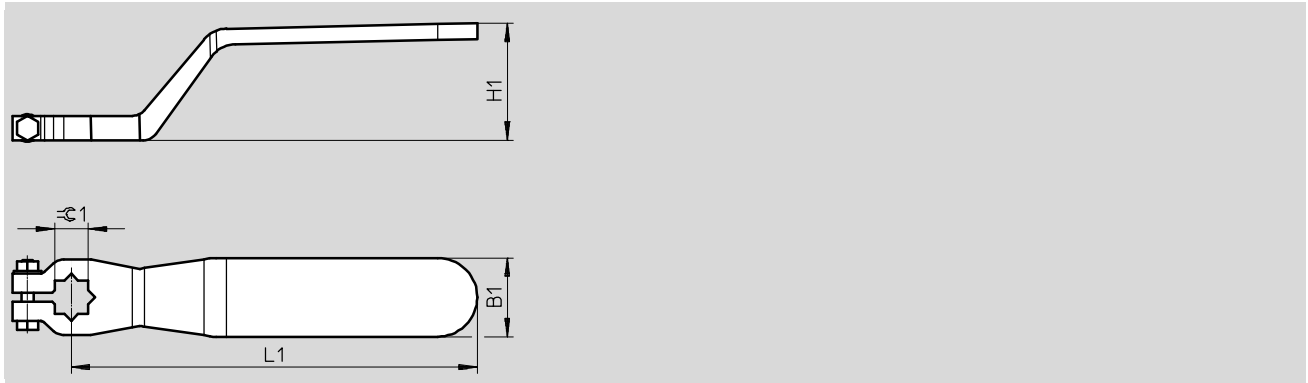
Hand lever VAOH

Information on materials:

- High-alloy stainless steel
- Free of copper and PTFE
- Contains paint-wetting impairment substances



Dimensions and ordering data

Download CAD data → www.festo.com

For connection	B1 ±5	H1 ±5	L1 ±10	⌀1 ±0.5	Weight [g]	Part No.	Type
Rp1/4 ... Rp1/2	21	36	120	9	100	542702	VAOH-9-H9
Rp3/4 ... Rp1 1/2	26	40	140	11	200	542703	VAOH-11-H9
Rp2	31	46	180	14	300	542704	VAOH-14-H9

Ball valves VZBE, 3-way

Type codes

VZBE - 1/4 - T - 63 - F - 3L - F04 - - V15 V15

Type	
VZBE	Ball valve

Nominal width DN	
1/4	1/4"
3/8	3/8"
1/2	1/2"
3/4	3/4"
1	1"
1 1/4	1 1/4"
1 1/2	1 1/2"
2	2"

Process valve connection type	
T	NPT female thread

Nominal pressure	
63	63 bar

Design	
F	Four parts

Valve function	
3L	3/2-way, L-shaped bore
3T	3/2-way, T-shaped bore

Flanged connection to ISO 5211	
F04	Hole pattern 04
F05	Hole pattern 05
F0507	Hole pattern 05 and 07

Actuation type	
-	Via drive

Housing material	
V15	Stainless steel ASTM A351-CF8M/1.4408

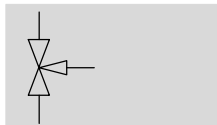
Shut-off element material	
V15	Stainless steel ASTM A351-CF8M/1.4408

06

Ball valves and ball valve units


Technical data


Function



- With L-shaped bore or T-shaped bore
- NPT version



-  - Connecting thread
1/4NPT ... 2NPT

-  - Flow rate
1.2 ... 22.5 m³/h

General technical data		1/4NPT	3/8NPT	1/2NPT	3/4NPT	1NPT	1 1/4NPT	1 1/2NPT	2NPT
Process valve connection		1/4NPT	3/8NPT	1/2NPT	3/4NPT	1NPT	1 1/4NPT	1 1/2NPT	2NPT
Nominal width DN		8	10	15	20	25	32	40	50
Valve function		3/2							
Design		3-way ball valve							
Sealing principle		Soft							
Actuation type		Mechanical							
Switching position indication		Slot direction = flow direction							
Flow direction		Reversible							
Type of mounting		In-line installation							
Mounting position		Any							
Based on standard		ISO 5211 ASME B1.20.1							
Breakaway torque at differential pressure, nominal pressure, process valve PN	[Nm]	9.6	9.6	9.6	14.3	25.2	33	45.5	85
Inside diameter	[mm]	11	11	12.7	16	20	25	32	38.1
Flow rate Kv	Type L	1.2	1.2	2.5	3.2	4.1	9.9	19.3	20.7
	Type T	1.4	1.4	2.8	3.7	4.6	10.6	20.2	22.5

Operating and environmental conditions		1/4NPT	3/8NPT	1/2NPT	3/4NPT	1NPT	1 1/4NPT	1 1/2NPT	2NPT	
Process valve connection		1/4NPT	3/8NPT	1/2NPT	3/4NPT	1NPT	1 1/4NPT	1 1/2NPT	2NPT	
Temperature of medium	[°C]	-20 ... +200								
Medium		Compressed air to ISO 8573-1:2010 [-::-]								
		Inert gases								
		Water								
		Vapour								
		Neutral fluids								
Certification		CRN								
Corrosion resistance class CRC ¹⁾		4								
CE marking (see declaration of conformity) ²⁾		-						To EU Pressure Equipment Directive		

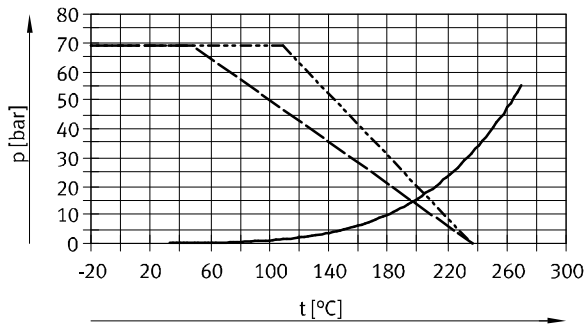
- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.
- 2) Additional information www.festo.com/sp → Certificates.

Ball valves VZBE, 3-way

Technical data

Materials		Material number
Housing	Stainless steel casting	1.4408
Ball	Stainless steel casting	1.4408
Shaft	High-alloy stainless steel	1.4401
Seals	PTFE	
Note on materials	RoHS compliant	
	Contains paint-wetting impairment substances	

Permissible operating pressure p as a function of the temperature of the medium t



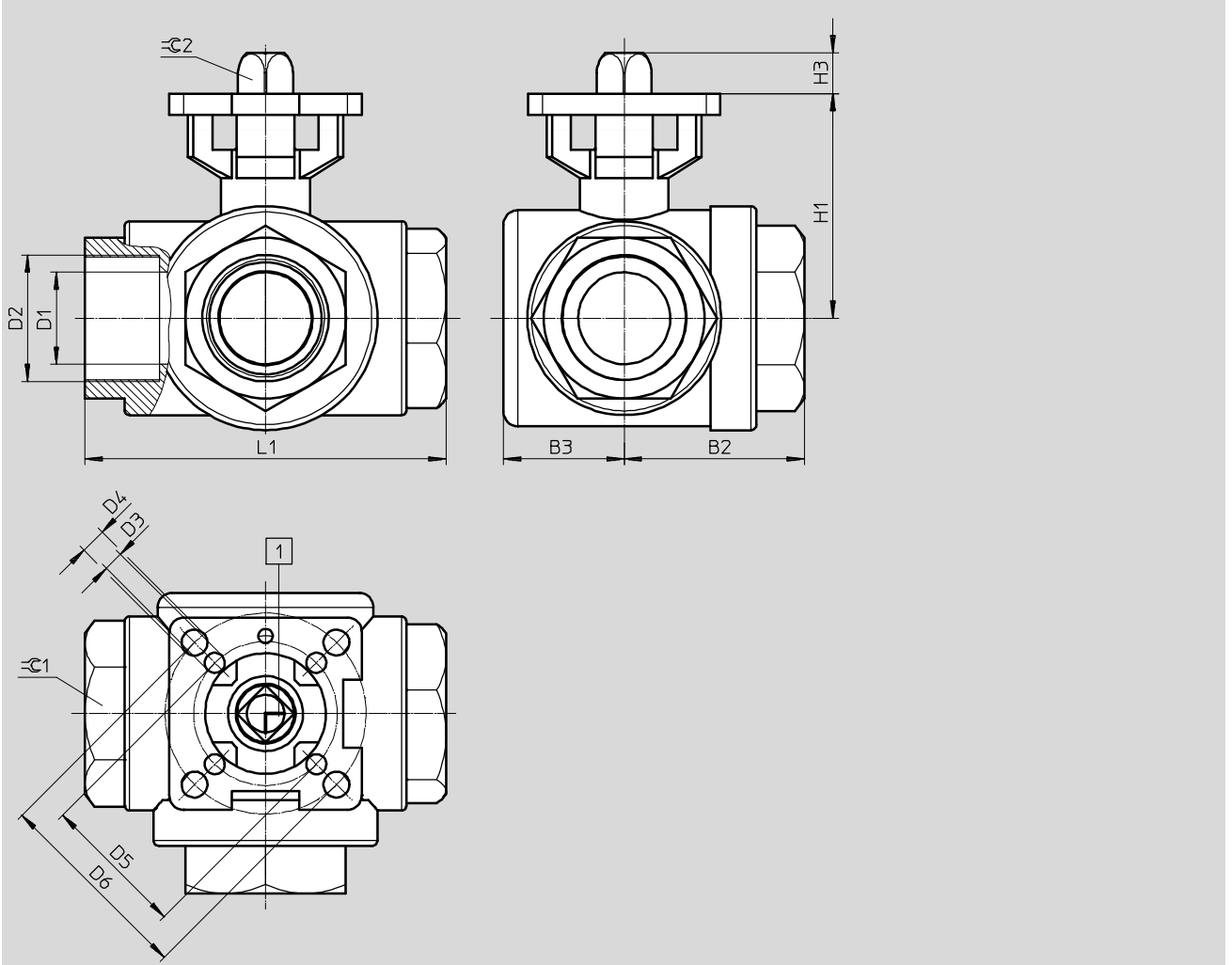
- Saturated water vapour
- - - - - PTFE-reinforced
- · - · - PTFE, modified

Ball valves VZBE, 3-way

Technical data

Dimensions

Download CAD data → www.festo.com



1 Switching position indication: the slot direction corresponds to the flow direction → page 520

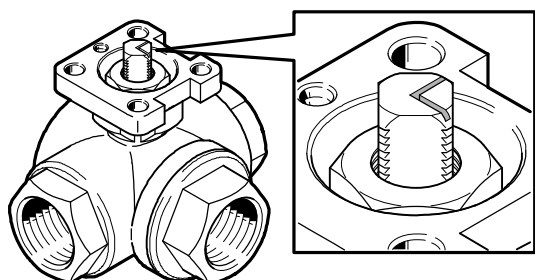
Type	B2	B3	D1	D2	D3	D4	D5	D6	H1	H3	L1	$\varnothing C1$	$\varnothing C2$
	±2		∅		∅	∅	∅	∅			±2		
VZBE-1/4-...-F04-...	37.3	22.5	11	1/4 NPT	-	6	-	42	38.2	9	75.7	26	9
VZBE-3/8-...-F04-...	37.3	22.5	11	3/8 NPT	-	6	-	42	38.2	9	75.7	26	9
VZBE-1/2-...-F04-...	37.3	22.5	12.7	1/2 NPT	-	6	-	42	38.2	9	75.7	26	9
VZBE-3/4-...-F04-...	44.7	28	16	3/4 NPT	-	6	-	42	45.2	9	86.6	33	9
VZBE-1-...-F05-...	51.4	32.7	20	1 NPT	-	7.1	-	50	56.5	11	102.4	39	11
VZBE-1 1/4-...-F05-...	57.7	37	25	1 1/4 NPT	-	7.1	-	50	61.9	11	118.2	49.5	11
VZBE-1 1/2-...-F0507-...	62.7	42.5	32	1 1/2 NPT	7.1	9.2	50	70	78.3	14.3	125.8	56	14
VZBE-2-...-F0507-...	74.6	50.5	38.1	2 NPT	7.1	9.2	50	70	87.4	14	149	70	14

Ball valves VZBE, 3-way

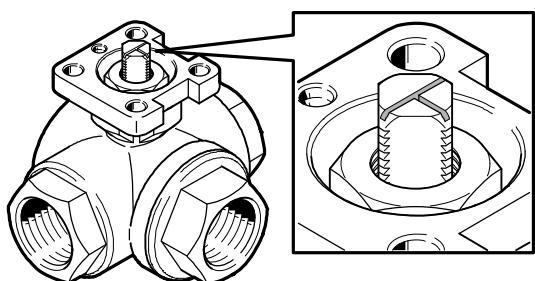
Technical data

Switching position indication

L-shaped bore



T-shaped bore



06

Ball valves and ball valve units

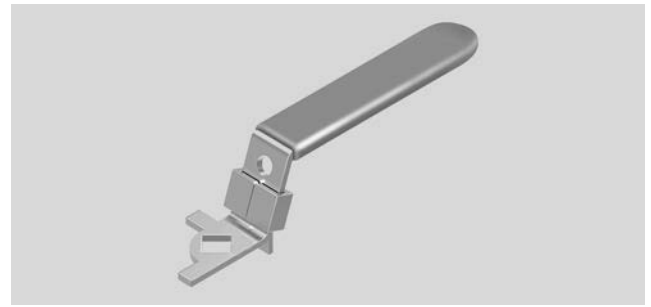
Ordering data					
	Version	Process valve connection	Weight [g]	Part No.	Type
	L-shaped bore	1/4NPT	724	4834288 ¹⁾	VZBE-1/4-T-63-F-3L-F04-V15V15
		3/8NPT	624	4834289 ¹⁾	VZBE-3/8-T-63-F-3L-F04-V15V15
		1/2NPT	624	4834290 ¹⁾	VZBE-1/2-T-63-F-3L-F04-V15V15
		3/4NPT	1024	4834291 ¹⁾	VZBE-3/4-T-63-F-3L-F04-V15V15
		1NPT	1618	4834292 ¹⁾	VZBE-1-T-63-F-3L-F05-V15V15
		1 1/4NPT	2212	4834293 ¹⁾	VZBE-1 1/4-T-63-F-3L-F05-V15V15
		1 1/2NPT	3360	4834294 ¹⁾	VZBE-1 1/2-T-63-F-3L-F0507-V15V15
		2NPT	5560	4834295 ¹⁾	VZBE-2-T-63-F-3L-F0507-V15V15
	T-shaped bore	1/4NPT	724	4834296 ¹⁾	VZBE-1/4-T-63-F-3T-F04-V15V15
		3/8NPT	624	4834297 ¹⁾	VZBE-3/8-T-63-F-3T-F04-V15V15
		1/2NPT	624	4834298 ¹⁾	VZBE-1/2-T-63-F-3T-F04-V15V15
		3/4NPT	1024	4834299 ¹⁾	VZBE-3/4-T-63-F-3T-F04-V15V15
		1NPT	1618	4834300 ¹⁾	VZBE-1-T-63-F-3T-F05-V15V15
		1 1/4NPT	2212	4834301 ¹⁾	VZBE-1 1/4-T-63-F-3T-F05-V15V15
		1 1/2NPT	3360	4834302 ¹⁾	VZBE-1 1/2-T-63-F-3T-F0507-V15V15
		2NPT	5560	4834303 ¹⁾	VZBE-2-T-63-F-3T-F0507-V15V15

1) Festo is only a retailer of this product, not the manufacturer.

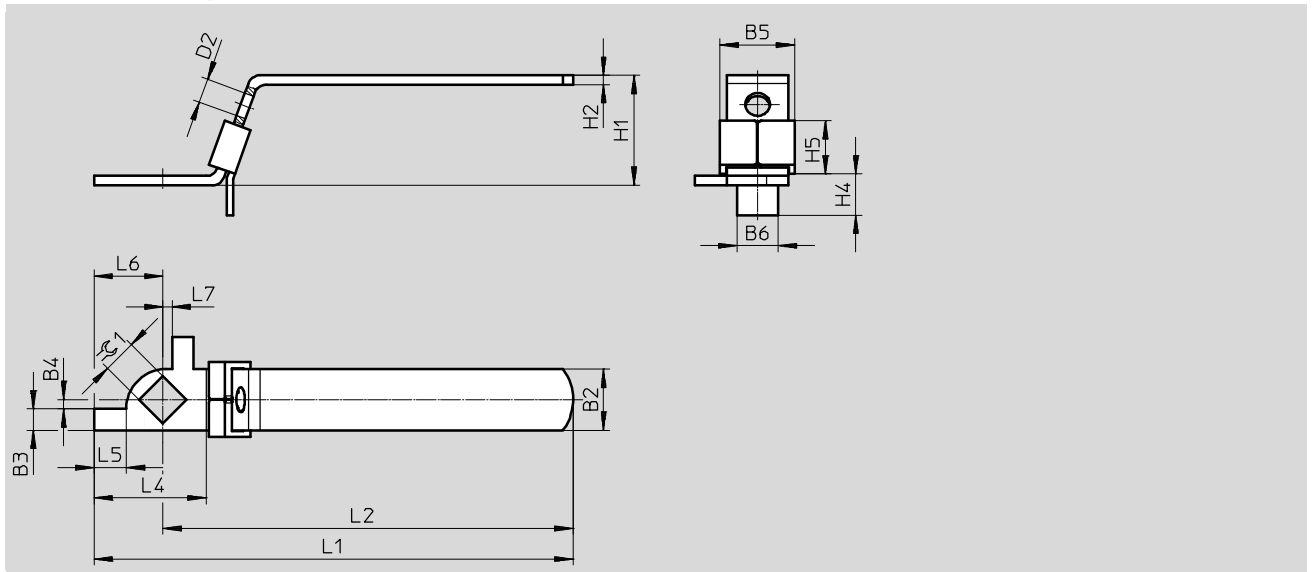
Accessories

Hand lever VAOH

- High-alloy stainless steel
- Free of copper and PTFE
- Contains paint-wetting impairment substances
- Lockable



Dimensions and ordering data

Download CAD data → www.festo.com

Dimensions and ordering data

For connection	B2	B3	B4	B5	B6	D2 Ø	H1	H2	H4	H5	L1
1/4" ... 3/4"	20	7	3	25	14.5	8	35	3	15	15.2	131
1"	20	7	3	24.5	13.5	8	36	3	13.5	15.3	157
1 1/4"	25	9.5	3	30	15	8	38	4	11.5	15	211
1 1/2" ... 2"	30	12	3	35	22	8	39	4	17	17	233

For connection	L2	L4	L5	L6	L7	≈C1	CRC ²⁾	Weight [g]	Part No.	Type
1/4" ... 3/4"	112	39	8.5	19	3	9	3	76	4896014 ¹⁾	VAOH-F7-9-H9-A-32
1"	134.5	40	10.5	25.5	3	11	3	82	4896015 ¹⁾	VAOH-F7-11-H9-A-32
1 1/4"	186	48	10.5	25	3	11	3	188	4896017 ¹⁾	VAOH-F7-11-211-H9-A-32
1 1/2" ... 2"	197.9	59	19.5	35.1	3	14	3	240	4896016 ¹⁾	VAOH-F7-14-H9-A-32

1) Festo is only a retailer of this product, not the manufacturer.

2) Corrosion resistance class CRC 3 to Festo standard FN 940070

High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Ball valves VZBD, 2-way

Type codes

VZBD - 1/2 - W1 - 16 - T - 2 - F0304 - - V14 V14

Type	
VZBD	Ball valve

Nominal width DN	
1/2	1/2"
3/4	3/4"
1	1"
1 1/4	1 1/4"
1 1/2	1 1/2"
2	2"
2 1/2	2 1/2"
3	3"
4	4"

Process valve connection type	
S1	Clamp ferrule to ASME-BPE
S5	Clamp ferrule to DIN 32676-B
W1	Extended welded ends to ASME-BPE
W3	Extended welded ends to ISO 1127

Nominal pressure	
16	16 bar

Design	
T	Three parts

Valve function	
2	2/2-way

Flanged connection to ISO 5211	
-	Without
F0304	Hole pattern 03 and 04
F0405	Hole pattern 04 and 05
F0507	Hole pattern 05 and 07
F0710	Hole pattern 07 and 10
F1012	Hole pattern 10 and 12

Actuation type	
-	Via drive


Housing material	
V14	Stainless steel ASTM A351-CF3M/1.4409


Shut-off element material	
V14	Stainless steel ASTM A351-CF3M/1.4409

Technical data

Function



-  - Nominal width DN
DN15 ... DN100

-  - Flow rate
3.5 ... 436.3 m³/h

- 2-way ball valve made from stainless steel
- Optionally with extended welded ends to ISO 1127 or to ASME BPE or clamp ferrules to DIN 32676-B or to ASME BPE



General technical data		15	20	25	32	40	50	65	80	100
Nominal width DN		15	20	25	32	40	50	65	80	100
Process valve connection	Welded end to ISO 1127									
	Welded end to ASME-BPE									
	Clamp ferrule to DIN 32676-B									
	Clamp ferrule to ASME-BPE									
Valve function	2/2									
Design	2-way ball valve									
Sealing principle	Soft									
Type of actuation	Mechanical									
Switching position indication	Slot direction = flow direction									
Flow direction	Reversible									
Type of mounting	In-line installation									
Mounting position	Any									
Based on standard	ISO 5211									
	ISO 1127									
	DIN 32676-B									
	ASME BPE									
Welded end to ISO 1127 and clamp ferrule to DIN 32676-B										
Breakaway torque at differential pressure, nominal pressure, process valve PN	[Nm]	7	9	15	23	30	44	79	-	-
Inside Ø	[mm]	18.1	23.7	29.7	38.4	44.3	56.3	72.1	-	-
Flow rate Kv	[m ³ /h]	12.2	21.9	35.9	61.2	83.3	141.5	238.5	-	-
Welded end to ASME-BPE and clamp ferrule to ASME-BPE										
Breakaway torque at differential pressure, nominal pressure, process valve PN	[Nm]	7	9	15	-	30	44	79	140	170
Inside Ø	[mm]	9.6	15.8	22.1	-	34.8	47.7	60.3	72.9	97.5
Flow rate Kv	[m ³ /h]	3.5	9.7	19.8	-	50.1	96.8	161.7	243.8	436.3

Ball valves VZBD, 2-way

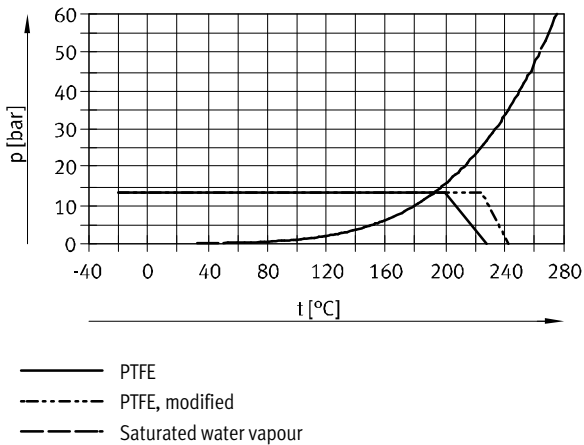
Technical data

Operating and environmental conditions									
Nominal width DN	15	20	25	32	40	50	65	80	100
Nominal pressure of process valve PN	63								
Temperature of medium [°C]	-20 ... +200								
Medium	Compressed air to ISO 8573-1:2010 [---]								
	Inert gases								
	Vapour								
	Water								
	Neutral fluids								
Certification	CRN								
Corrosion resistance class CRC ¹⁾	4								
CE marking (see declaration of conformity) ²⁾	-				To EU Pressure Equipment Directive				

- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.
- 2) Additional information www.festo.com/sp → Certificates.

Materials	Material number
Housing	Stainless steel casting 1.4409 (ASTM A351-CF3M)
Ball	Stainless steel casting 1.4409 (ASTM A351-CF3M)
Shaft	High-alloy stainless steel 1.4401 (ASTM A240-316)
Seat seal	PTFE, modified
Seals	PTFE
	FPM
Note on materials	RoHS compliant
	Contains paint-wetting impairment substances

Permissible operating pressure p as a function of the temperature of the medium t

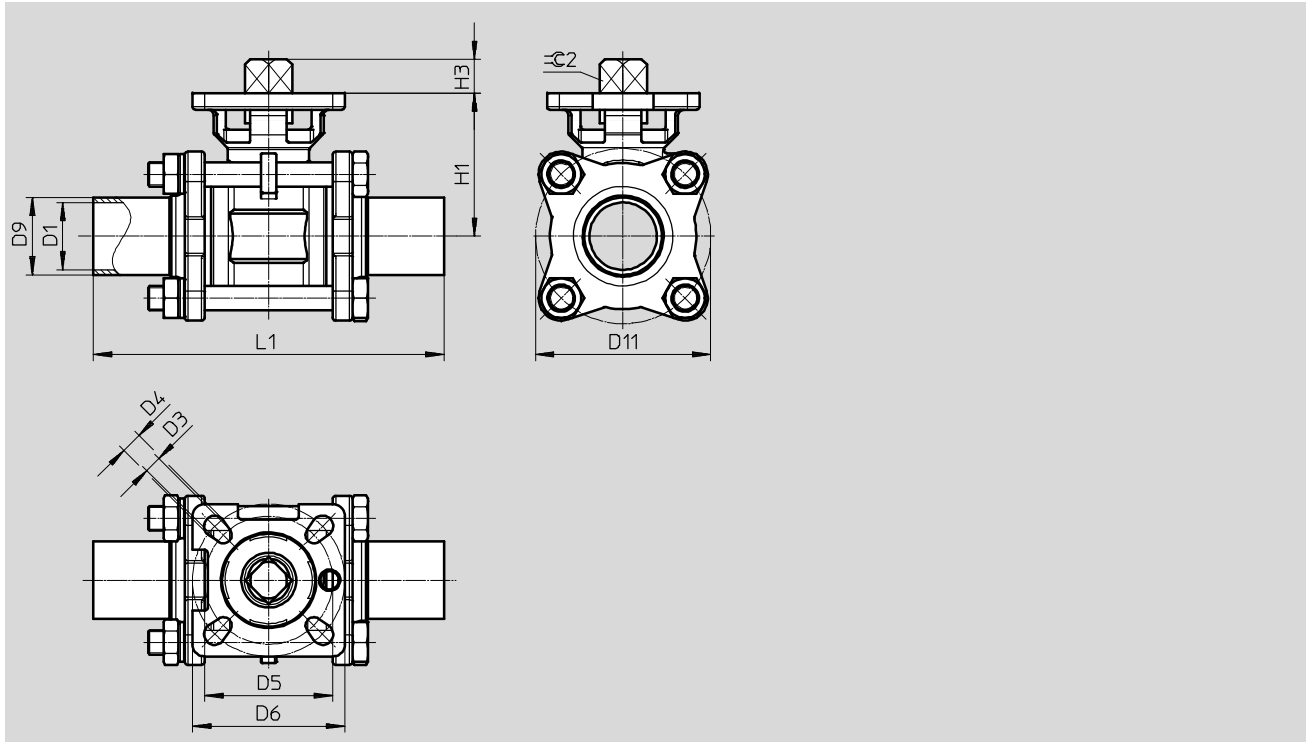


Technical data

Dimensions

Download CAD data → www.festo.com

With extended welded ends to ISO 1127 (W3) or to ASME BPE (W1)



Type	D1 Ø	D3 Ø	D4 Ø	D5 Ø	D6 Ø	D9 Ø	D11 Ø	H1	H3	L1 ±2	⊖C2
VZBD-1/2-W3-...	18.1	5.5	5.5	36	42	21.3	52	38.5	9	130	9
VZBD-3/4-W3-...	23.7	5.5	5.5	36	42	26.9	61.9	42.7	9	150	9
VZBD-1-W3-...	29.7	5.5	7	42	50	33.7	70	53.5	11	160	11
VZBD-11/4-W3-...	38.4	5.5	7	42	50	42.4	85	60.1	11	180	11
VZBD-11/2-W3-...	44.3	7	9	50	70	48.3	98.8	70.6	14	200	14
VZBD-2-W3-...	56.3	7	9	50	70	60.3	120	79.8	14	230	14
VZBD-21/2-W3-...	72.1	9	11	70	102	76.1	147	99.4	17	290	17

Type	D1 Ø	D3 Ø	D4 Ø	D5 Ø	D6 Ø	D9 Ø	D11 Ø	H1	H3	L1 ±2	⊖C2
VZBD-1/2-W1-...	9.6	5.5	5.5	36	42	12.7	45.5	34	9	90.7	9
VZBD-3/4-W1-...	15.8	5.5	5.5	36	42	19.1	47	35.3	11	103	9
VZBD-1-W1-...	22.1	5.5	7	42	50	25.4	57.5	47	11	115	11
VZBD-11/2-W1-...	34.8	7	9	50	70	38.1	83	63.5	14	139	14
VZBD-2-W1-...	47.7	7	9	50	70	50.8	100	72	14	158	14
VZBD-21/2-W1-...	60.3	9	11	70	102	63.5	126	90	17	197	17
VZBD-3-W1-...	72.9	9	11	70	102	76.2	148	99	17	228	17
VZBD-4-W1-...	97.5	11	13	102	125	101.6	183	127.5	22	241.8	22

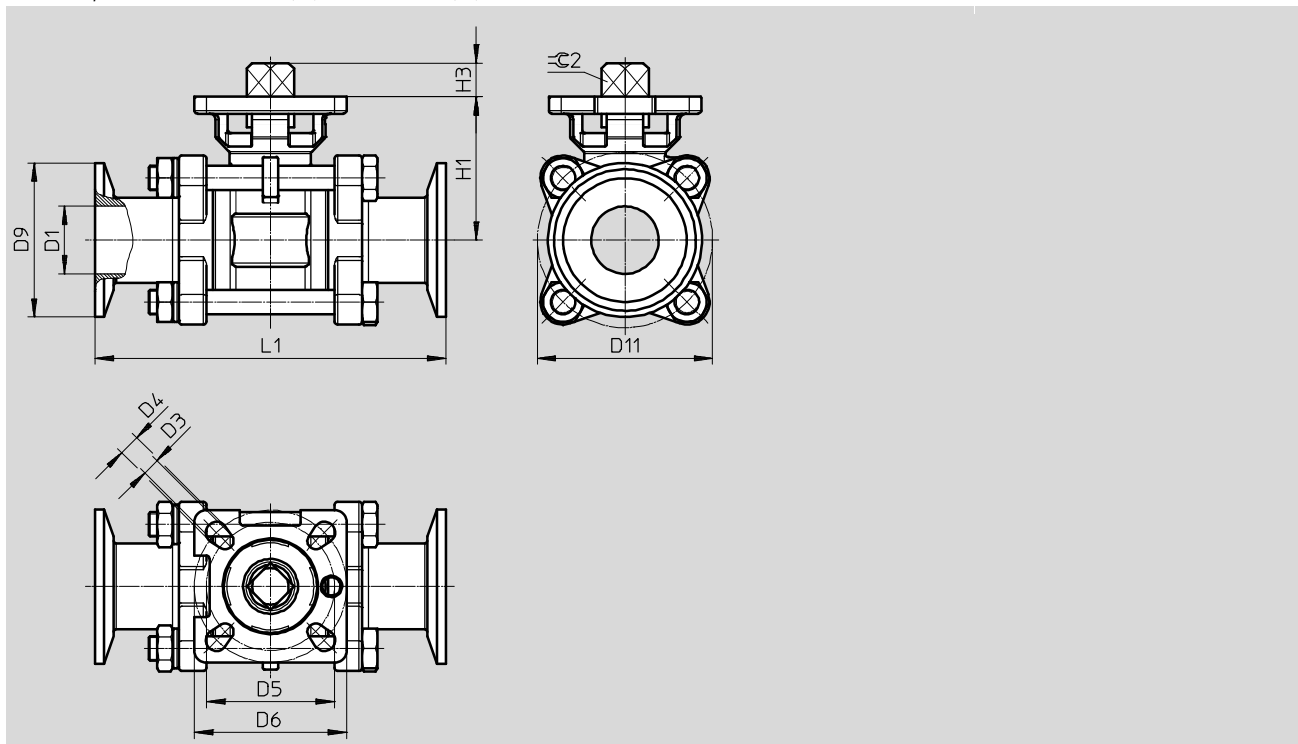
Ball valves VZBD, 2-way

Technical data

Dimensions

Download CAD data → www.festo.com

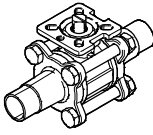
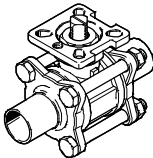
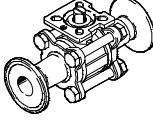
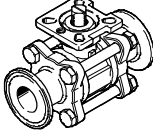
With clamp ferrule to DIN 32676-B (S5) or to ASME-BPE (S1)



Type	D1 Ø	D3 Ø	D4 Ø	D5 Ø	D6 Ø	D9 Ø	D11 Ø	H1	H3	L1 ±2	⊖C2
VZBD-1/2-S5-...	18.1	5.5	5.5	36	42	50.5	52	38.5	9	130	9
VZBD-3/4-S5-...	23.7	5.5	5.5	36	42	50.5	61.9	42.7	9	150	9
VZBD-1-S5-...	29.7	5.5	7	42	50	50.5	70	53.5	11	160	11
VZBD-11/4-S5-...	38.4	5.5	7	42	50	64	85	60.1	11	180	11
VZBD-11/2-S5-...	44.3	7	9	50	70	64	98.8	70.6	14	200	14
VZBD-2-S5-...	56.3	7	9	50	70	77.5	120	79.8	14	230	14
VZBD-21/2-S5-...	72.1	9	11	70	102	91	147	99.4	17	290	17

Type	D1 Ø	D3 Ø	D4 Ø	D5 Ø	D6 Ø	D9 Ø	D11 Ø	H1	H3	L1 ±2	⊖C2
VZBD-1/2-S1-...	9.6	5.5	5.5	36	42	25.4	45.5	34	9	90.7	9
VZBD-3/4-S1-...	15.8	5.5	5.5	36	42	25.4	47	35.3	11	103	9
VZBD-1-S1-...	22.1	5.5	7	42	50	50.5	57.5	47	11	115	11
VZBD-11/2-S1-...	34.8	7	9	50	70	50.5	83	63.5	14	139	14
VZBD-2-S1-...	47.7	7	9	50	70	64	100	72	14	158	14
VZBD-21/2-S1-...	60.3	9	11	70	102	77.5	126	90	17	197	17
VZBD-3-S1-...	72.9	9	11	70	102	91	148	99	17	228	17
VZBD-4-S1-...	97.5	11	13	102	125	119	183	127.5	22	241.8	22

Technical data

Ordering data						
	Standard	Nominal width DN	Flange hole pattern	Weight [g]	Part No.	Type
Extended welded ends						
	ISO 1127	15	F0304	730	4783595 ¹⁾	VZBD-1/2-W3-16-T-2-F0304-V14V14
		20	F0304	930	4783596 ¹⁾	VZBD-3/4-W3-16-T-2-F0304-V14V14
		25	F0405	1350	4783597 ¹⁾	VZBD-1-W3-16-T-2-F0405-V14V14
		32	F0405	2050	4783598 ¹⁾	VZBD-11/4-W3-16-T-2-F0405-V14V14
		40	F0507	3270	4783599 ¹⁾	VZBD-11/2-W3-16-T-2-F0507-V14V14
		50	F0507	5470	4783600 ¹⁾	VZBD-2-W3-16-T-2-F0507-V14V14
		65	F0710	10080	4783601 ¹⁾	VZBD-21/2-W3-16-T-2-F0710-V14V14
	ASME-BPE	1/2"	F0304	430	4762847 ¹⁾	VZBD-1/2-W1-16-T-2-F0304-V14V14
		3/4"	F0304	530	4762848 ¹⁾	VZBD-3/4-W1-16-T-2-F0304-V14V14
		1"	F0405	950	4762849 ¹⁾	VZBD-1-W1-16-T-2-F0405-V14V14
		1 1/2"	F0507	1970	4762850 ¹⁾	VZBD-11/2-W1-16-T-2-F0507-V14V14
		2"	F0507	3070	4762851 ¹⁾	VZBD-2-W1-16-T-2-F0507-V14V14
		2 1/2"	F0710	6180	4762852 ¹⁾	VZBD-21/2-W1-16-T-2-F0710-V14V14
		3"	F0710	9080	4762853 ¹⁾	VZBD-3-W1-16-T-2-F0710-V14V14
		4"	F1012	16180	4762854 ¹⁾	VZBD-4-W1-16-T-2-F1012-V14V14
Clamp ferrule						
	DIN 32676-B	15	F0304	830	4802244 ¹⁾	VZBD-1/2-S5-16-T-2-F0304-V14V14
		20	F0304	1130	4802245 ¹⁾	VZBD-3/4-S5-16-T-2-F0304-V14V14
		25	F0405	1550	4802246 ¹⁾	VZBD-1-S5-16-T-2-F0405-V14V14
		32	F0405	2250	4802247 ¹⁾	VZBD-11/4-S5-16-T-2-F0405-V14V14
		40	F0507	3370	4802248 ¹⁾	VZBD-11/2-S5-16-T-2-F0507-V14V14
		50	F0507	5670	4802249 ¹⁾	VZBD-2-S5-16-T-2-F0507-V14V14
		65	F0710	10680	4802250 ¹⁾	VZBD-21/2-S5-16-T-2-F0710-V14V14
	ASME-BPE	1/2"	F0304	430	4795666 ¹⁾	VZBD-1/2-S1-16-T-2-F0304-V14V14
		3/4"	F0304	530	4795667 ¹⁾	VZBD-3/4-S1-16-T-2-F0304-V14V14
		1"	F0405	950	4795668 ¹⁾	VZBD-1-S1-16-T-2-F0405-V14V14
		1 1/2"	F0507	1970	4795669 ¹⁾	VZBD-11/2-S1-16-T-2-F0507-V14V14
		2"	F0507	3070	4795670 ¹⁾	VZBD-2-S1-16-T-2-F0507-V14V14
		2 1/2"	F0710	6180	4795671 ¹⁾	VZBD-21/2-S1-16-T-2-F0710-V14V14
		3"	F0710	9080	4795672 ¹⁾	VZBD-3-S1-16-T-2-F0710-V14V14
		4"	F1012	16180	4795673 ¹⁾	VZBD-4-S1-16-T-2-F1012-V14V14

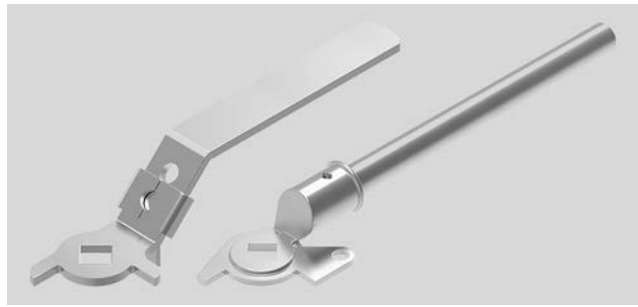
1) Festo is only a retailer of this product, not the manufacturer.

Ball valves VZBD, 2-way

Accessories

Hand lever VAOH

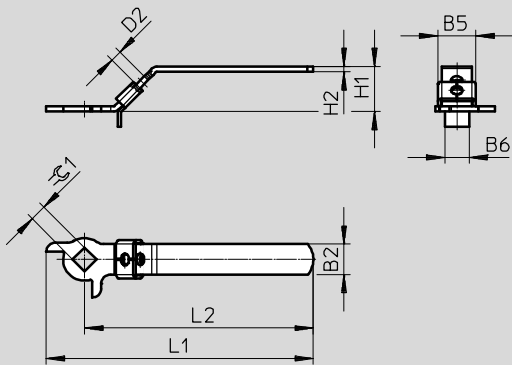
- High-alloy stainless steel
- Free of copper and PTFE
- RoHS compliant
- Contains paint-wetting impairment substances
- Lockable



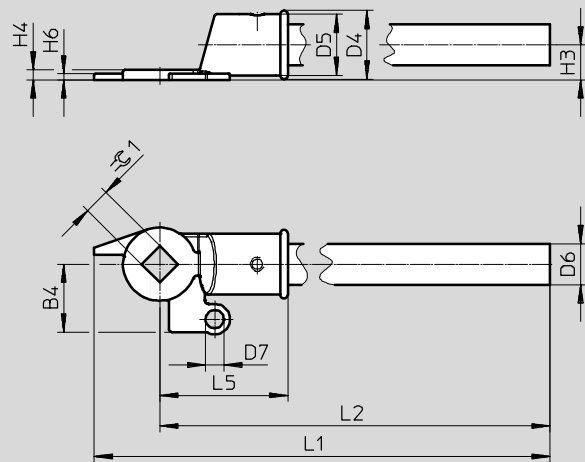
Dimensions and ordering data

Download CAD data → www.festo.com

DN15 ... DN50



DN65 ... DN100



Dimensions and ordering data

For connection	B2	B5	B6	D2 ∅	H1	H2	L1	L2	≈C1	CRC ²⁾	Weight [g]	Part No.	Type
DN15 ... DN20	19	23.8	13	7.5	29	3	144.2	123	9	3	170	4895358 ¹⁾	VAOH-F8-9-H9-A
DN25 ... DN32	20	24.8	16	7.5	30	3.5	176.5	151.5	11	3	250	4895359 ¹⁾	VAOH-F8-11-H9-A
DN40 ... DN50	25	31	22	7.5	31	4	214	182	14	3	530	4895360 ¹⁾	VAOH-F8-14-H9-A

Dimensions and ordering data

For connection	B4	D4 ∅	D5 ∅	D6 ∅	D7 ∅	H3	H4	H6	L1	L2	L5	≈C1	CRC ²⁾	Weight [g]	Part No.	Type
DN65 ... DN80	44.5	45	40	27	12	23	6.5	4	387	344	84	17	3	820	4895361 ¹⁾	VAOH-F8-17-H9-A
DN100	53.5	45	40	27	14	25	8	5	442.5	389	89.5	22	3	920	4895363 ¹⁾	VAOH-F8-22-H9-A

1) Festo is only a retailer of this product, not the manufacturer.

2) Corrosion resistance class CRC 3 to Festo standard FN 940070

High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Type codes

VZBF - 1/2 - P1 - 20 - D - 2 - F0304 - - V15 V15

Type	
VZBF	Ball valve

Nominal width DN	
1/2	1/2"
3/4	3/4"
1	1"
1 1/4	1 1/4"
1 1/2	1 1/2"
2	2"
2 1/2	2 1/2"
3	3"
4	4"
6	6"
8	8"

Process valve connection type	
P1	Flange to ANSI 150

Nominal pressure	
20	20 bar

Design	
D	Two parts

Valve function	
2	2/2-way

Flanged connection to ISO 5211	
F0304	Hole pattern 03 and 04
F0405	Hole pattern 04 and 05
F0507	Hole pattern 05 and 07
F0710	Hole pattern 07 and 10
F1012	Hole pattern 10 and 12
F14	Hole pattern 14

Actuation type	
-	Via drive

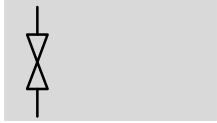
Housing material	
V15	Stainless steel ASTM A351-CF8M/1.4408

Shut-off element material	
V15	Stainless steel ASTM A351-CF8M/1.4408
V16	Stainless steel ASTM A240-316/1.4401

Ball valves VZBF, 2-way

Technical data

Function



- 2-way ball valve made from stainless steel



- Ring housing
1/2" ... 8"
- Flow rate
8.5 ... 2078.3 m³/h

General technical data												
Nominal width DN		1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"
Process valve connection	Flange to ANSI B16.5 class 150											
Valve function	2/2											
Design	2-way ball valve											
Sealing principle	Soft											
Type of actuation	Mechanical											
Switching position indication	Slot direction = flow direction											
Flow direction	Reversible											
Type of mounting	In-line installation											
Mounting position	Any											
Based on standard	ISO 5211 ANSI B16.5 class 150											
Breakaway torque at differential pressure, nominal pressure, process valve PN	[Nm]	8	10	12	20	30	40	60	90	130	1020	1080
Inside Ø	[mm]	15	20	24	30	38	50	64	76	98	150	200
Flow rate Kv	[m ³ /h]	8.5	15.6	23.2	37.3	61.6	111.8	187.9	264.5	453.8	1132.3	2078.3

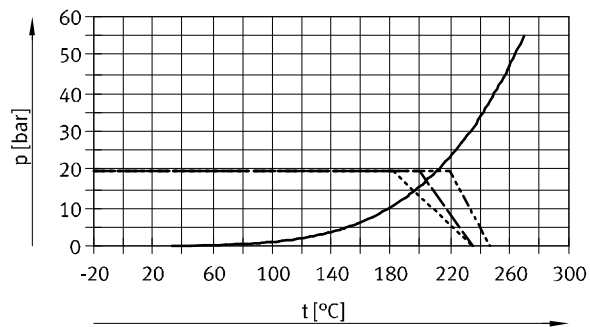
Operating and environmental conditions												
Nominal width DN		1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"
Nominal pressure of process valve PN	20											
Temperature of medium	[°C]	-20 ... +200										
Medium	Compressed air to ISO 8573-1:2010 [:-:-] Inert gases Water Vapour Neutral fluids											
Certification	CRN											
Corrosion resistance class CRC ¹⁾	4											
CE marking (see declaration of conformity) ²⁾	-			To EU Pressure Equipment Directive								

- 1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.
- 2) Additional information www.festo.com/sp → Certificates.

Technical data

Materials		Material number
Housing	Stainless steel casting	1.4408 (ASTM A351-CF8M)
Ball	1/2" ... 4"	1.4408 (ASTM A351-CF8M)
	6" ... 8"	1.4401 (ASTM A240-316)
Shaft	High-alloy stainless steel	1.4401 (ASTM A240-316)
Seals	FPM	
	Graphite	
	PCTFE	
	PTFE	
Note on materials	RoHS compliant	
	Contains paint-wetting impairment substances	

Permissible operating pressure p as a function of the temperature of the medium t



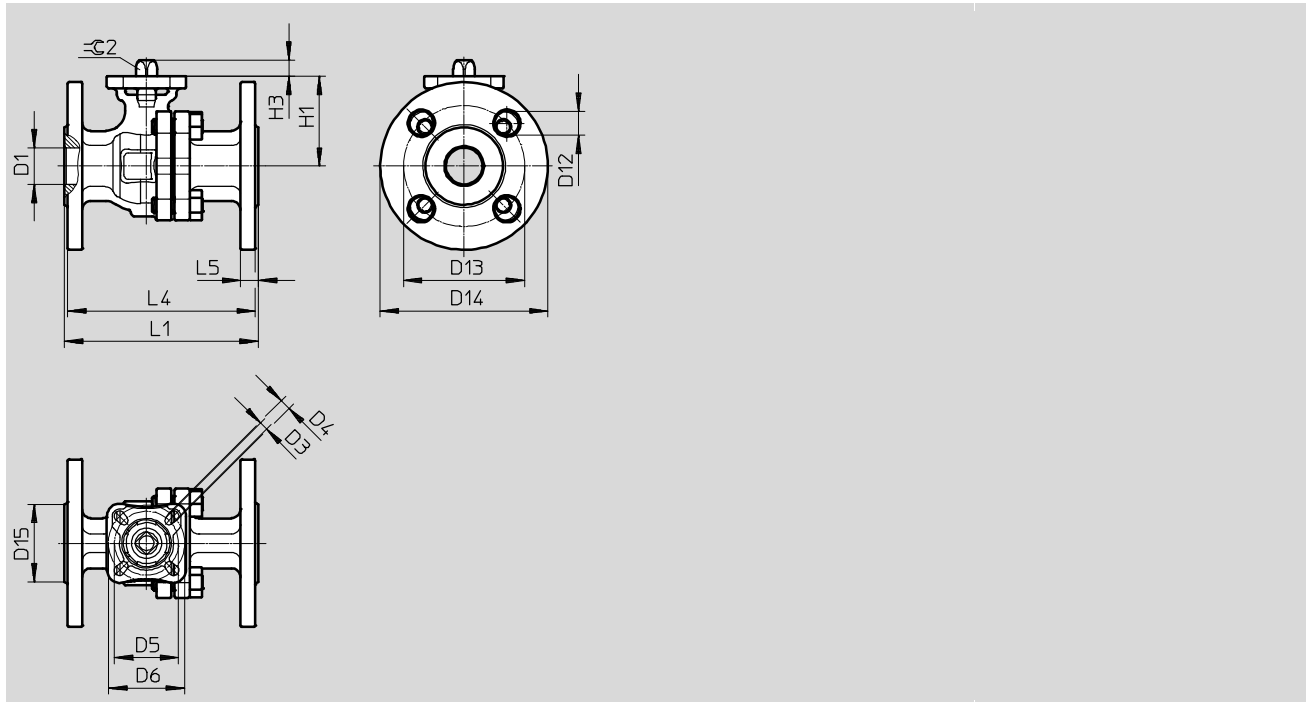
- Saturated water vapour
- - - - - PTFE, modified
- · - · - PTFE-reinforced
- · · · · PTFE

Ball valves VZBF, 2-way

Technical data

Dimensions

Download CAD data → www.festo.com



Type	D1 Ø	D3 Ø	D4 Ø	D5 Ø	D6 Ø	D12 Ø	D13 Ø	D14 Ø	D15 Ø	H1	H3	L1 ±2	L4	L5	$\pm C2$
VZBF-1/2-...	15	5.5	5.5	36	42	16	60.5	89	35	50.5	8.5	108	104.8	11.1	9
VZBF-3/4-...	20	5.5	5.5	36	42	16	70	98	43	55	8.5	117	113.8	11.6	9
VZBF-1-...	24	5.5	7	42	50	16	79.5	108	51	59	10.5	127.5	124.3	11.6	11
VZBF-11/4-...	30	5.5	7	42	50	16	89	117	64	62	10.5	140.5	137.3	12.7	11
VZBF-11/2-...	38	7	9	50	70	16	98.5	127	73	76	14	165	161.8	14.3	14
VZBF-2-...	50	7	9	50	70	19	120.5	152	92	84.5	14	178	174.8	16	14
VZBF-21/2-...	64	9	11	70	102	19	139.5	178	105	104.5	17	190.5	187.3	17.5	17
VZBF-3-...	76	9	11	70	102	19	152.5	190.5	127	111.5	17	203	199.8	19.1	17
VZBF-4-...	98	11	13	102	125	19	190.5	229	157	135.5	23	229	225.8	24	22
VZBF-6-...	150	11	13	102	125	22.4	241.5	279	216	201	27.5	394	390.8	25.4	27
VZBF-8-...	200	17	-	140	-	22.4	298.5	343	270	259	36	457	453.8	28.6	36

Ordering data

	Nominal width DN	Weight [g]	Part No.	Type
	1/2"	1550	4810851 ¹⁾	VZBF-1/2-P1-20-D-2-F0304-V15V15
	3/4"	1950	4810852 ¹⁾	VZBF-3/4-P1-20-D-2-F0304-V15V15
	1"	3050	4810853 ¹⁾	VZBF-1-P1-20-D-2-F0405-V15V15
	1 1/4"	3550	4810854 ¹⁾	VZBF-11/4-P1-20-D-2-F0405-V15V15
	1 1/2"	5630	4810855 ¹⁾	VZBF-11/2-P1-20-D-2-F0507-V15V15
	2"	7630	4810856 ¹⁾	VZBF-2-P1-20-D-2-F0507-V15V15
	2 1/2"	13650	4810857 ¹⁾	VZBF-21/2-P1-20-D-2-F0710-V15V15
	3"	17350	4810859 ¹⁾	VZBF-3-P1-20-D-2-F0710-V15V15
	4"	28100	4810860 ¹⁾	VZBF-4-P1-20-D-2-F1012-V15V15
	6"	50200	4810861 ¹⁾	VZBF-6-P1-20-D-2-F1012-V15V16
8"	84200	4810862 ¹⁾	VZBF-8-P1-20-D-2-F14-V15V16	

1) Festo is only a retailer of this product, not the manufacturer.

Accessories

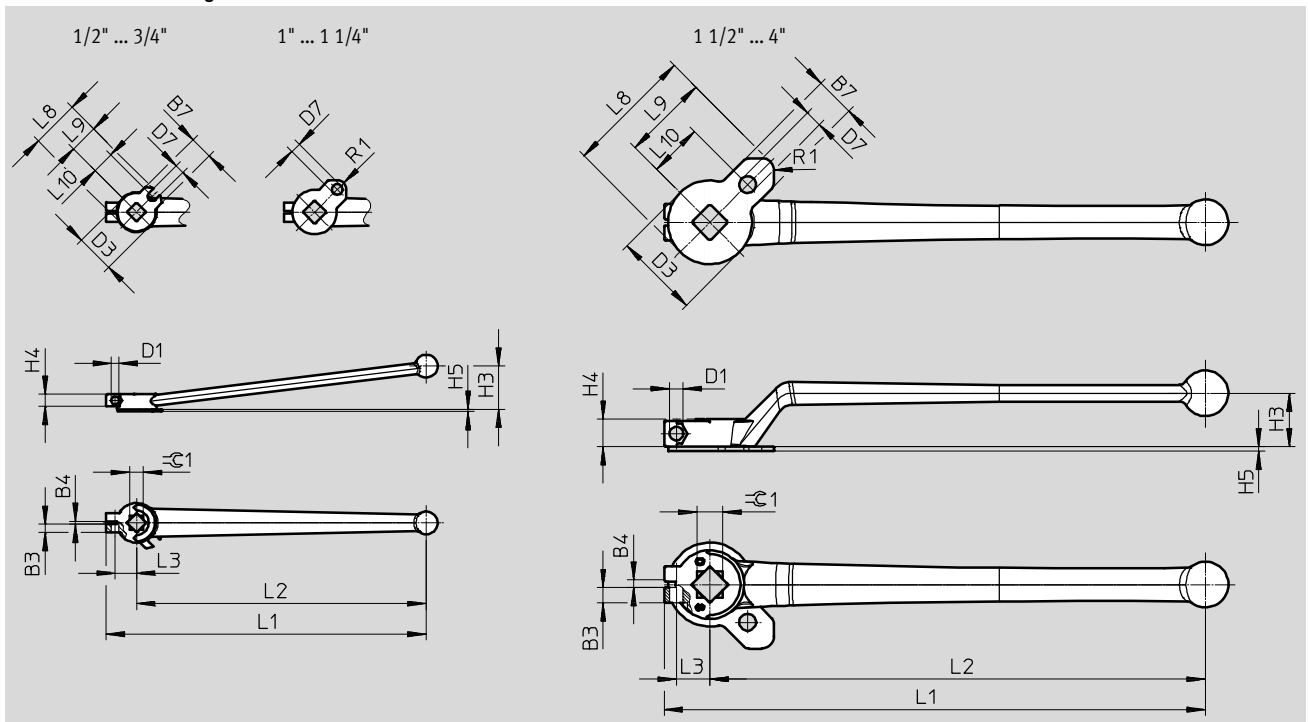
Hand lever VAOH

- High-alloy stainless steel
- Free of copper and PTFE
- RoHS compliant
- Contains paint-wetting impairment substances
- Lockable



Dimensions and ordering data

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Dimensions and ordering data

For connection	B3	B4	B7	D1 Ø	D3 Ø	D7 Ø	H3	H4	H5	L1	L2
1/2" ... 3/4"	5.5	2	15.8	5.2	25	6	28.3	8	1.5	210	190
1" ... 1 1/4"	5.5	2	17.8	5.2	29	7	28.3	8	1.8	210	190
1 1/2" ... 2"	5.5	3	26	6.2	35	8	30.5	13.5	2	260	235
2 1/2" ... 3"	10	4	27.5	9	55	11	35	18	3	355	325
4"	10	4	27.5	9	70	12	38	21	3	355	325

For connection	L3	L8	L9	L10	R1	≈C1	CRC ²⁾	Weight [g]	Part No.	Type
1/2" ... 3/4"	14	33.5	21.1	18	-	9	3	150	4895982 ¹⁾	VAOH-F9-9-H9-A
1" ... 1 1/4"	14	41.5	27	21	6	11	3	150	4895983 ¹⁾	VAOH-F9-11-H9-A
1 1/2" ... 2"	16.2	54	36.5	25	5	14	3	370	4895984 ¹⁾	VAOH-F9-14-H9-A
2 1/2" ... 3"	22	83.6	56.1	35	8	17	3	850	4895985 ¹⁾	VAOH-F9-17-H9-A
4"	22	102.7	67.7	51	7	22	3	900	4895986 ¹⁾	VAOH-F9-22-H9-A

1) Festo is only a retailer of this product, not the manufacturer.

2) Corrosion resistance class CRC 3 to Festo standard FN 940070

High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Ball valves VZBF, 2-way

Accessories

Hand lever VAOH

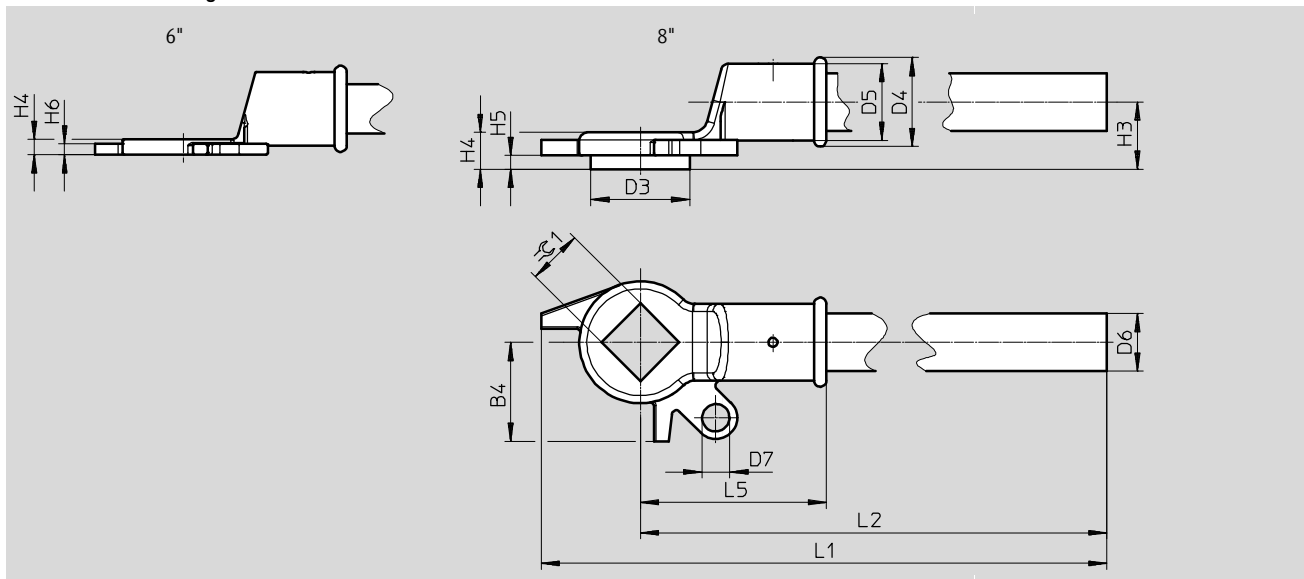
Information on materials:

- High-alloy stainless steel
- Free of copper and PTFE
- RoHS compliant
- Contains paint-wetting impairment substances



Dimensions and ordering data

Download CAD data → www.festo.com



Dimensions and ordering data

For connection	B4	D3	D4	D5	D6	D7	H3	H4	H5
		∅	∅	∅	∅	∅			
6"	58	–	56,5	48,5	32	14	30	10	–
8"	65	65	58,5	50,5	38	18	43,1	15	9

For connection	H6	L1	L2	L5	≅G1	CRC ²⁾	Weight [g]	Part No.	Type
6"	7	815,1	757,1	107	27	3	1800	4895987 ¹⁾	VAOH-F9-27-H14-A
8"	10	928	863	122	36	3	3800	4895988 ¹⁾	VAOH-F9-36-H14-A

1) Festo is only a retailer of this product, not the manufacturer.

2) Corrosion resistance class CRC 3 to Festo standard FN 940070

High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Ball valves VZBC, 2-way, compact design

Type codes

		VZBC	-	15	-	F	F	-	40	-	22	-	F0304	-	V4	V4	T
Type																	
VZBC	Ball valve																
Nominal width DN																	
15	DN15																
20	DN20																
25	DN25																
32	DN32																
40	DN40																
50	DN50																
65	DN65																
80	DN80																
100	DN100																
Connection type 1																	
F	Flange to EN 1092-1																
Connection type 2																	
F	Flange to EN 1092-1																
Process valve nominal pressure PN																	
40	40 bar																
16	16 bar																
Valve function																	
22	2/2-way																
Flanged connection to ISO 5211																	
F0304	Hole pattern 03 and 04																
F0405	Hole pattern 04 and 05																
F0507	Hole pattern 05 and 07																
F07	Hole pattern 07																
F0710	Hole pattern 07 and 10																
Housing material																	
V4	Stainless steel 1.4408																
Shut-off element material																	
V4	Stainless steel 1.4408																
Sealing material																	
T	PTFE-reinforced																

Ball valves VZBC, 2-way, compact design

Technical data



- 2-way ball valve made from stainless steel



- Ring housing
DN15 ... DN100
- Flow rate
19.4 ... 1414 m³/h

General technical data

Process valve connection	Ring housing with threaded flange									
Nominal width DN	15	20	25	32	40	50	65	80	100	
Valve function	2/2									
Design	2-way ball valve									
Sealing principle	Soft									
Actuation type	Mechanical									
Manual override	None									
Switching position indication	Slot direction = flow direction									
Flow direction	Reversible									
Type of mounting	In-line installation									
Mounting position	Any									
Based on standard	EN 1092-1 ISO 5211									
Actuating torque [Nm]	10	13	17	24	35	54	85	117	148	
Inside diameter [mm]	15	20	25	32	38	50	64	76	96	
Flow rate Kv [m ³ /h]	19.4	45.6	71.5	105	170	275	507	905	1414	

Operating and environmental conditions

Process valve connection	Ring housing with threaded flange									
Nominal width DN	15	20	25	32	40	50	65	80	100	
Operating medium	Compressed air to ISO 8573-1:2010 [-:--]									
Process valve operating medium	Neutral liquids Inert gases Water – no water vapour									
Process valve nominal pressure	PN 40							PN 16		
Temperature of medium [°C]	-10 ... +200									
Corrosion resistance class CRC ¹⁾	3									
CE marking (see declaration of conformity)	-			To EU Pressure Equipment Directive						
➔ www.festo.com										

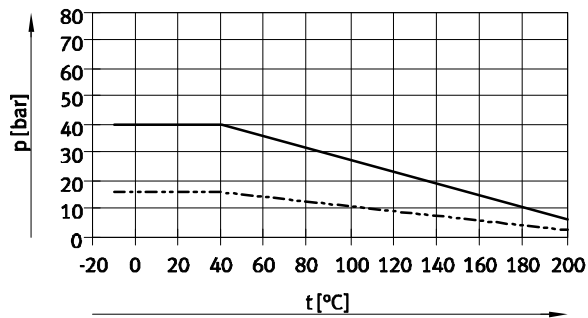
1) Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Ball valves VZBC, 2-way, compact design

Technical data

Materials		Material number
Housing	High-alloy stainless steel	1.4408
Ball		1.4408
Shaft		1.4401
Seals	PTFE	
	PTFE-reinforced	
Note on materials	RoHS compliant	
	Contains paint-wetting impairment substances	

Permissible operating pressure p as a function of the temperature of the medium t



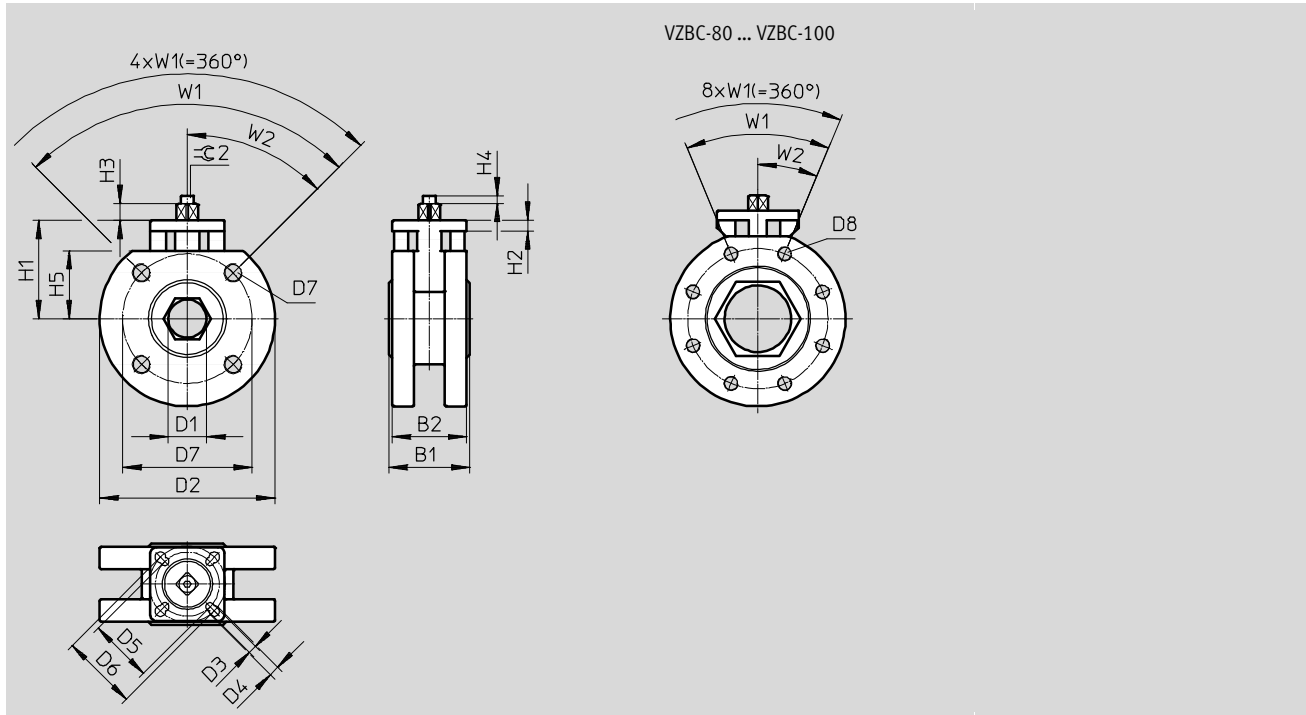
- DN15 ... DN50
- - - DN65 ... DN100

Ball valves VZBC, 2-way, compact design

Technical data

Dimensions

Download CAD data → www.festo.com



Type	B1	B2	D1	D2	D3	D4	D5	D6	D7
	+1.6		∅	∅	∅	∅	∅	∅	∅
VZBC-15-FF-40-22-F0304-V4V4T	40	36	15	95	6	5.5	36	42	65
VZBC-20-FF-40-22-F0304-V4V4T	44	40	20	105	6	5.5	36	42	75
VZBC-25-FF-40-22-F0405-V4V4T	53	49	25	115	5.5	7	42	50	85
VZBC-32-FF-40-22-F0405-V4V4T	58.4	54.4	32	140	5.5	7	42	50	100
VZBC-40-FF-40-22-F0507-V4V4T	62	56	38	150	7	8.5	50	70	110
VZBC-50-FF-40-22-F0507-V4V4T	78	72	50	165	7	8.5	50	70	125
VZBC-65-FF-16-22-F07-V4V4T	100	94	64	185	-	9	-	70	145
VZBC-80-FF-16-22-F07-V4V4T	120	114	76	200	-	9	-	70	160
VZBC-100-FF-16-22-F0710-V4V4T	152	146	96	220	9	10.5	70	102	180


Type	D8	H1	H2	H3	H4	H5	W1	W2	±0.2
				+1.5 -0.5					-0.1
VZBC-15-FF-40-22-F0304-V4V4T	M12	60	6.3	7.86	5	34.5	90°	45°	9
VZBC-20-FF-40-22-F0304-V4V4T	M12	64.3	7	11	5	38.5	90°	45°	9
VZBC-25-FF-40-22-F0405-V4V4T	M12	64.6	7	11	5	44.6	90°	45°	11
VZBC-32-FF-40-22-F0405-V4V4T	M16	69	7	11	-	51	90°	45°	11
VZBC-40-FF-40-22-F0507-V4V4T	M16	76.3	7.2	17	-	55	90°	45°	14
VZBC-50-FF-40-22-F0507-V4V4T	M16	85.5	7.2	15.3	-	63	90°	45°	14
VZBC-65-FF-16-22-F07-V4V4T	M16	105	10.6	14	-	73.5	90°	45°	17
VZBC-80-FF-16-22-F07-V4V4T	M16	123	10.6	18	-	94	45°	22.5°	17
VZBC-100-FF-16-22-F0710-V4V4T	M16	132	12.6	15	-	105	45°	22.5°	17

06

Ball valves and ball valve units

Ball valves VZBC, 2-way, compact design

Technical data

Ordering data		Weight	Part No.	Type
	Process valve connection	[g]		
	Ring housing with threaded flange	1500	1692198	VZBC-15-FF-40-22-F0304-V4V4T
		2100	1692200	VZBC-20-FF-40-22-F0304-V4V4T
		2600	1692201	VZBC-25-FF-40-22-F0405-V4V4T
		3700	1692202	VZBC-32-FF-40-22-F0405-V4V4T
		4400	1692204	VZBC-40-FF-40-22-F0507-V4V4T
		6200	1692206	VZBC-50-FF-40-22-F0507-V4V4T
		10000	1692207	VZBC-65-FF-16-22-F07-V4V4T
		14400	1692208	VZBC-80-FF-16-22-F07-V4V4T
		20600	1692209	VZBC-100-FF-16-22-F0710-V4V4T

Ball valves VZBC, 2-way, compact design

Accessories

Hand lever VAOH

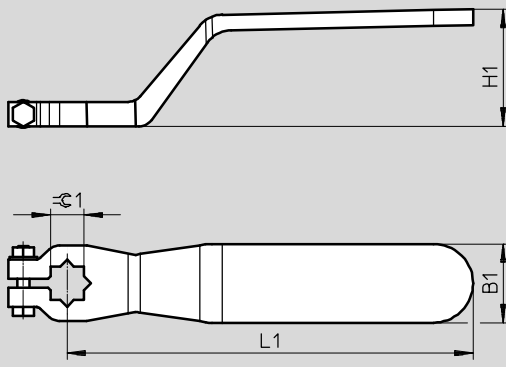
Information on materials:

- High-alloy stainless steel
- Free of copper and PTFE
- Contains paint-wetting impairment substances



Dimensions and ordering data

Download CAD data → www.festo.com



For connection	B1 ±5	H1 ±5	L1 ±10	$\varnothing 1$ ±0.5	Weight [g]	Part No.	Type
DN15 ... DN20	21	36	120	9	100	542702	VAOH-9-H9
DN25 ... DN32	26	40	140	11	200	542703	VAOH-11-H9
DN40 ... DN50	31	46	180	14	300	542704	VAOH-14-H9
DN65 ... DN100	36	55	240	17	450	542705	VAOH-17-H9

Type codes

		VAPB	-	1/2	-	F	-	40	-	F03	-	
Type												
VAPB	Ball valve											
Connection to EN 10226-1												
1/4	Barrel with female thread Rp1/4											
3/8	Barrel with female thread Rp3/8											
1/2	Barrel with female thread Rp1/2											
3/4	Barrel with female thread Rp3/4											
1	Barrel with female thread Rp1											
1 1/4	Barrel with female thread Rp1 1/4											
1 1/2	Barrel with female thread Rp1 1/2											
2	Barrel with female thread Rp2											
2 1/2	Barrel with female thread Rp2 1/2											
Connection type												
F	Female thread											
Process valve nominal pressure PN												
25	PN 25											
40	PN 40											
Flange hole pattern to ISO 5211												
F03	1 bolt hole circle with \varnothing 36 mm											
F0304	2 bolt hole circles with \varnothing 36 and 42 mm											
F0405	2 bolt hole circles with \varnothing 42 and 50 mm											
F05	1 bolt hole circle with \varnothing 50 mm											
F07	1 bolt hole circle with \varnothing 70 mm											
Material												
-	Brass											

Ball valves VAPB, 2-way

Technical data



- - Connecting thread
Rp1/4 ... Rp21/2
- - Flow rate
5.9 ... 535 m³/h

- Blow-out proof shaft assembled from inside



General technical data

Connecting thread	Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp11/4	Rp11/2	Rp2	Rp21/2
Nominal width DN	15	15	15	20	25	32	40	50	63
Valve function	2/2								
Design	2-way ball valve								
Sealing principle	Soft								
Actuation type	Mechanical								
Switching position indication	Slot direction = flow direction								
Flow direction	Reversible								
Type of mounting	In-line installation								
Mounting position	Any								
Based on standard	ISO 5211 EN 10226-1								
Working port 1, 2	1/4	3/8	1/2	3/4	1	11/4	11/2	2	21/2
Internal diameter [mm]	15	15	15	20	25	32	40	50	63
Flow rate Kv [m ³ /h]	5.9	9.4	17	41	70	121	200	292	535

Operating and environmental conditions

Connecting thread	Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp11/4	Rp11/2	Rp2	Rp21/2
Medium	Compressed air to ISO 8573-1:2010 [:-:-]								
	Neutral fluids								
	Inert gases								
	Water								
Process valve nominal pressure	PN 40	PN 40	PN 40	PN 40	PN 40	PN 40	PN 25	PN 25	PN 25
Temperature of medium [°C]	-20 ... +150								
Breakaway torque at a differential pressure of 0 bar	3.1	3.1	3.1	4.6	6.5	10.8	13.5	20	30
Breakaway torque at a differential pressure of 10 bar	3.5	3.5	3.5	5.1	7.2	11.9	14.9	22	33
Breakaway torque at process valve differential pressure PN	5	5	5	6	8.5	15	19	29	45
CE mark (see declaration of conformity) ¹⁾	-							To EU Pressure Equipment Directive	

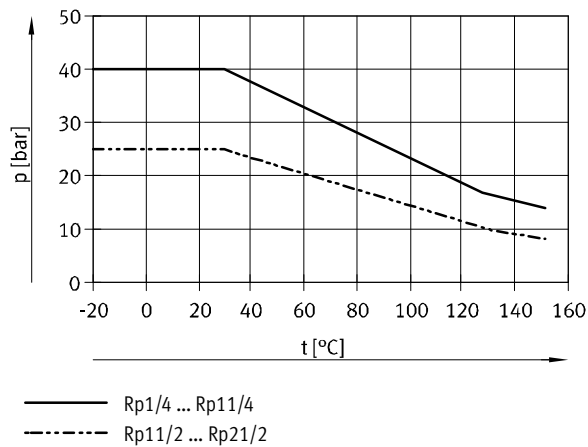
1) Additional information www.festo.com/sp → Certificates.

Technical data

Materials		Material number
Housing	Nickel-plated brass	CW617N
Ball	Brass, hard-chromium plated	Up to Rp1/2 CW614N, and above Rp3/4 CW617N
Shaft	Nickel-plated brass	CW614N
Seals	Ball	PTFE
		HNBR
	Shaft	PTFE
Note on materials	RoHS compliant	
	Contains paint-wetting impairment substances	

Torque ¹⁾ [Nm]	Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp11/4	Rp11/2	Rp2	Rp21/2
Connecting thread									
$\Delta p = 0$ bar	3.1	3.1	3.1	4.6	6.5	10.8	13.5	20	30
$\Delta p = 10$ bar	3.5	3.5	3.5	5.1	7.2	11.9	14.9	22	33
$\Delta p = pN$	5	5	5	6	8.5	15	19	29	45

1) Torque required for actuating the ball valve

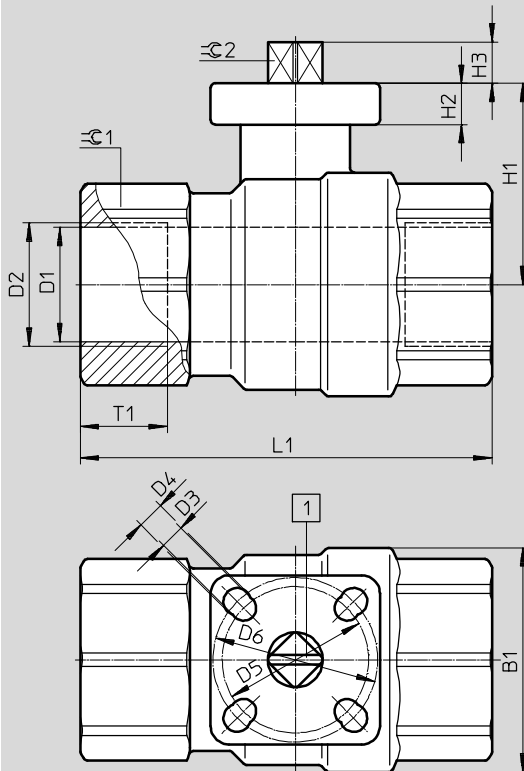
Permissible operating pressure p as a function of the temperature of the medium t 

Ball valves VAPB, 2-way

Technical data

Dimensions

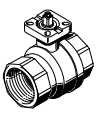
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1 Switching position indication: the slot direction corresponds to the flow direction.

Type	B1	D1 ∅ ±0.15	D2	D3 ∅	D4 ∅	D5 ∅	D6 ∅	H1	H2	H3	L1 ±2	T1	⊖ 1 -0.1	⊖ 2
VAPB-1/4-F-40-F03	35	15	Rp1/4	5.5	-	36	-	40	9	9	75	15	26	9
VAPB-3/8-F-40-F03	35	15	Rp3/8	5.5	-	36	-	40	9	9	75	15	26	9
VAPB-1/2-F-40-F03	35	15	Rp1/2	5.5	-	36	-	40	9	9	75	15	26	9
VAPB-3/4-F-40-F03	45	20	Rp3/4	5.5	-	36	-	45	9	9	80	16	32	9
VAPB-1-F-40-F0304	55	25	Rp1	5.5	-	36	42	45	9	9	90	19	41	9
VAPB-11/4-F-40-F0405	65	32	Rp11/4	5.5	6.5	42	50	60	10	11	110	21	50	11
VAPB-11/2-F-40-F0405	75	40	Rp11/2	5.5	6.5	42	50	65	10	11	120	21	55	11
VAPB-2-F-25-F05	90	50	Rp2	6.5	-	50	-	75	12	14	140	25	70	14
VAPB-21/2-F-25-F07	110	65	Rp21/2	8.5	-	70	-	85	10	15.5	143	24	83	14

Ordering data

Version	Process valve connection	Weight [g]	Part No.	Type
	Rp1/4	500	534302	VAPB-1/4-F-40-F03
	Rp3/8	500	534303	VAPB-3/8-F-40-F03
	Rp1/2	400	534304	VAPB-1/2-F-40-F03
	Rp3/4	500	534305	VAPB-3/4-F-40-F03
	Rp1	800	534306	VAPB-1-F-40-F0304
	Rp11/4	1300	534307	VAPB-11/4-F-40-F0405
	Rp11/2	1900	534308	VAPB-11/2-F-25-F0405
	Rp2	3100	534309	VAPB-2-F-25-F05
	Rp21/2	3100	534310	VAPB-21/2-F-25-F07

Accessories

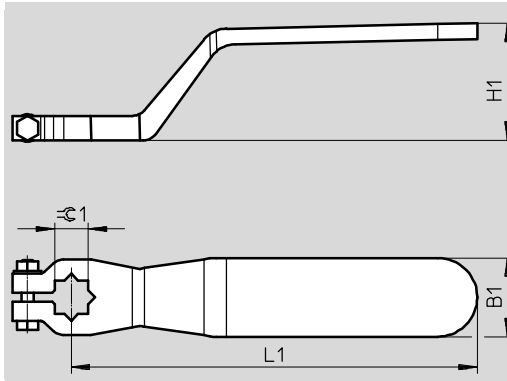
Hand lever VAOH

Information on materials:

- High-alloy stainless steel
- Free of copper and PTFE
- Contains paint-wetting impairment substances



Dimensions and ordering data

Download CAD data → www.festo.com

For connection	B1 ±5	H1 ±5	L1 ±10	∅1 ±0.5	Weight [g]	Part No.	Type
Rp1/4 ... Rp1	21	36	120	9	100	542702	VAOH-9-H9
Rp11/4 ... Rp11/2	26	40	140	11	200	542703	VAOH-11-H9
Rp2 ... Rp21/2	31	46	180	14	300	542704	VAOH-14-H9

Ball valves VZBM, 2-way

Type codes

VZBM - 1/4 - RP - 40 - D - 2 - F03 - - B2 B3

Type	
VZBM	Ball valves

Nominal width DN	
1/4	DN8
3/8	DN10
1/2	DN15
3/4	DN20
1	DN25
1 1/4	DN32
1 1/2	DN40
2	DN50

Process valve connection type	
RP	Pipe thread to EN 10226-1

Nominal pressure	
25	25 bar
40	40 bar

Design	
D	Two parts

Valve function	
2	2/2-way

Flanged connection to ISO 5211	
F03	Hole pattern 03
F0305	Hole pattern 03 and 05

Actuation type	
-	Via drive

Housing material	
B2	Nickel-plated brass

Shut-off element material	
B3	Chrome-plated brass

06

Ball valves and ball valve units


Technical data


Function



- 2-way ball valve made from brass



-  - Connecting thread
Rp1/4 ... Rp2

-  - Flow rate
5.9 ... 243 m³/h

General technical data

Connecting thread	Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp11/4	Rp11/2	Rp2
Nominal width DN	8	10	15	20	25	32	40	50
Valve function	2/2							
Design	2-way ball valve							
Sealing principle	Soft							
Actuation type	Mechanical							
Switching position indication	Slot direction = flow direction							
Flow direction	Reversible							
Type of mounting	In-line installation							
Mounting position	Any							
Based on standard	ISO 5211 EN 10226-1							
Breakaway torque at differential pressure, nominal pressure, process valve PN [Nm]	2	2	3	3.5	4	5	7	10
Inside diameter [mm]	10	10	15	20	25	32	40	50
Flow rate Kv [m ³ /h]	5.9	9.4	15	28	39	84	156	243

Operating and environmental conditions

Connecting thread	Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp11/4	Rp11/2	Rp2
Process valve nominal pressure PN	40	40	25	25	25	25	25	25
Temperature of medium [°C]	-15 ... +90							
Medium	Compressed air to ISO 8573-1:2010 [-:::]							
	Inert gases							
	Water – no water vapour							
	Neutral fluids							
CE mark (see declaration of conformity) ¹⁾	To EU Pressure Equipment Directive							

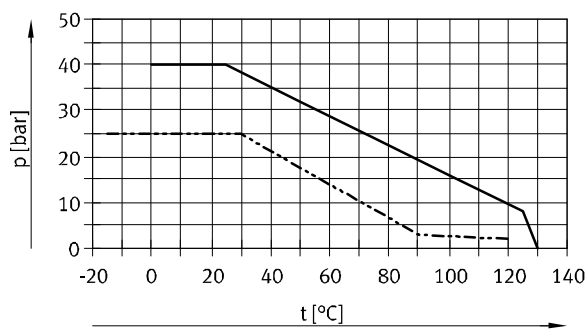
1) Additional information www.festo.com/sp → Certificates.

Ball valves VZBM, 2-way

Technical data

Materials		Material number
Housing		Nickel-plated brass CW617N
Ball	Rp1/4 ... Rp3/8	Chrome-plated brass CW614N
	Rp1/2 ... Rp2	Chrome-plated brass CW617N
Shaft	Rp1/4 ... Rp3/8	Brass CW614N
	Rp1/2 ... Rp2	Brass CW617N
Seals	Rp1/4 ... Rp3/8	PTFE
		PTFE
	Rp1/2 ... Rp2	FPM
		HNBR
Note on materials	RoHS compliant	
	Contains paint-wetting impairment substances	

Permissible operating pressure p as a function of the temperature of the medium t

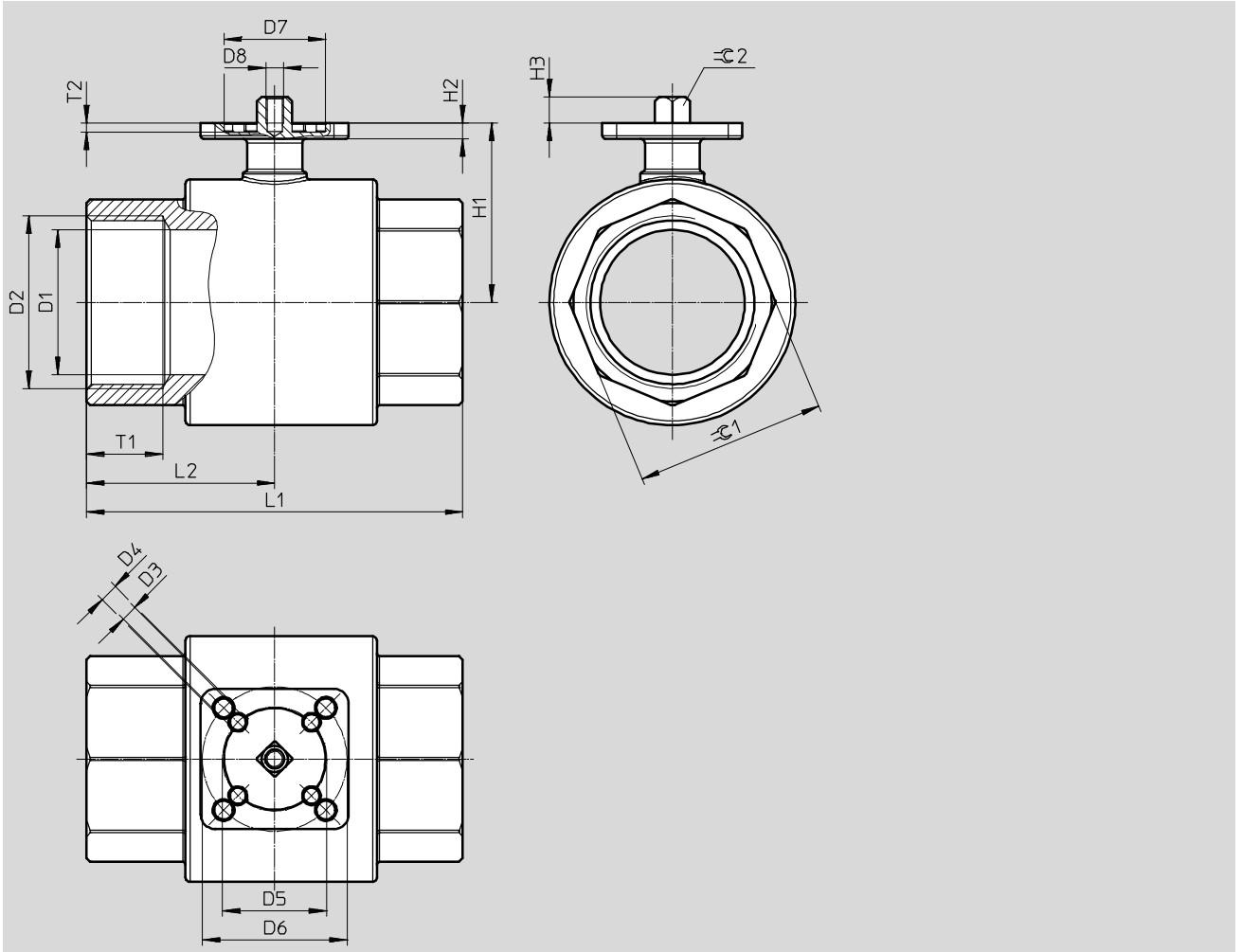


- Rp1/4 ... Rp3/8
- - - Rp1/2 ... Rp2

Technical data

Dimensions

Download CAD data → www.festo.com

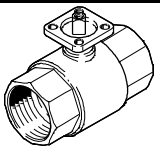


Type	D1 ∅ ±0.15	D2	D3 ∅ +0.2	D4 ∅ +0.2	D5 ∅ ±0.15	D6 ∅ ±0.15	D7 ∅	D8
VZBM-1/4-RP-40-D-2-F03-B2B3	10	Rp1/4	5.5	-	36	-	25 ^{H8}	M4
VZBM-3/8-RP-40-D-2-F03-B2B3	10	Rp3/8					25 ^{H8}	M4
VZBM-1/2-RP-25-D-2-F03-B2B3	15	Rp1/2					25.2±0.1	M6
VZBM-3/4-RP-25-D-2-F03-B2B3	20	Rp3/4					25.2±0.1	
VZBM-1-RP-25-D-2-F03-B2B3	25	Rp1					25.2±0.1	
VZBM-11/4-RP-25-D-2-F03-B2B3	32	Rp11/4					25.2±0.1	
VZBM-11/2-RP-25-D-2-F0305-B2B3	40	Rp11/2					35.2±0.1	
VZBM-2-RP-25-D-2-F0305-B2B3	50	Rp2	6.5	50	35.2±0.1			

Type	H1	H2	H3	L1 ±2	L2	T1 Min.	T2 ±0.1	$\sqrt{Ra}</math>1±1$	$\sqrt{Ra}</math>2h11$
VZBM-1/4-RP-40-D-2-F03-B2B3	38	9	9	75	32.5	15	3.2	±1	9
VZBM-3/8-RP-40-D-2-F03-B2B3	38	9		75	32.5				
VZBM-1/2-RP-25-D-2-F03-B2B3	32	5.5		61	30.5				
VZBM-3/4-RP-25-D-2-F03-B2B3	36			70	35	16.3			
VZBM-1-RP-25-D-2-F03-B2B3	44			84	42	19.1			
VZBM-11/4-RP-25-D-2-F03-B2B3	49			97	48.5	21.4			
VZBM-11/2-RP-25-D-2-F0305-B2B3	54			108	54	22			
VZBM-2-RP-25-D-2-F0305-B2B3	62			130	65	26.3			

Ball valves VZBM, 2-way

Technical data

Ordering data	Connecting thread	Weight [g]	Part No.	Type
	Rp1/4	412	4405646 ¹⁾	VZBM-1/4-RP-40-D-2-F03-B2B3
	Rp3/8	390	4405647 ¹⁾	VZBM-3/8-RP-40-D-2-F03-B2B3
	Rp1/2	206	4405648 ¹⁾	VZBM-1/2-RP-25-D-2-F03-B2B3
	Rp3/4	306	4405649 ¹⁾	VZBM-3/4-RP-25-D-2-F03-B2B3
	Rp1	473	4405650 ¹⁾	VZBM-1-RP-25-D-2-F03-B2B3
	Rp1 1/4	730	4405651 ¹⁾	VZBM-1 1/4-RP-25-D-2-F03-B2B3
	Rp1 1/2	1135	4405652 ¹⁾	VZBM-1 1/2-RP-25-D-2-F0305-B2B3
	Rp2	1770	4405653 ¹⁾	VZBM-2-RP-25-D-2-F0305-B2B3

1) Festo is only a retailer of this product, not the manufacturer.

Accessories

Hand lever VAOH

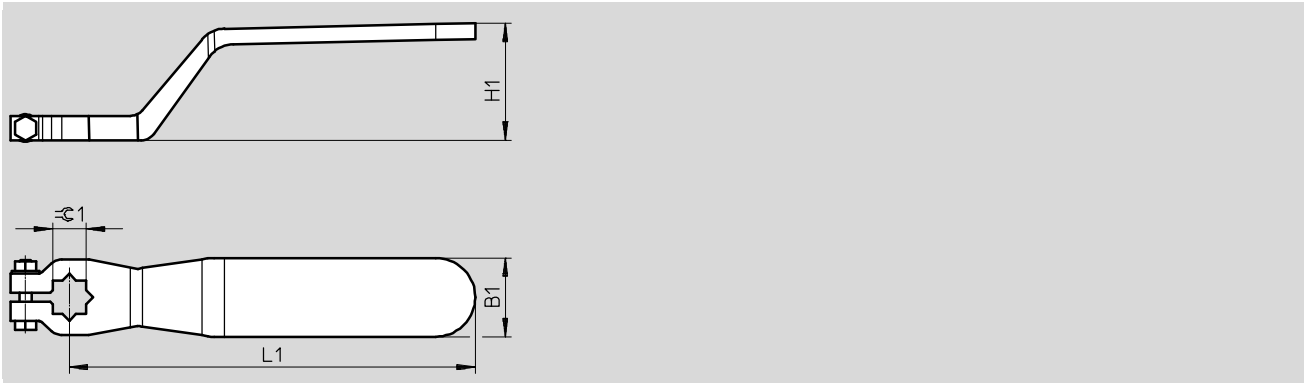
Information on materials:

- High-alloy stainless steel
- Free of copper and PTFE
- Contains paint-wetting impairment substances



Dimensions and ordering data

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For connection	B1	H1	L1	≈∅1	Weight [g]	Part No.	Type
Rp1/4 ... Rp2	±5 21	±5 36	±10 120	±0.5 9	100	542702	VAOH-9-H9

Ball valves VZBM, 3-way

Type codes

VZBM - 2 - RP - 25 - F - 3L - F05 - - B2 B3

Type	
VZBM	Ball valves

Nominal width DN	
1/4	DN8
3/8	DN10
1/2	DN15
3/4	DN20
1	DN25
1 1/4	DN32
1 1/2	DN40
2	DN50

Process valve connection type	
RP	Pipe thread to EN 10226-1

Nominal pressure	
25	25 bar
40	40 bar

Design	
F	Four-part

Valve function	
3L	3/2-way, L-shaped bore
3T	3/2-way, T-shaped bore

Flanged connection to ISO 5211	
F03	Hole pattern 03
F0304	Hole pattern 03 and 04
F0405	Hole pattern 04 and 05
F05	Hole pattern 05

Actuation type	
-	Via drive

Housing material	
B2	Brass, nickel-plated/CW617N

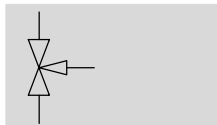
Shut-off element material	
B3	Brass, chrome-plated/CW614N

06

Ball valves and ball valve units


Technical data


Function



- With L-shaped bore or T-shaped bore



-  - Connecting thread
Rp1/4 ... Rp2

-  - Flow rate
5.9 ... 292 m³/h

General technical data		Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp1 1/4	Rp1 1/2	Rp2
Connecting thread									
Nominal width DN		8	10	15	20	25	32	40	50
Valve function		3/2							
Design		3-way ball valve							
Sealing principle		Soft							
Type of actuation		Mechanical							
Switching position indication		Slot direction = flow direction							
Flow direction		Reversible							
Type of mounting		In-line installation							
Mounting position		Any							
Based on standard		ISO 5211 EN 10226-1							
Breakaway torque at differential pressure, nominal pressure, process valve PN	[Nm]	6	6	6.9	8	11	16.7	26.7	36
Inside diameter	[mm]	8	10	14.1	17.6	25	32	38	45
Flow rate Kv	[m ³ /h]	5.9	9.4	17	41	70	121	200	292

Operating and environmental conditions		Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp1 1/4	Rp1 1/2	Rp2
Connecting thread									
Process valve nominal pressure PN		40	40	40	40	40	40	25	25
Temperature of medium	[°C]	-20 ... +130							
Medium		Compressed air to ISO 8573-1:2010 [-:::]							
		Inert gases							
		Water – no water vapour							
		Neutral fluids							
CE mark (see declaration of conformity) ¹⁾		To EU Pressure Equipment Directive							

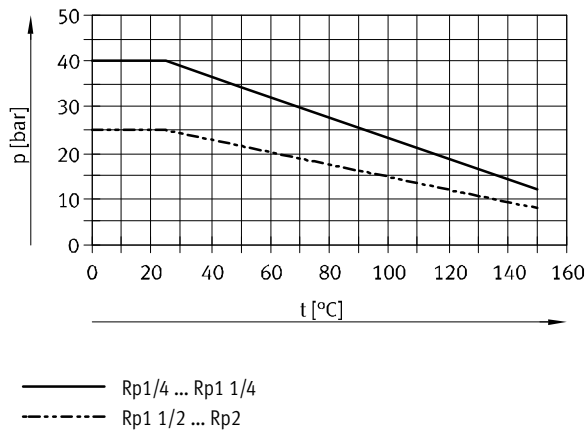
1) Additional information www.festo.com/sp → Certificates.

Ball valves VZBM, 3-way

Technical data

Materials		Material number
Housing	Brass, nickel-plated	CW617N
Ball	Brass, chrome-plated	CW614N
Shaft	Brass	CW614N
Seals	PTFE	
	HNBR	
Note on materials	RoHS-compliant	
	Contains paint-wetting impairment substances	

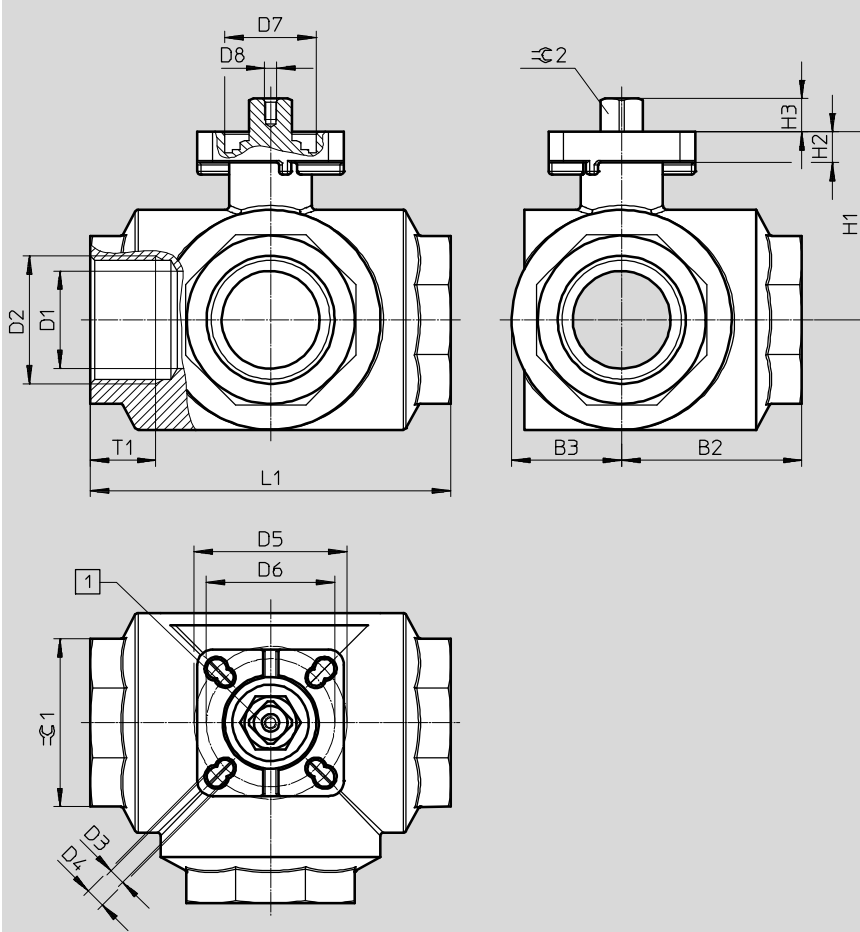
Permissible operating pressure p as a function of the temperature of the medium t



Technical data

Dimensions

Download CAD data → www.festo.com



1 Switching position indication: the slot direction corresponds to the flow direction → page 556

Type	B2	B2	D1 ∅	D2	D3 ∅	D4 ∅	D5 ∅	D6 ∅	D7 ∅ H8	D8
VZBM-1/4-RP-40-F-3...-F03-B2B3	32.5	17	8	Rp1/4	5.5	-	36	-	25	M4
VZBM-3/8-RP-40-F-3...-F03-B2B3			10	Rp3/8						
VZBM-1/2-RP-40-F-3...-F03-B2B3			14.1	Rp1/2						
VZBM-3/4-RP-40-F-3...-F03-B2B3	38	21.5	17.6	Rp3/4		5.5	-	42	30	
VZBM-1-RP-40-F-3...-F0304-B2B3	48.5	26	25	Rp1						
VZBM-11/4-RP-40-F-3...-F0405-B2B3	59	36.5	32	Rp1 1/4		6.5	42	50	30	
VZBM-11/2-RP-25-F-3...-F0405-B2B3	67.5	38	38	Rp1 1/2		6.5	50	-	35	
VZBM-2-RP-25-F-3...-F05-B2B3	78.5	43	45	Rp2						

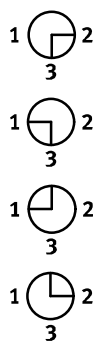
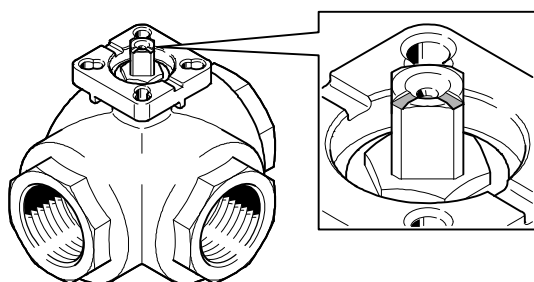
Type	H1	H2	H3	L1	T1	∅C1	∅C2
				±2	Min.		-0.1
VZBM-1/4-RP-40-F-3...-F03-B2B3	38	9	9	64.5	15	25	9
VZBM-3/8-RP-40-F-3...-F03-B2B3				76			
VZBM-1/2-RP-40-F-3...-F03-B2B3				97			
VZBM-3/4-RP-40-F-3...-F03-B2B3	42	10	11	118	21.4	55	11
VZBM-1-RP-40-F-3...-F0304-B2B3	46.5			134.5			
VZBM-11/4-RP-40-F-3...-F0405-B2B3	61.3	12	14	157	25.7	67	14
VZBM-11/2-RP-25-F-3...-F0405-B2B3	63.5						
VZBM-2-RP-25-F-3...-F05-B2B3	74						

Ball valves VZBM, 3-way

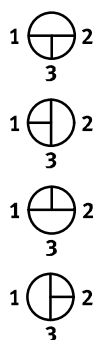
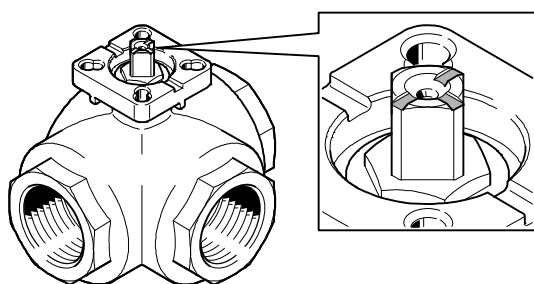
Technical data

Switching position indication

L-hole



T-hole



Ordering data

	Version	Connecting thread	Weight [g]	Part No.	Type
	L-hole	Rp1/4	530	4451869 ¹⁾	VZBM-1/4-RP-40-F-3L-F03-B2B3
		Rp3/8	500	4451868 ¹⁾	VZBM-3/8-RP-40-F-3L-F03-B2B3
		Rp1/2	460	4451867 ¹⁾	VZBM-1/2-RP-40-F-3L-F03-B2B3
		Rp3/4	720	4451866 ¹⁾	VZBM-3/4-RP-40-F-3L-F03-B2B3
		Rp1	1280	4451862 ¹⁾	VZBM-1-RP-40-F-3L-F0304-B2B3
		Rp1 1/4	3000	4451863 ¹⁾	VZBM-11/4-RP-40-F-3L-F0405-B2B3
		Rp1 1/2	3260	4451864 ¹⁾	VZBM-11/2-RP-25-F-3L-F0405-B2B3
		Rp2	4470	4451865 ¹⁾	VZBM-2-RP-25-F-3L-F05-B2B3
	T-hole	Rp1/4	530	4451861 ¹⁾	VZBM-1/4-RP-40-F-3T-F03-B2B3
		Rp3/8	460	4451854 ¹⁾	VZBM-3/8-RP-40-F-3T-F03-B2B3
		Rp1/2	460	4451855 ¹⁾	VZBM-1/2-RP-40-F-3T-F03-B2B3
		Rp3/4	710	4451856 ¹⁾	VZBM-3/4-RP-40-F-3T-F03-B2B3
		Rp1	1250	4451857 ¹⁾	VZBM-1-RP-40-F-3T-F0304-B2B3
		Rp1 1/4	2930	4451858 ¹⁾	VZBM-11/4-RP-40-F-3T-F0405-B2B3
	Rp1 1/2	3190	4451859 ¹⁾	VZBM-11/2-RP-25-F-3T-F0405-B2B3	
	Rp2	4320	4451860 ¹⁾	VZBM-2-RP-25-F-3T-F05-B2B3	

1) Festo is only a retailer of this product, not the manufacturer.

Accessories

Hand lever VAOH

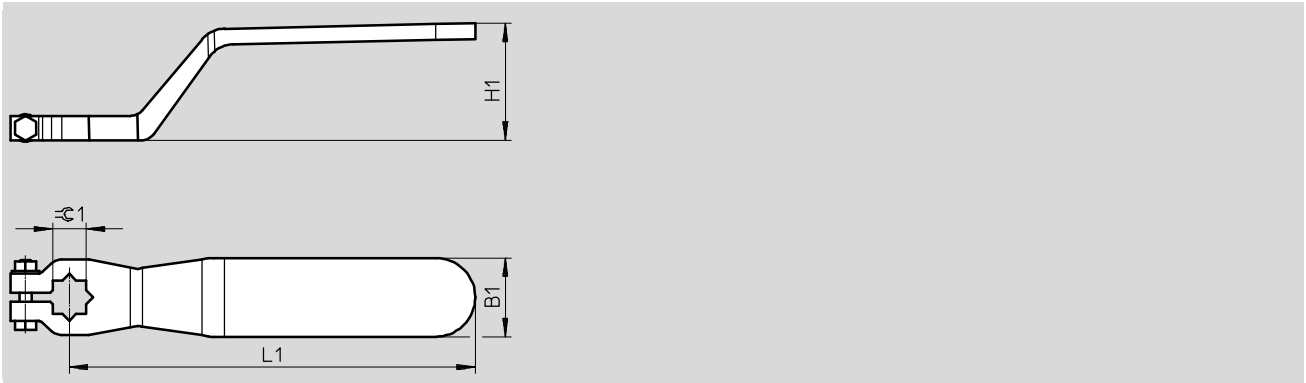
Information on materials:

- High-alloy stainless steel
- Free of copper and PTFE
- Contains paint-wetting impairment substances



Dimensions and ordering data

Download CAD data → www.festo.com



For connection	B1	H1	L1	≈C1	Weight [g]	Part No.	Type
Rp1/4 ... Rp1	±5	±5	±10	±0.5	100	542702	VAOH-9-H9
Rp1 1/4 ... Rp1 1/2	26	40	140	11	200	542703	VAOH-11-H9
Rp2	31	46	180	14	300	542704	VAOH-14-H9

Ball valves VZBM, manual

Type codes

VZBM - 1/4 - RP - 40 - D - 2 - - M - B2 B3

Type	
VZBM	Ball valves

Nominal width DN	
1/4	DN8
3/8	DN10
1/2	DN15
3/4	DN20
1	DN25
1 1/4	DN32
1 1/2	DN40

Process valve connection type	
RP	Pipe thread to EN 10226-1

Nominal pressure	
40	40 bar
50	50 bar

Design	
D	Two parts

Valve function	
2	2/2-way

Flanged connection to ISO 5211	
-	Without

Actuation type	
M	With hand lever

Housing material	
B2	Nickel-plated brass

Shut-off element material	
B3	Chrome-plated brass


Technical data


Function



- With hand lever



-  - Connecting thread
Rp1/4 ... Rp11/2

-  - Flow rate
6 ... 156 m³/h

General technical data		Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp11/4	Rp11/2
Process valve connection		Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp11/4	Rp11/2
Nominal width DN		8	10	15	20	25	32	40
Valve function		2/2						
Design		2-way ball valve						
Sealing principle		Soft						
Actuation type		Mechanical						
Switching position indication		Slot direction = flow direction						
Flow direction		Reversible						
Type of mounting		In-line installation						
Mounting position		Any						
Based on standard		EN 10226-1						
Actuating torque at differential pressure, nominal pressure, process valve	[Nm]	7.5	7.5	9	20	25	37	50
Inside diameter	[mm]	10	10	15	20	25	32	40
Flow rate Kv	[m ³ /h]	6	8	15	28	39	84	156

Operating and environmental conditions		Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp11/4	Rp11/2
Process valve connection		Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp11/4	Rp11/2
Process valve nominal pressure PN		50	50	50	50	40	40	40
Temperature of medium	[°C]	-15 ... +120						
Medium		Compressed air to ISO 8573-1:2010 [-:--]						
		Inert gases						
		Water – no water vapour						
		Neutral fluids						
Certification		DVGW Gas						
		DVGW Water						
CE mark (see declaration of conformity) ¹⁾		To EU Pressure Equipment Directive						

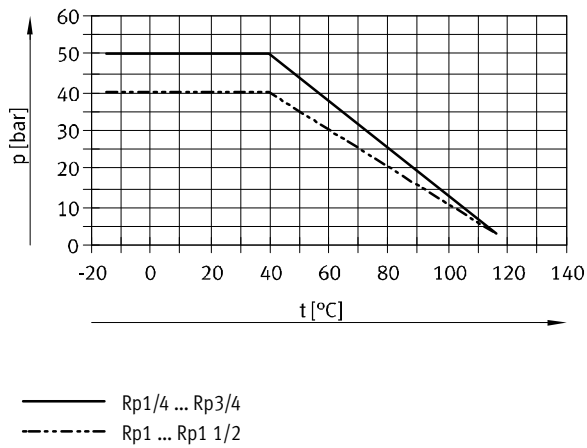
1) Additional information www.festo.com/sp → Certificates.

Ball valves VZBM, manual

Technical data

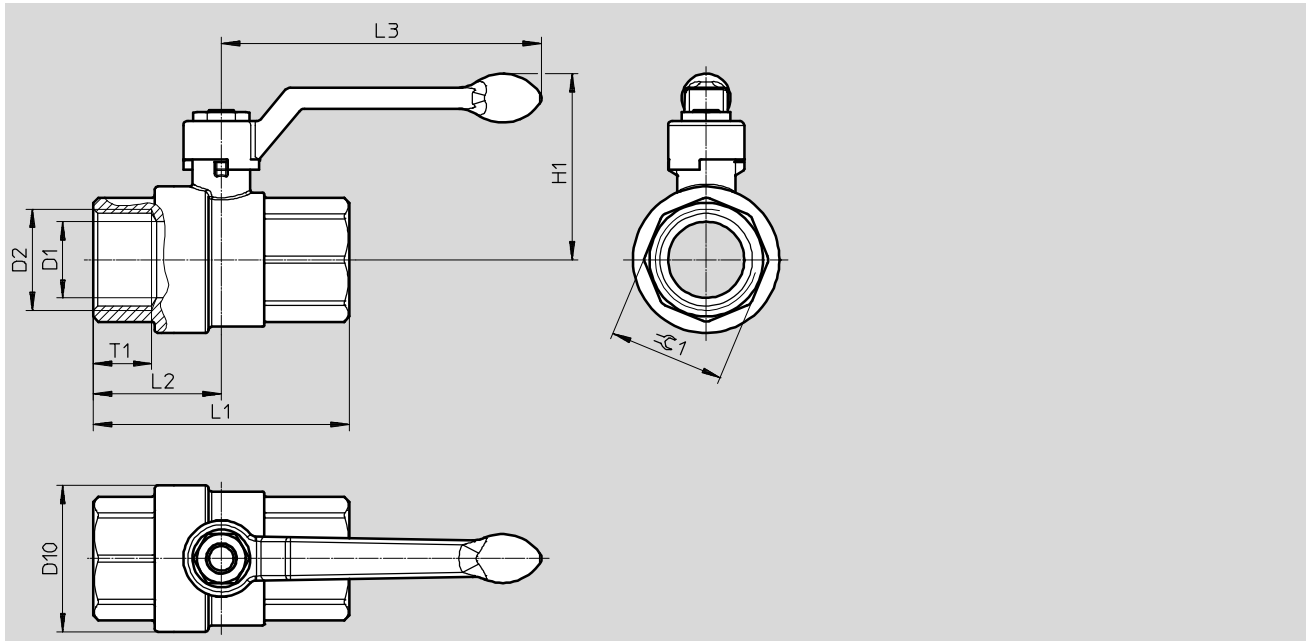
Materials		Material number
Housing	Nickel-plated brass	CW617N
Ball	Chrome-plated brass	CW617N
Shaft	Brass	CW617N
Seals	PTFE	
	NBR	
Note on materials	RoHS compliant	
	Contains paint-wetting impairment substances	

Permissible operating pressure p as a function of the temperature of the medium t



Technical data

Dimensions

Download CAD data → www.festo.com

Type	D1 Ø	D2	D10 Ø	H1	L1	L2	L3	T1 Min.	≈1
VZBM-1/4-RP-50-D-2-M-B2B3	10	Rp1/4	23	41	49	23	85	12	18
VZBM-3/8-RP-50-D-2-M-B2B3	10	Rp3/8	24	41	50.5	23.5	85	12	21
VZBM-1/2-RP-50-D-2-M-B2B3	15	Rp1/2	32	49	61	30.5	85	15	26
VZBM-3/4-RP-50-D-2-M-B2B3	20	Rp3/4	40	57	69.5	35	105	16.3	32
VZBM-1-RP-40-D-2-M-B2B3	25	Rp1	48	61	84	42	105	19.1	38
VZBM-11/4-RP-40-D-2-M-B2B3	32	Rp11/4	60	75	98	49	130	21.4	47
VZBM-11/2-RP-40-D-2-M-B2B3	40	Rp11/2	72.5	81	108	54	130	22	54

Ordering data

	Connecting thread	Weight [g]	Part No.	Type
	Rp1/4	130	4405684 ¹⁾	VZBM-1/4-RP-50-D-2-M-B2B3
	Rp3/8	120	4405685 ¹⁾	VZBM-3/8-RP-50-D-2-M-B2B3
	Rp1/2	200	4405686 ¹⁾	VZBM-1/2-RP-50-D-2-M-B2B3
	Rp3/4	335	4405687 ¹⁾	VZBM-3/4-RP-50-D-2-M-B2B3
	Rp1	480	4405689 ¹⁾	VZBM-1-RP-40-D-2-M-B2B3
	Rp11/4	770	4405690 ¹⁾	VZBM-11/4-RP-40-D-2-M-B2B3
	Rp11/2	1116	4405691 ¹⁾	VZBM-11/2-RP-40-D-2-M-B2B3

1) Festo is only a retailer of this product, not the manufacturer.

Ball valves VZBM, manual

Accessories

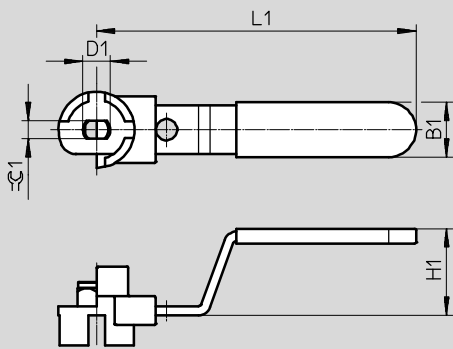
Hand lever VAOH

- Galvanised steel
- Free of copper and PTFE
- Contains paint-wetting impairment substances
- RoHS compliant
- Lockable for VZBM, manual



Dimensions and ordering data

Download CAD data → www.festo.com



For connection	B1	D1 Ø	H1	L1	⊕ 1	Weight [g]	Part No.	Type
Rp1/4 ... Rp1/2	16	7	24.5	89	5	50	4650069 ¹⁾	VAOH-F10-D7-H9-A
Rp3/4 ... Rp1	18	9	28.5	105	6	75	4650070 ¹⁾	VAOH-F10-D9-H9-A
Rp11/4 ... Rp11/2	22	12	32	130	8	145	4650071 ¹⁾	VAOH-F10-D12-H9-A

1) Festo is only a retailer of this product, not the manufacturer.

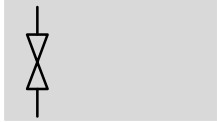
Type codes

		QH	-	1/4	-	
Type						
QH	Ball valve					
Pneumatic port 1						
1/4	Female thread G1/4					
3/8	Female thread G3/8					
1/2	Female thread G1/2					
3/4	female thread G3/4					
1	Female thread G1					
1 1/2	Female thread G1 1/2					
Pneumatic port 2						
-	Same connection size as pneumatic port 1					

Ball valves QH, manual

Technical data

Function



- With hand lever
- Pipe thread to ISO 228-1



- - Connecting thread
G1/4 ... G11/2
- - Standard nominal flow rate
3400 ... 84000 l/min

General technical data						
Pneumatic port 1	G1/4	G3/8	G1/2	G3/4	G1	G11/2
Pneumatic port 2	G1/4	G3/8	G1/2	G3/4	G1	G11/2
Nominal width [mm]	10	10	15	20	25	40
Design	Ball valve					
Type of mounting	In-line installation					
Mounting position	Any					
Valve function	2/2-way valve, double solenoid					
Type of actuation	Manual					
Sealing principle	Soft					
Standard nominal flow rate [l/min] qnN	3400	7500	11500	21000	33000	84000

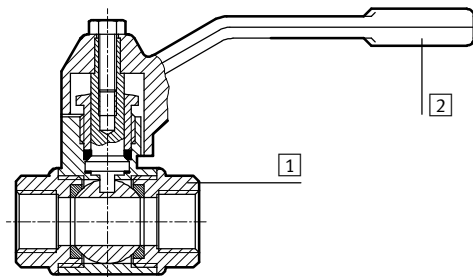
Operating and environmental conditions	
Medium ¹⁾	Compressed air according to ISO 8573-1:2010 [7:-:-] Water
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Ambient temperature [°C]	-20 ... +180

1) Other media on request

- - Note
Not permitted for toxic gases such as natural gas, mains gas etc.

Materials

Sectional view

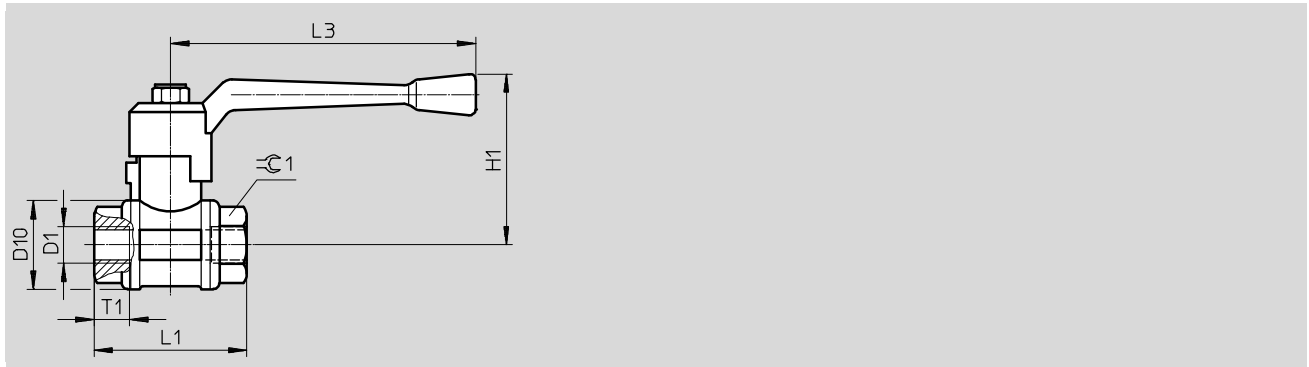


Ball valve		
1	Housing	Brass
2	Lever	Aluminium

Technical data

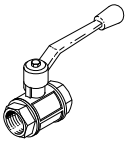
Dimensions – Female thread at both ends

Download CAD data → www.festo.com



Type	D1	D10 Ø	H1	L1	L3	T1	≈C 1
QH-1/4	G1/4	30	56	52	100	11.5	21.5
QH-3/8	G3/8	30	56	52	100	11.5	21.5
QH-1/2	G1/2	35	59	64	100	15	27
QH-3/4	G3/4	44	72	74	120	16.3	32
QH-1	G1	51	77	88	120	19.1	41
QH-11/2	G11/2	73	100	105.5	150	21.4	55

Ordering data

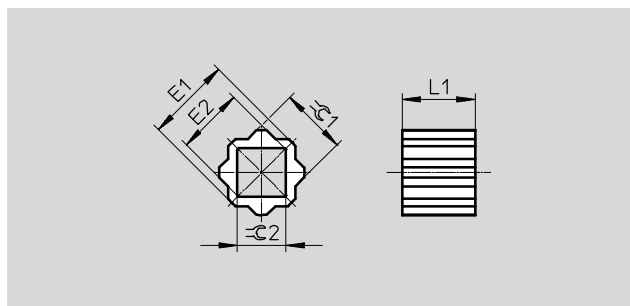
Version	Pneumatic port	Pneumatic port		Weight [g]	Part No.	Type
		1	2			
 Female thread at both ends		G1/4	G1/4	175	9541	QH-1/4
		G3/8	G3/8	180	9542	QH-3/8
		G1/2	G1/2	340	9543	QH-1/2
		G3/4	G3/4	590	9544	QH-3/4
		G1	G1	815	9545	QH-1
		G11/2	G11/2	1750	6837	QH-11/2

Ball valves

Accessories

Reducing sleeve square DARQ

- Connection 1,
function drive outlet
- Connection 2,
function reducing outlet
- Material:
Sintered stainless steel
- RoHS-compliant
- Contains paint-wetting impairment
substances



DARQ-R-A-...	E1 +0,1/-0,3	E2 +0,3/-0,1	L1 ±0,2	⌀ C1 -0,02/-0,12	⌀ C2 +0,04/+0,18
S11-S8-...	14	11	12	11	8
S11-S9-...	14	12,3	11	11	9
S14-S8-...	18	11	16	14	8
S14-S9-...	18	12,3	16	14	9
S14-S10-...	18	13,3	16	14	10
S14-S11-...	18	14,3	16	14	11
S14-S12-...	18	16,3	16	14	12
S17-S8-...	22	11	17	17	8
S17-S9-...	22	12,3	17	17	9
S17-S11-...	22	14,3	17	17	11
S17-S12-...	22	16,3	17	17	12
S17-S14-...	22	18,3	17	17	14
S22-S11-...	28	14,3	22	22	11
S22-S14-...	28	18,3	22	22	14
S22-S16-...	28	21,3	22	22	16
S22-S17-...	28	22,3	22	22	17
S27-S14-...	36	18,3	27	27	14
S27-S17-...	36	22,3	27	27	17
S27-S22-...	36	28,5	27	27	22
S36-S22-...	48	28,5	36	36	22
S36-S27-...	48	36,1	36	36	27
S46-S36-...	59	48	46	46	36

Accessories

Ordering data Design	Connection		Length [mm]	CRC ¹⁾	Weight/piece [g]	Part No.	Type	PU ²⁾	
	Drive outlet	Reducing outlet							
Internal square and external octagon	Size 11	Size 8	12	2	7	8082116	DARQ-R-A-S11-S8-12	1	
	Size 11	Size 9	11		5	8082117	DARQ-R-A-S11-S9-11		
	Size 14	Size 8	16		20	8086383	DARQ-R-A-S14-S8-16		
	Size 14	Size 9	16		18	8082118	DARQ-R-A-S14-S9-16		
	Size 14	Size 10	16		16	8082119	DARQ-R-A-S14-S10-16		
	Size 14	Size 11	16		13	8082120	DARQ-R-A-S14-S11-16		
	Size 14	Size 12	16		10	8082121	DARQ-R-A-S14-S12-16		
	Size 17	Size 8	17		36	8086384	DARQ-R-A-S17-S8-17		
	Size 17	Size 9	17		34	8096914	DARQ-R-A-S17-S9-17		
	Size 17	Size 11	17		29	8082122	DARQ-R-A-S17-S11-17		
	Size 17	Size 12	17		25	8086385	DARQ-R-A-S17-S12-17		
	Size 17	Size 14	17		19	8082123	DARQ-R-A-S17-S14-17		
	Size 22	Size 11	22		75	8086386	DARQ-R-A-S22-S11-22		
	Size 22	Size 14	22		62	8082124	DARQ-R-A-S22-S14-22		
	Size 22	Size 16	22		52	8082125	DARQ-R-A-S22-S16-22		
	Size 22	Size 17	22		46	8082126	DARQ-R-A-S22-S17-22		
	Size 27	Size 14	27		140	8096913	DARQ-R-A-S27-S14-27		
	Size 27	Size 17	27		121	8086387	DARQ-R-A-S27-S17-27		
	Size 27	Size 22	27		80	8082127	DARQ-R-A-S27-S22-27		
	Size 36	Size 22	36		286	8096915	DARQ-R-A-S36-S22-36		
	Size 36	Size 27	36		215	8082128	DARQ-R-A-S36-S27-36		
	Size 46	Size 36	46		410	8082129	DARQ-R-A-S46-S36-46		
	Size 11	Size 8	12		35	8082130	DARQ-R-A-S11-S8-12-P5		5
	Size 11	Size 9	11		25	8082131	DARQ-R-A-S11-S9-11-P5		
	Size 14	Size 8	16		100	8086388	DARQ-R-A-S14-S8-16-P5		
	Size 14	Size 9	16		90	8082132	DARQ-R-A-S14-S9-16-P5		
	Size 14	Size 11	16		65	8082133	DARQ-R-A-S14-S11-16-P5		
	Size 17	Size 11	17		145	8082134	DARQ-R-A-S17-S11-17-P5		
	Size 17	Size 12	17		125	8086389	DARQ-R-A-S17-S12-17-P5		
	Size 17	Size 14	17		95	8082135	DARQ-R-A-S17-S14-17-P5		
	Size 22	Size 14	22		310	8082136	DARQ-R-A-S22-S14-22-P5		
	Size 22	Size 17	22		230	8082137	DARQ-R-A-S22-S17-22-P5		
Size 27	Size 22	27	400	8082138	DARQ-R-A-S27-S22-27-P5				
Size 36	Size 27	36	1075	8082139	DARQ-R-A-S36-S27-36-P5				
Size 11	Size 9	11	50	8082140	DARQ-R-A-S11-S9-11-P10	10			
Size 14	Size 9	16	180	8082141	DARQ-R-A-S14-S9-16-P10				
Size 14	Size 11	16	130	8082142	DARQ-R-A-S14-S11-16-P10				
Size 17	Size 14	17	190	8082143	DARQ-R-A-S17-S14-17-P10				
Size 22	Size 17	22	460	8082144	DARQ-R-A-S22-S17-22-P10				
Size 11	Size 9	11	250	8082145	DARQ-R-A-S11-S9-11-P50	50			
Size 14	Size 9	16	900	8082146	DARQ-R-A-S14-S9-16-P50				
Size 14	Size 11	16	650	8082147	DARQ-R-A-S14-S11-16-P50				
Size 17	Size 11	17	1450	8082148	DARQ-R-A-S17-S11-17-P50				
Size 22	Size 17	22	2300	8082149	DARQ-R-A-S22-S17-22-P50				

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) Packaging unit

Ball valve actuator units VZBA, VZBC, VZBM



Overview, configuration and ordering
→ www.festo.com/catalogue/vzba



Additional information, support and user documentation
→ www.festo.com/sp/vzba



Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/ex





- + Combination of a pneumatic quarter turn actuator and a ball valve
- + Process valve connection thread, weld-on end, ring housing with threaded flange
- + Nominal width DN 8 ... 100
- + Nominal pressure process valve PN 0 ... 63

- + Flange hole pattern to ISO 5211
- + Corrosion-resistant and acid-resistant versions

Ball valve actuator units

Key features and product range overview

General

-  Connecting thread
Rp1/4 ... Rp4
-  Flow rate
5.9 ... 1414 m³/h

Flexible

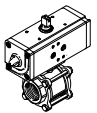
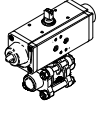
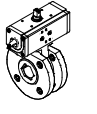
- Electric or pneumatic actuation
- Flange hole pattern to ISO 5211
- Connection pattern to NAMUR VDI/VDE 3845
- Corrosion- and acid-resistant designs
- Versions with ATEX certification

Design

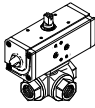
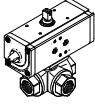
- 2-way ball valve actuator units made from stainless steel or brass with pipe thread or with weld-on ends
- 2-way ball valve actuator units made from stainless steel in compact design
- 3-way ball valve actuator units made from stainless steel or brass

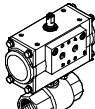
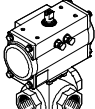
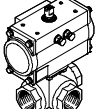
Characteristics

- Combination of a pneumatic quarter turn actuator and a ball valve
- Flow is fully opened or closed in both directions
- Sensor boxes or limit switches can be mounted directly on the actuator unit for sensing the end positions

Design	Type	Quarter turn actuator	Process valve connection	Nominal width DN	Flange hole pattern to ISO 5211	Nominal pressure of process valve PN	→ Page/Internet	
Stainless steel	2-way ball valve actuator units with pipe thread to EN 10226-1							
		VZBA-...GG	DAPS double-acting or single-acting	Rp1/4	8	F0304	63	576
				Rp3/8	10	F0304		
				Rp1/2	15	F0304		
				Rp3/4	20	F0304		
				Rp1	25	F0405		
				Rp1 1/4	32	F0405		
				Rp1 1/2	40	F0507		
				Rp2	50	F0507		
				Rp2 1/2	65	F0710		
				Rp3	80	F0710		
	Rp4	100	F10					
	2-way ball valve actuator units with weld-on ends to EN 12627							
		VZBA-...WW	DAPS double-acting or single-acting	Weld-on end	8	F0304	63	576
					10	F0304		
					15	F0304		
					20	F0304		
					25	F0405		
					32	F0405		
					40	F0507		
					50	F0507		
					65	F0710		
					80	F0710		
	100	F10						
	2-way ball valve actuator units in compact design with flange to DIN EN 1092-1							
		VZBC-...FF	DAPS double-acting or single-acting	Ring housing with threaded flange	15	F0304	40	584
					20	F0304		
					25	F0405		
					32	F0405		
					40	F0507		
50					F0507			
65					F07	16		
80					F07			
100					F0710			

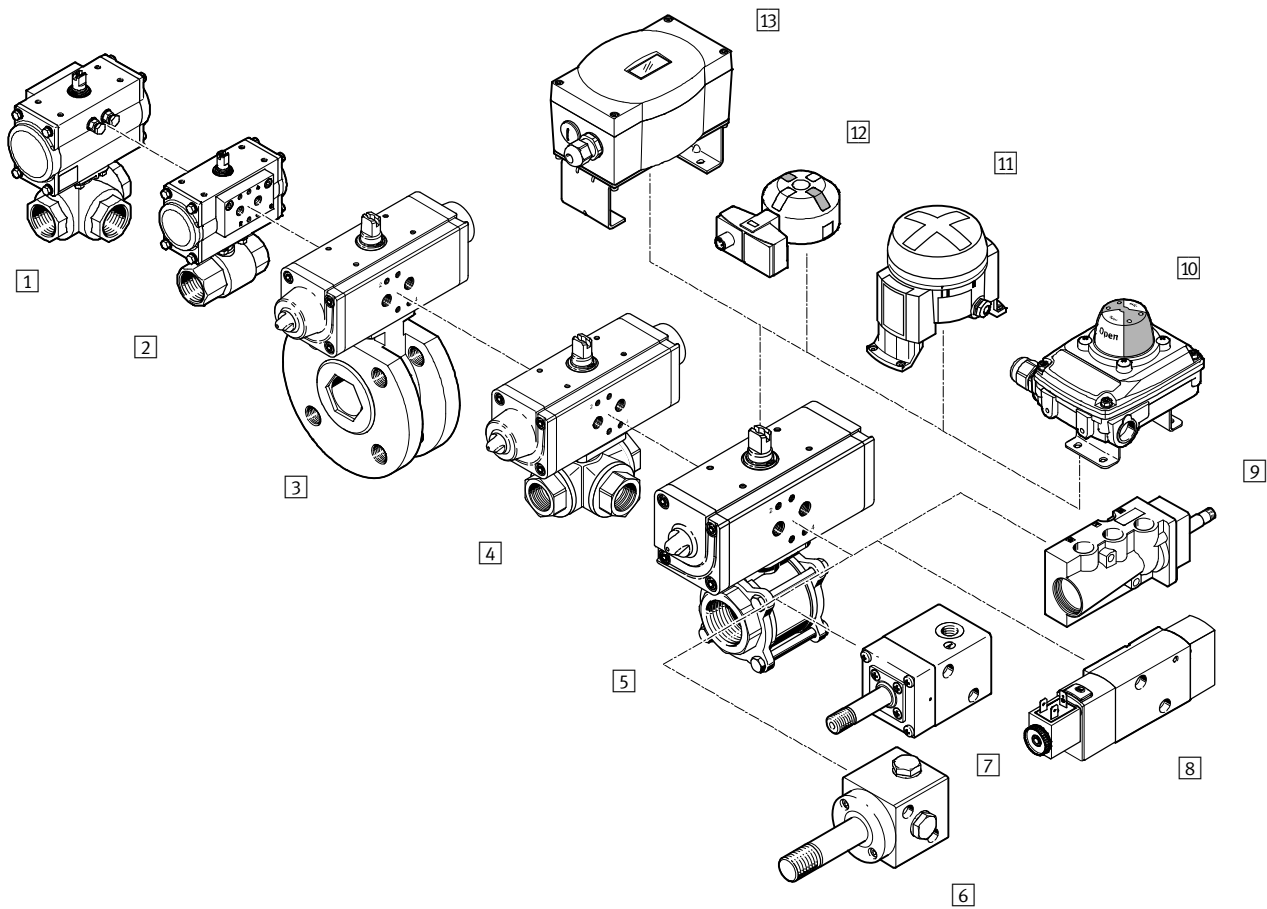
Key features and product range overview

Design		Type	Quarter turn actuator	Process valve connection	Nominal width DN	Flange hole pattern to ISO 5211	Nominal pressure of process valve PN	→ Page/Internet
Stainless steel	3-way ball valve actuator units with L-shaped bore and pipe thread to EN 10226-1							
		VZBA	DAPS double-acting or single-acting	Rp1/4	8	F0304	63	590
				Rp3/8	10	F0304		
				Rp1/2	15	F0304		
				Rp3/4	20	F0405		
				Rp1	25	F0405		
				Rp1 1/4	32	F0405		
				Rp1 1/2	40	F0405		
				Rp2	50	F05		
	3-way ball valve actuator units with T-shaped bore and pipe thread to EN 10226-1							
		VZBA	DAPS double-acting or single-acting	Rp1/4	8	F0304	63	590
				Rp3/8	10	F0304		
				Rp1/2	15	F0304		
				Rp3/4	20	F0405		
				Rp1	25	F0405		
Rp1 1/4				32	F0405			
Rp1 1/2				40	F0405			
Rp2				50	F05			

Design		Type	Quarter turn actuator	Process valve connection	Nominal width DN	Flange hole pattern to ISO 5211	Nominal pressure of process valve PN	→ Page/Internet
Brass	2-way ball valve actuator units with pipe thread to EN 10226-1							
		VZBM	DFPD double-acting or single-acting	Rp1/4	8	F03	40	596
				Rp3/8	10	F03		
				Rp1/2	15	F03		
				Rp3/4	20	F03		
				Rp1	25	F03	25	
				Rp1 1/4	32	F03		
				Rp1 1/2	40	F0305		
				Rp2	50	F0305		
	3-way ball valve actuator units with L-shaped bore and pipe thread to EN 10226-1							
		VZBM	DFPD double-acting or single-acting	Rp1/4	8	F03	40	602
				Rp3/8	10	F03		
				Rp1/2	15	F03		
				Rp3/4	20	F03		
				Rp1	25	F0304	25	
Rp1 1/4				32	F0405			
Rp1 1/2				40	F0405			
Rp2				50	F05			
3-way ball valve actuator units with T-shaped bore and pipe thread to EN 10226-1								
	VZBM	DFPD double-acting or single-acting	Rp1/4	8	F03	40	602	
			Rp3/8	10	F03			
			Rp1/2	15	F03			
			Rp3/4	20	F03			
			Rp1	25	F0304	25		
			Rp1 1/4	32	F0405			
			Rp1 1/2	40	F0405			
			Rp2	50	F05			

Ball valve actuator units

Peripherals overview



Peripherals overview

Mounting components and accessories			→ Page/Internet
		Brief description	
1	Ball valve actuator unit VZBM	Combination of double-acting or single-acting quarter turn actuator DFPD and 3-way ball valve, brass	602
2	Ball valve actuator unit VZBM	Combination of double-acting or single-acting quarter turn actuator DFPD and 2-way ball valve, brass	596
3	Ball valve actuator unit VZBC	Combination of double-acting or single-acting quarter turn actuator DAPS and 2-way ball valve, stainless steel, compact design	584
4	Ball valve actuator unit VZBA	Combination of double-acting or single-acting quarter turn actuator DAPS and 3-way ball valve, stainless steel	590
5	Ball valve actuator unit VZBA	Combination of double-acting or single-acting quarter turn actuator DAPS and 2-way ball valve, stainless steel	576
6	Solenoid valves VOFD	Solenoid valve with solenoid coil, connection pattern to NAMUR	151
7	Solenoid valves VOFC	Solenoid valve with solenoid coil, connection pattern to NAMUR	85
8	Solenoid valves VSNC	For single-acting and double-acting quarter turn actuators with a connection pattern to VDI/VDE 3845	23
9	Solenoid valve NVF3	For F solenoid coil and explosion-proof F solenoid coil	nvf3
10	Sensor boxes SRBC	For electrical position feedback and monitoring the position of process valves actuated using quarter turn actuators	217
11	Limit switch attachments DAPZ	Round design, variant AR Electrical, inductive or inductive and explosion-proof sensing	279
12	Sensor boxes SRBG	For electrical position feedback and monitoring the position of process valves actuated using quarter turn actuators	235
13	Positioner CMSX	For controlling the position of quarter turn actuators in process automation systems	289

Ball valve actuator units VZBA, 2-way, stainless steel

Type codes

VZBA - 1/4 - G G - 63 - T - 22 - F0304 -

Type	
VZBA	Ball valve

Nominal width DN	
1/4"	DN8
3/8"	DN10
1/2"	DN15
3/4"	DN20
1"	DN25
1 1/4"	DN32
1 1/2"	DN40
2"	DN50
2 1/2"	DN65
3"	DN80
4"	DN100

Connection type 1	
G	Pipe thread to DIN EN 10226-1
W	Weld-on end

Connection type 2	
G	Pipe thread to DIN EN 10226-1
W	Weld-on end

Nominal pressure of process valve PN	
63	63 bar

Design	
T	Three-part

Valve function	
22	2/2-way

Flanged connection to ISO 5211	
F0304	2 bolt circles with \varnothing 36 mm and \varnothing 42 mm
F0405	2 bolt circles with \varnothing 42 mm and \varnothing 50 mm
F0507	2 bolt circles with \varnothing 50 mm and \varnothing 70 mm
F07	1 bolt circle with \varnothing 70 mm
F0710	2 bolt circles with \varnothing 70 mm and \varnothing 102 mm
F10	1 bolt circle with \varnothing 102 mm

06

Ball valves and ball valve units

Ball valve actuator units VZBA, 2-way, stainless steel

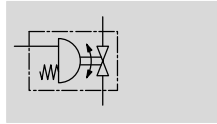
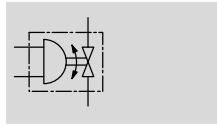
Type codes

		V4	V4	T	-	PS	15	-	R	-	90	-	4	-	C
Housing material															
V4	Stainless steel 1.4401/1.4404 (AISI 316L)/1.4408														
Shut-off element material															
V4	Stainless steel 1.4401/1.4404 (AISI 316L)/1.4408														
Sealing material															
T	PTFE reinforced														
Actuator															
PP	DAPS, double-acting														
PS	DAPS, single-acting														
Torque															
15	15 Nm														
30	30 Nm														
53	53 Nm														
60	60 Nm														
90	90 Nm														
106	106 Nm														
120	120 Nm														
180	180 Nm														
240	240 Nm														
Swivel direction															
R	Right														
Nominal swivel angle															
90	90°														
Spring configuration															
-	Not applicable for double-acting														
1	Spring force for connection pressure 2.8 bar														
2	Spring force for connection pressure 3.5 bar														
3	Spring force for connection pressure 4.2 bar														
4	Spring force for connection pressure 5.6 bar														
End-position adjustment															
C	Closed														

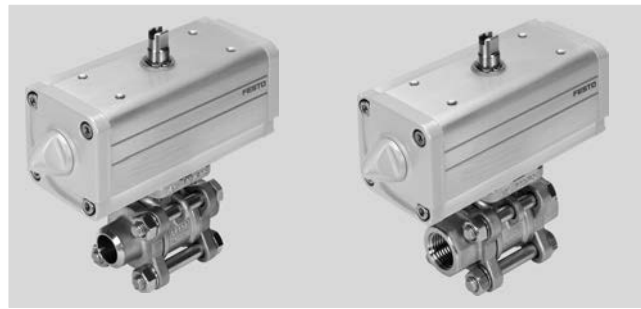
Ball valve actuator units VZBA, 2-way, stainless steel

Technical data

Function



- Swivel angle
0 ... 90°
- Flow rate
7 ... 1414 m³/h
- Connecting thread
Rp1/4 ... Rp4



General technical data											
Nominal width DN	8	10	15	20	25	32	40	50	65	80	100
Quarter turn actuator											
Type of mounting	In-line installation										
Mounting position	Any										
Swivel angle [°]	90										
Closing direction	Closes to the right										
Ball valve											
Design	2-way ball valve, quarter turn actuator										
Type of actuation	Pneumatic										
Switching position indication	Slot direction = flow direction										
Nominal pressure of process valve PN	63										
Flow rate Kv [m ³ /h]	7	10	19.4	45.6	71.5	105	170	275	507	905	1414

Operating and environmental conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Operating pressure [bar]	6 ... 8.4
Ambient temperature [°C]	-10 ... +80
Temperature of medium ¹⁾ [°C]	-10 ... +200
Medium	Compressed air to ISO 8573-1:2010 [-:~:]
	Inert gases
	Neutral fluids
	Water – no water vapour
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Corrosion resistance class CRC ²⁾	3

1) As a function of operating pressure
 2) Corrosion resistance class CRC 3 according to Festo standard 940070
 High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional surface requirements which are in direct contact with a normal industrial environment.

Ball valve actuator units VZBA, 2-way, stainless steel

Technical data

ATEX	
ATEX category for gas	II 2G
ATEX category for dust	II 2D
Max. surface temperature of assembly	TX
Explosion group of assembly	II C
Explosion-proof temperature rating	-10°C ≤ Ta ≤ +60°C

Materials	Information on materials	Material number
Housing	High-alloy stainless steel	1.4408
Ball		
Shaft	High-alloy stainless steel	1.4401
Seals	PTFE reinforced	
	PTFE	
Note on materials	RoHS-compliant	
	Contains paint-wetting impairment substances	

Weight – Double-acting

Nominal width DN	Process valve connection	Weld-on ends	Weight [g]
8	Rp1/4	Weld-on ends	1450
10	Rp3/8		1450
15	Rp1/2		1450
20	Rp3/4		1900
25	Rp1		2300
32	Rp1 1/4		3800

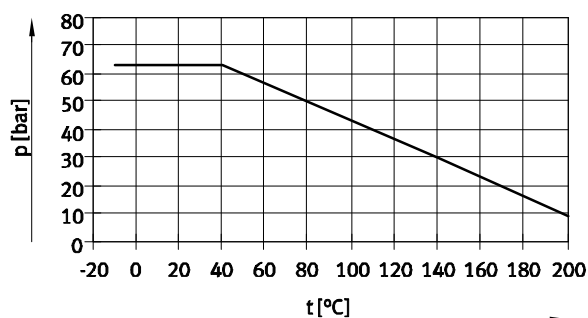
Nominal width DN	Process valve connection	Weld-on ends	Weight [g]
40	Rp1 1/2	Weld-on ends	4800
50	Rp2		6600
65	Rp2 1/2		11,700
80	Rp3		18,200
100	Rp4		27,700

Weight – Single-acting

Nominal width DN	Process valve connection	Weld-on ends	Weight [g]
8	Rp1/4	Weld-on ends	2000
10	Rp3/8		2000
15	Rp1/2		2000
20	Rp3/4		3100
25	Rp1		3500
32	Rp1 1/4		5150

Nominal width DN	Process valve connection	Weld-on ends	Weight [g]
40	Rp1 1/2	Weld-on ends	6100
50	Rp2		10,000
65	Rp2 1/2		16,300
80	Rp3		22,900
100	Rp4		33,500

Permissible operating pressure p as a function of temperature of medium t



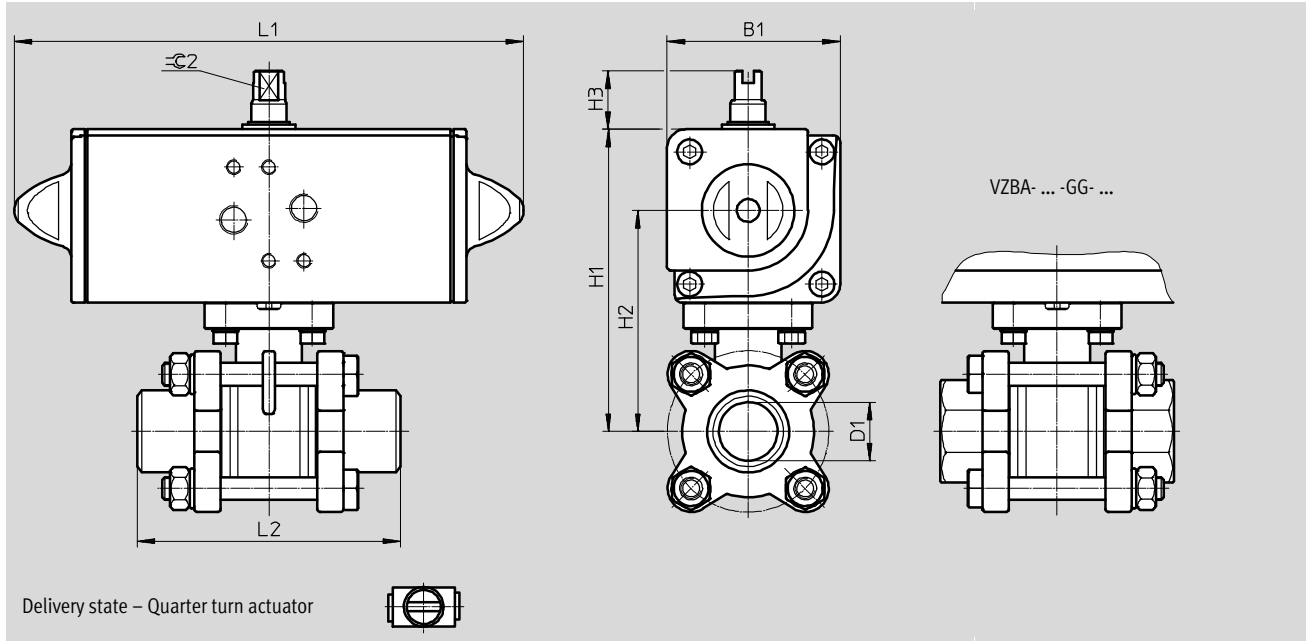
Ball valve actuator units VZBA, 2-way, stainless steel

Technical data

Dimensions

DAPS – Double-acting

Download CAD data → www.festo.com



Type	B1	D1 ∅	H1	H2	H3	L1	L2	⊖ 2
VZBA-1/4"-WW-63-T-22-F0304-V4V4T-PP15-R-90-C	52.2	10	92.2	68	20	159	70	8
VZBA-3/8"-WW-63-T-22-F0304-V4V4T-PP15-R-90-C	52.2	12	92.2	68	20	159	70	8
VZBA-1/2"-WW-63-T-22-F0304-V4V4T-PP15-R-90-C	52.2	16	92.2	68	20	159	75	8
VZBA-3/4"-WW-63-T-22-F0304-V4V4T-PP30-R-90-C	59.2	20	103.2	75.5	20	174	90	9
VZBA-1"-WW-63-T-22-F0405-V4V4T-PP30-R-90-C	59.2	25	111.2	83.5	20	174	100	9
VZBA-1 1/4"-WW-63-T-22-F0405-V4V4T-PP60-R-90-C	70.4	32	128.4	95.7	20	198	110	10
VZBA-1 1/2"-WW-63-T-22-F0507-V4V4T-PP60-R-90-C	70.4	38	138.4	105.7	20	198	125	10
VZBA-2"-WW-63-T-22-F0507-V4V4T-PP60-R-90-C	70.4	50	147.7	114.7	20	198	150	10
VZBA-2 1/2"-WW-63-T-22-F0710-V4V4T-PP106-R-90-C	83.3	65	181.3	142.8	20	237.1	190	12
VZBA-3"-WW-63-T-22-F0710-V4V4T-PP180-R-90-C	107.5	80	217.5	166.5	30	289.9	220	15
VZBA-4"-WW-63-T-22-F10-V4V4T-PP240-R-90-C	111.1	100	249.1	198.1	30	313.6	270	15

Type	B1	D1 ∅	H1	H2	H3	L1	L2	⊖ 2
VZBA-1/4"-GG-63-T-22-F0304-V4V4T-PP15-R-90-C	52.2	10	99.2	68	20	159	65	8
VZBA-3/8"-GG-63-T-22-F0304-V4V4T-PP15-R-90-C	52.2	12	99.2	68	20	159	65	8
VZBA-1/2"-GG-63-T-22-F0304-V4V4T-PP15-R-90-C	52.2	16	99.2	68	20	159	75	8
VZBA-3/4"-GG-63-T-22-F0304-V4V4T-PP30-R-90-C	59.2	20	103.2	75.5	20	174	80	9
VZBA-1"-GG-63-T-22-F0405-V4V4T-PP30-R-90-C	59.2	25	111.2	83.5	20	174	90	9
VZBA-1 1/4"-GG-63-T-22-F0405-V4V4T-PP60-R-90-C	70.4	32	128.4	95.7	20	198	110	10
VZBA-1 1/2"-GG-63-T-22-F0507-V4V4T-PP60-R-90-C	70.4	38	138.4	105.7	20	198	120	10
VZBA-2"-GG-63-T-22-F0507-V4V4T-PP60-R-90-C	70.4	50	147.7	114.7	20	198	140	10
VZBA-2 1/2"-GG-63-T-22-F0710-V4V4T-PP106-R-90-C	83.3	65	181.3	142.8	20	237.1	185	12
VZBA-3"-GG-63-T-22-F0710-V4V4T-PP180-R-90-C	107.5	80	217.5	166.5	30	289.9	205	15
VZBA-4"-GG-63-T-22-F10-V4V4T-PP240-R-90-C	111.1	100	249.1	198.1	30	313.6	240	15

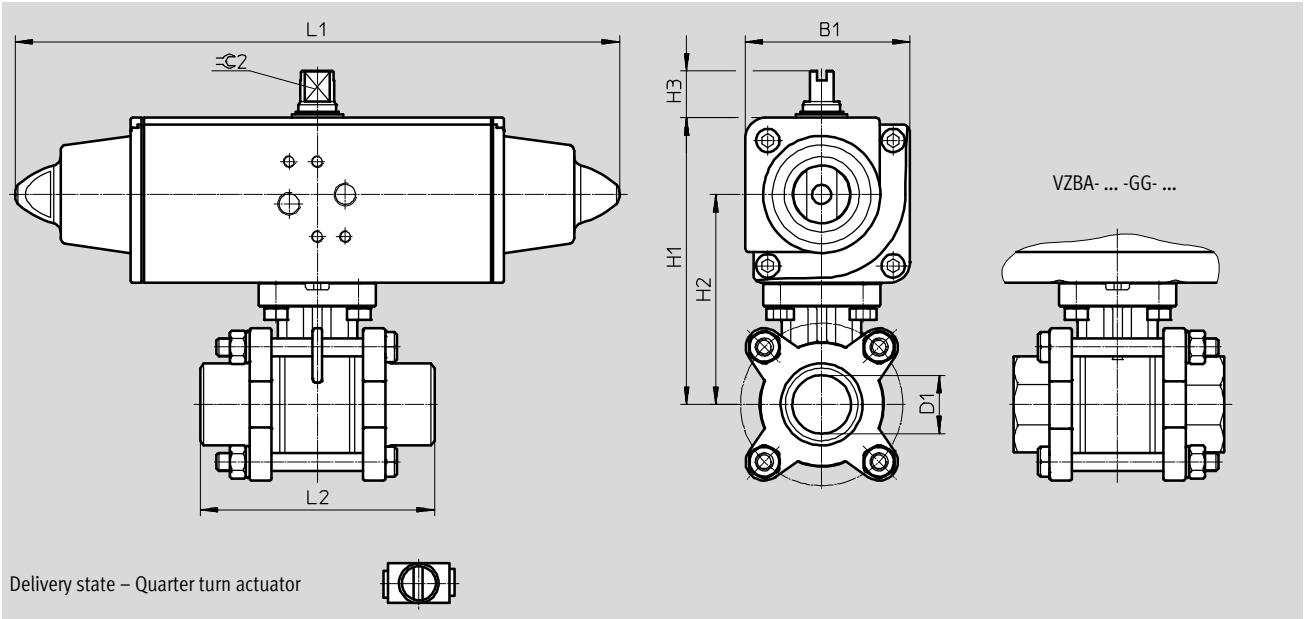
Ball valve actuator units VZBA, 2-way, stainless steel

Technical data

Dimensions

DAPS – Single-acting

Download CAD data → www.festo.com

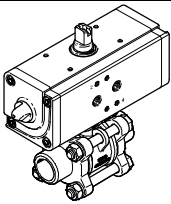
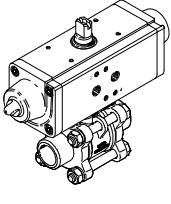


Type	B1	D1 Ø	H1	H2	H3	L1	L2	≈ 2
VZBA-1/4"-WW-63-T-22-F0304-V4V4T-PS15-R-90-4-C	59.2	10	99.2	71.5	20	233.3	70	9
VZBA-3/8"-WW-63-T-22-F0304-V4V4T-PS15-R-90-4-C	59.2	12	99.2	71.5	20	233.3	70	9
VZBA-1/2"-WW-63-T-22-F0304-V4V4T-PS15-R-90-4-C	59.2	16	99.2	71.5	20	233.3	75	9
VZBA-3/4"-WW-63-T-22-F0304-V4V4T-PS30-R-90-4-C	70.4	20	114.4	81.7	20	259	90	10
VZBA-1"-WW-63-T-22-F0405-V4V4T-PS30-R-90-4-C	70.4	25	122.4	89.7	20	259	100	10
VZBA-1 1/4"-WW-63-T-22-F0405-V4V4T-PS53-R-90-4-C	83.3	32	141.3	102.8	20	304.3	110	12
VZBA-1 1/2"-WW-63-T-22-F0507-V4V4T-PS53-R-90-4-C	83.3	38	151.3	112.8	20	304.3	125	12
VZBA-2"-WW-63-T-22-F0507-V4V4T-PS90-R-90-4-C	107.5	50	184.5	133.5	30	393.7	150	15
VZBA-2 1/2"-WW-63-T-22-F0710-V4V4T-PS120-R-90-4-C	111.1	65	209.1	158.1	30	409.6	190	15
VZBA-3"-WW-63-T-22-F0710-V4V4T-PS180-R-90-4-C	118	80	228	172	30	474	220	19
VZBA-4"-WW-63-T-22-F10-V4V4T-PS240-R-90-4-C	134.9	100	272.9	210.9	30	520.5	270	19

Type	B1	D1 Ø	H1	H2	H3	L1	L2	≈ 2
VZBA-1/4"-GG-63-T-22-F0304-V4V4T-PS15-R-90-4-C	59.2	10	99.2	71.5	20	233.3	65	9
VZBA-3/8"-GG-63-T-22-F0304-V4V4T-PS15-R-90-4-C	59.2	12	99.2	71.5	20	233.3	65	9
VZBA-1/2"-GG-63-T-22-F0304-V4V4T-PS15-R-90-4-C	59.2	16	99.2	71.5	20	233.3	75	9
VZBA-3/4"-GG-63-T-22-F0304-V4V4T-PS30-R-90-4-C	70.4	20	114.4	81.7	20	259	80	10
VZBA-1"-GG-63-T-22-F0405-V4V4T-PS30-R-90-4-C	70.4	25	122.4	89.7	20	259	90	10
VZBA-1 1/4"-GG-63-T-22-F0405-V4V4T-PS53-R-90-4-C	83.3	32	141.3	102.8	20	304.3	110	12
VZBA-1 1/2"-GG-63-T-22-F0507-V4V4T-PS53-R-90-4-C	83.3	38	151.3	112.8	20	304.3	120	12
VZBA-2"-GG-63-T-22-F0507-V4V4T-PS90-R-90-4-C	107.5	50	184.5	133.5	30	393.7	140	15
VZBA-2 1/2"-GG-63-T-22-F0710-V4V4T-PS120-R-90-4-C	111.1	65	209.1	158.1	30	409.6	185	15
VZBA-3"-GG-63-T-22-F0710-V4V4T-PS180-R-90-4-C	118	80	228	172	30	474	205	19
VZBA-4"-GG-63-T-22-F10-V4V4T-PS240-R-90-4-C	134.9	100	272.9	210.9	30	520.5	240	19

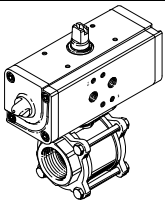
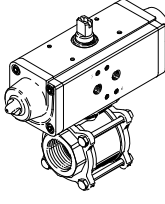
Ball valve actuator units VZBA, 2-way, stainless steel

Technical data

Ordering data				
DAPS – Double-acting	Connection	Nominal width DN	Part No.	Type
	With weld-on ends	8	1810730	VZBA-1/4"-WW-63-T-22-F0304-V4V4T-PP15-R-90-C
		10	1810731	VZBA-3/8"-WW-63-T-22-F0304-V4V4T-PP15-R-90-C
		15	1810732	VZBA-1/2"-WW-63-T-22-F0304-V4V4T-PP15-R-90-C
		20	1810733	VZBA-3/4"-WW-63-T-22-F0304-V4V4T-PP30-R-90-C
		25	1810734	VZBA-1"-WW-63-T-22-F0405-V4V4T-PP30-R-90-C
		32	1810735	VZBA-1 1/4"-WW-63-T-22-F0405-V4V4T-PP60-R-90-C
		40	1810736	VZBA-1 1/2"-WW-63-T-22-F0507-V4V4T-PP60-R-90-C
		50	1810737	VZBA-2"-WW-63-T-22-F0507-V4V4T-PP60-R-90-C
		65	1810738	VZBA-2 1/2"-WW-63-T-22-F0710-V4V4T-PP106-R-90-C
		80	1810739	VZBA-3"-WW-63-T-22-F0710-V4V4T-PP180-R-90-C
		100	1810740	VZBA-4"-WW-63-T-22-F10-V4V4T-PP240-R-90-C
DAPS – Single-acting				
	With weld-on ends	8	1774103	VZBA-1/4"-WW-63-T-22-F0304-V4V4T-PS15-R-90-4-C
		10	1774104	VZBA-3/8"-WW-63-T-22-F0304-V4V4T-PS15-R-90-4-C
		15	1774105	VZBA-1/2"-WW-63-T-22-F0304-V4V4T-PS15-R-90-4-C
		20	1774106	VZBA-3/4"-WW-63-T-22-F0304-V4V4T-PS30-R-90-4-C
		25	1774107	VZBA-1"-WW-63-T-22-F0405-V4V4T-PS30-R-90-4-C
		32	1774108	VZBA-1 1/4"-WW-63-T-22-F0405-V4V4T-PS60-R-90-4-C
		40	1774109	VZBA-1 1/2"-WW-63-T-22-F0507-V4V4T-PS60-R-90-4-C
		50	1774110	VZBA-2"-WW-63-T-22-F0507-V4V4T-PS60-R-90-4-C
		65	1774111	VZBA-2 1/2"-WW-63-T-22-F0710-V4V4T-PS106-R-90-4-C
		80	1774112	VZBA-3"-WW-63-T-22-F0710-V4V4T-PS180-R-90-4-C
		100	1774113	VZBA-4"-WW-63-T-22-F10-V4V4T-PS240-R-90-4-C

Ball valve actuator units VZBA, 2-way, stainless steel

Technical data

Ordering data			
DAPS – Double-acting	Connecting thread	Part No.	Type
	Rp1/4	1809651	VZBA-1/4"-GG-63-T-22-F0304-V4V4T-PP15-R-90-C
	Rp3/8	1809652	VZBA-3/8"-GG-63-T-22-F0304-V4V4T-PP15-R-90-C
	Rp1/2	1809653	VZBA-1/2"-GG-63-T-22-F0304-V4V4T-PP15-R-90-C
	Rp3/4	1809654	VZBA-3/4"-GG-63-T-22-F0304-V4V4T-PP30-R-90-C
	Rp1	1809655	VZBA-1"-GG-63-T-22-F0405-V4V4T-PP30-R-90-C
	Rp1 1/4	1809656	VZBA-1 1/4"-GG-63-T-22-F0405-V4V4T-PP60-R-90-C
	Rp1 1/2	1809657	VZBA-1 1/2"-GG-63-T-22-F0507-V4V4T-PP60-R-90-C
	Rp2	1809658	VZBA-2"-GG-63-T-22-F0507-V4V4T-PP60-R-90-C
	Rp2 1/2	1809659	VZBA-2 1/2"-GG-63-T-22-F0710-V4V4T-PP106-R-90-C
	Rp3	1809660	VZBA-3"-GG-63-T-22-F0710-V4V4T-PP180-R-90-C
Rp4	1809661	VZBA-4"-GG-63-T-22-F10-V4V4T-PP240-R-90-C	
DAPS – Single-acting			
	Rp1/4	1758069	VZBA-1/4"-GG-63-T-22-F0304-V4V4T-PS15-R-90-4-C
	Rp3/8	1758070	VZBA-3/8"-GG-63-T-22-F0304-V4V4T-PS15-R-90-4-C
	Rp1/2	1758071	VZBA-1/2"-GG-63-T-22-F0304-V4V4T-PS15-R-90-4-C
	Rp3/4	1758072	VZBA-3/4"-GG-63-T-22-F0304-V4V4T-PS30-R-90-4-C
	Rp1	1758073	VZBA-1"-GG-63-T-22-F0405-V4V4T-PS30-R-90-4-C
	Rp1 1/4	1758074	VZBA-1 1/4"-GG-63-T-22-F0405-V4V4T-PS53-R-90-4-C
	Rp1 1/2	1758075	VZBA-1 1/2"-GG-63-T-22-F0507-V4V4T-PS53-R-90-4-C
	Rp2	1758076	VZBA-2"-GG-63-T-22-F0507-V4V4T-PS90-R-90-4-C
	Rp2 1/2	1758077	VZBA-2 1/2"-GG-63-T-22-F0710-V4V4T-PS120-R-90-4-C
	Rp3	1758078	VZBA-3"-GG-63-T-22-F0710-V4V4T-PS180-R-90-4-C
Rp4	1758079	VZBA-4"-GG-63-T-22-F10-V4V4T-PS240-R-90-4-C	

Ball valve actuator units VZBC, 2-way, compact design, stainless steel

Type codes

VZBC - 15 - F F - 40 - 22 - F0304 - V4 V4 T -

Type	
VZBC	Ball valve

Nominal width DN	
15	DN15
20	DN20
25	DN25
32	DN32
40	DN40
50	DN50
65	DN65
80	DN80
100	DN100

Connection type 1	
F	Flange to DIN EN 1092-1

Connection type 2	
F	Flange to DIN EN 1092-1

Nominal pressure of process valve PN	
40	40 bar
16	16 bar

Valve function	
22	2/2-way

Flanged connection to ISO 5211	
F0304	2 bolt circles with \varnothing 36 mm and \varnothing 42 mm
F0405	2 bolt circles with \varnothing 42 mm and \varnothing 50 mm
F0507	2 bolt circles with \varnothing 50 mm and \varnothing 70 mm
F07	1 bolt circle with \varnothing 70 mm
F0710	2 bolt circles with \varnothing 70 mm and \varnothing 102 mm

Housing material	
V4	Stainless steel 1.4401/1.4404 (AISI 316L)/1.4408

Shut-off element material	
V4	Stainless steel 1.4401/1.4404 (AISI 316L)/1.4408

Sealing material	
T	PTFE reinforced

06

Ball valves and ball valve units

Ball valve actuator units VZBC, 2-way, compact design, stainless steel

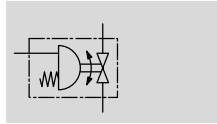
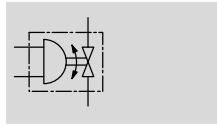
Type codes




		PS	15	-	R	-	90	-	4	-	C
Actuator											
PP	DAPS, double-acting										
PS	DAPS, single-acting										
Torque											
15	15 Nm										
30	30 Nm										
53	53 Nm										
60	60 Nm										
90	90 Nm										
106	106 Nm										
120	120 Nm										
180	180 Nm										
240	240 Nm										
Swivel direction											
R	Right										
Nominal swivel angle											
90	90°										
Spring configuration											
-	Not applicable for double-acting										
1	Spring force for connection pressure 2.8 bar										
2	Spring force for connection pressure 3.5 bar										
3	Spring force for connection pressure 4.2 bar										
4	Spring force for connection pressure 5.6 bar										
End-position adjustment											
C	Closed										

Ball valve actuator units VZBC, 2-way, compact design, stainless steel

Technical data

Function



-  Swivel angle
0 ... 90°
-  Flow rate
19.4 ... 1414 m³/h
-  Connecting thread
Rp1/2 ... Rp4



General technical data										
Nominal width DN	15	20	25	32	40	50	65	80	100	
Quarter turn actuator										
Type of mounting	In-line installation									
Mounting position	Any									
Swivel angle [°]	90									
Closing direction	Closes to the right									
Ball valve										
Design	2-way ball valve									
Type of actuation	Pneumatic									
Switching position indication	Slot direction = flow direction									
Type of mounting	In-line installation									
Nominal pressure of process valve PN	40						16			
Flow rate Kv [m ³ /h]	19.4	45.6	71.5	105	170	275	507	905	1414	

Operating and environmental conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Operating pressure [bar]	6 ... 8.4
Ambient temperature [°C]	-10 ... +80
Temperature of medium ¹⁾ [°C]	-10 ... +200
Medium	Compressed air to ISO 8573-1:2010 [-:-:-]
	Inert gases
	Neutral fluids
	Water – no water vapour
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Corrosion resistance class CRC ²⁾	3

1) As a function of operating pressure

2) Corrosion resistance class CRC 3 to Festo standard FN 940070

High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Ball valve actuator units VZBC, 2-way, compact design, stainless steel

Technical data

ATEX	
ATEX category for gas	II 2G
ATEX category for dust	II 2D
Max. surface temperature of assembly	TX
Explosion group of assembly	IIC
Explosion ambient temperature	-10 °C ≤ Ta ≤ +60 °C

Materials		Material number
Housing	High-alloy stainless steel	1.4408
Ball		
Shaft	High-alloy stainless steel	1.4401
Seals	PTFE reinforced	
	PTFE	
Note on materials	RoHS-compliant	
	Contains paint-wetting impairment substances	

Weight – Double-acting

Nominal width DN	Process valve connection	Weight [g]
15	Ring housing with threaded flange	2300
20		3200
25		3700
32		5700
40		6400

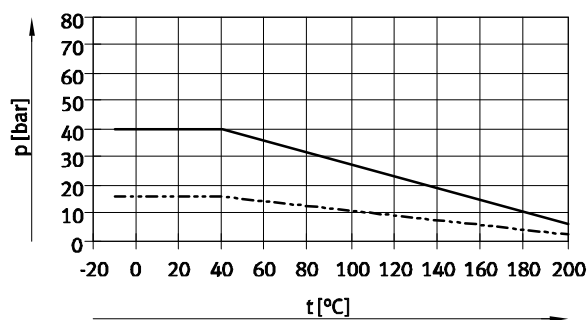
Nominal width DN	Process valve connection	Weight [g]
50	Ring housing with threaded flange	8600
65		14,300
80		18,700
100		26,000

Weight – Single-acting

Nominal width DN	Process valve connection	Weight [g]
15	Ring housing with threaded flange	2850
20		4350
25		4850
32		7000
40		7700

Nominal width DN	Process valve connection	Weight [g]
50	Ring housing with threaded flange	11,800
65		18,900
80		23,300
100		31,900

Permissible operating pressure p as a function of the temperature of the medium t



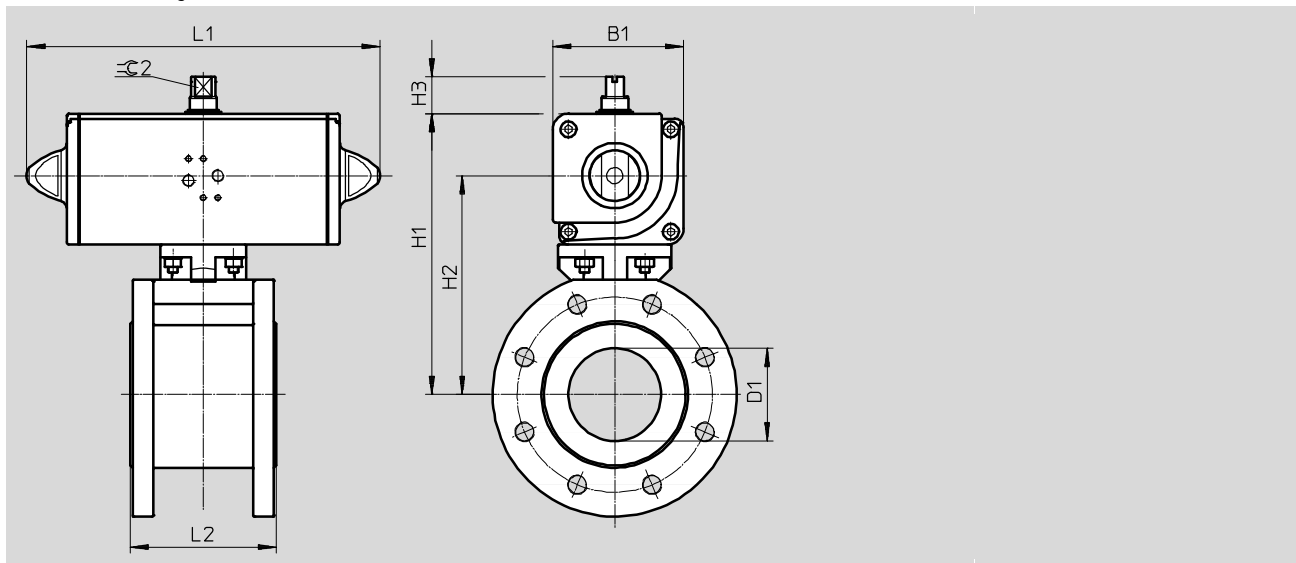
Ball valve actuator units VZBC, 2-way, compact design, stainless steel

Technical data

Dimensions

DAPS – Double-acting

Download CAD data → www.festo.com



Type	B1	D1 ∅	H1	H2	H3	L1	L2	≙ 2
VZBC-15-FF-40-22-F0304-V4V4T-PP15-R-90-C	52.2	15	112.2	88	20	159	40	8
VZBC-20-FF-40-22-F0304-V4V4T-PP30-R-90-C	59.2	20	123.5	95.8	20	174	44	9
VZBC-25-FF-40-22-F0405-V4V4T-PP30-R-90-C	59.2	25	123.8	96.1	20	174	53	9
VZBC-32-FF-40-22-F0405-V4V4T-PP60-R-90-C	70.4	32	139.4	106.7	20	198	58.4	10
VZBC-40-FF-40-22-F0507-V4V4T-PP60-R-90-C	70.4	38	146.7	114	20	198	62	10
VZBC-50-FF-40-22-F0507-V4V4T-PP106-R-90-C	83.3	50	168.8	130.3	20	237.1	78	12
VZBC-65-FF-16-22-F07-V4V4T-PP180-R-90-C	107.5	64	212.5	161.5	30	289.9	100	15
VZBC-80-FF-16-22-F07-V4V4T-PP180-R-90-C	107.5	76	229.5	178.5	30	289.9	120	15
VZBC-100-FF-16-22-F0710-V4V4T-PP240-R-90-C	111.1	96	243.1	192.1	30	313.6	152	15

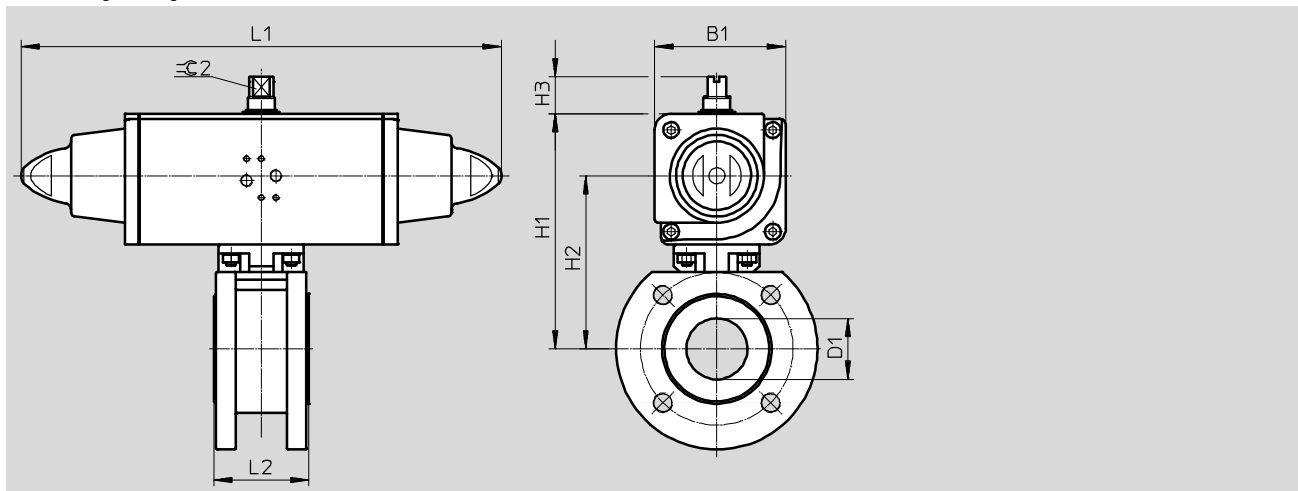
Ball valve actuator units VZBC, 2-way, compact design, stainless steel

Technical data

Dimensions

DAPS – Single-acting

Download CAD data → www.festo.com



Type	B1	D1 Ø	H1	H2	H3	L1	L2	C2
VZBC-15-FF-40-22-F0304-V4V4T-PS15-R-90-4-C	59.2	15	119.2	91.5	20	233.3	40	9
VZBC-20-FF-40-22-F0304-V4V4T-PS30-R-90-4-C	70.4	20	134.7	102	20	259	44	10
VZBC-25-FF-40-22-F0405-V4V4T-PS30-R-90-4-C	70.4	25	135	102.3	20	259	53	10
VZBC-32-FF-40-22-F0405-V4V4T-PS53-R-90-4-C	83.3	32	152.3	113.8	20	304.3	58.4	12
VZBC-40-FF-40-22-F0507-V4V4T-PS53-R-90-4-C	83.3	38	159.6	121.1	20	304.3	62	12
VZBC-50-FF-40-22-F0507-V4V4T-PS90-R-90-4-C	107.5	50	193	142	30	393.7	78	15
VZBC-65-FF-16-22-F07-V4V4T-PS180-R-90-4-C	118	64	223	167	30	474	100	19
VZBC-80-FF-16-22-F07-V4V4T-PS180-R-90-4-C	118	76	241	185	30	474	120	19
VZBC-100-FF-16-22-F0710-V4V4T-PS240-R-90-4-C	134.9	96	266.9	204.9	30	520.5	152	19

Ordering data

DAPS – Double-acting	Connection	Nominal width DN	Part No.	Type
	Ring housing with threaded flange	15	1913365	VZBC-15-FF-40-22-F0304-V4V4T-PP15-R-90-C
		20	1913367	VZBC-20-FF-40-22-F0304-V4V4T-PP30-R-90-C
		25	1913368	VZBC-25-FF-40-22-F0405-V4V4T-PP30-R-90-C
		32	1913369	VZBC-32-FF-40-22-F0405-V4V4T-PP60-R-90-C
		40	1913370	VZBC-40-FF-40-22-F0507-V4V4T-PP60-R-90-C
		50	1913371	VZBC-50-FF-40-22-F0507-V4V4T-PP106-R-90-C
		65	1913372	VZBC-65-FF-16-22-F07-V4V4T-PP180-R-90-C
		80	1913373	VZBC-80-FF-16-22-F07-V4V4T-PP180-R-90-C
100	1913374	VZBC-100-FF-16-22-F0710-V4V4T-PP240-R-90-C		
DAPS – Single-acting	Connection	Nominal width DN	Part No.	Type
	Ring housing with threaded flange	15	1915401	VZBC-15-FF-40-22-F0304-V4V4T-PS15-R-90-4-C
		20	1915402	VZBC-20-FF-40-22-F0304-V4V4T-PS30-R-90-4-C
		25	1915403	VZBC-25-FF-40-22-F0405-V4V4T-PS30-R-90-4-C
		32	1915404	VZBC-32-FF-40-22-F0405-V4V4T-PS53-R-90-4-C
		40	1915406	VZBC-40-FF-40-22-F0507-V4V4T-PS53-R-90-4-C
		50	1915407	VZBC-50-FF-40-22-F0507-V4V4T-PS90-R-90-4-C
		65	1915408	VZBC-65-FF-16-22-F07-V4V4T-PS180-R-90-4-C
		80	1915409	VZBC-80-FF-16-22-F07-V4V4T-PS180-R-90-4-C
100	1915410	VZBC-100-FF-16-22-F0710-V4V4T-PS240-R-90-4-C		

Ball valve actuator units VZBA, 3-way, stainless steel

Type codes

VZBA - 2 - G G G - 63 - 32L - F0507 -

Type

VZBA	Ball valve
------	------------

Nominal width DN

1/4"	DN8
3/8"	DN10
1/2"	DN15
3/4"	DN20
1"	DN25
1 1/4"	DN32
1 1/2"	DN40
2"	DN50

Connection type 1

G	Pipe thread to DIN EN 10226-1
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Connection type 2

G	Pipe thread to DIN EN 10226-1
---	-------------------------------

Connection type 3

G	Pipe thread to DIN EN 10226-1
---	-------------------------------

Nominal pressure of process valve PN

63	63 bar
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Valve function

32T	3/2-way, T-shaped bore
32L	3/2-way, L-shaped bore

Flanged connection to ISO 5211

F0304	2 bolt circles with \varnothing 36 mm and \varnothing 42 mm
F0405	2 bolt circles with \varnothing 42 mm and \varnothing 50 mm
F0507	2 bolt circles with \varnothing 50 mm and \varnothing 70 mm

Ball valve actuator units VZBA, 3-way, stainless steel

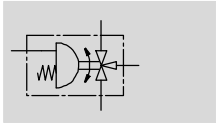
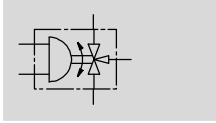
Type codes

		V4	V4	T	-	PS	80	-	90	-	5	-	C
Housing material													
V4	Stainless steel 1.4401/1.4404 (AISI 316L)/1.4408												
Shut-off element material													
V4	Stainless steel 1.4401/1.4404 (AISI 316L)/1.4408												
Sealing material													
T	PTFE reinforced												
Actuator													
PP	DAPS, double-acting												
PS	DAPS, single-acting												
Torque													
30	30 Nm												
53	53 Nm												
60	60 Nm												
90	90 Nm												
106	106 Nm												
Nominal swivel angle													
90	90°												
Spring configuration													
-	Not applicable for double-acting												
3	Spring force for connection pressure 3 bar												
4	Spring force for connection pressure 4 bar												
5	Spring force for connection pressure 5 bar												
End-position adjustment													
C	Closed												

Ball valve actuator units VZBA, 3-way, stainless steel

Technical data

Function



- Swivel angle
0 ... 90°
- Flow rate
4.5 ... 100 m³/h
- Connecting thread
Rp1/4 ... Rp4



General technical data

Nominal width DN	8	10	15	20	25	32	40	50
Quarter turn actuator								
Type of mounting	In-line installation							
Mounting position	Any							
Swivel angle [°]	90							
Closing direction	Closes to the right							
Ball valve								
Design	3-way ball valve with L-shaped bore, T-shaped bore							
Type of actuation	Pneumatic							
Switching position indication	Slot direction = flow direction							
Type of mounting	In-line installation							
Nominal pressure of process valve PN	63							
Flow rate Kv [m ³ /h]	→ Page 594							

Operating and environmental conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]	
Operating pressure [bar]	6 ... 8.4	
Ambient temperature [°C]	-10 ... +80	
Temperature of medium ¹⁾ [°C]	-10 ... +200	
Medium	Compressed air to ISO 8573-1:2010 [-:-:-]	
	Inert gases	
	Neutral fluids	
	Water – no water vapour	
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)	
Note on materials	Contains paint-wetting impairment substances, RoHS-compliant	
Corrosion resistance class CRC ²⁾	3	

1) As a function of operating pressure

2) Corrosion resistance class CRC 3 to Festo standard FN 940070

High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Ball valve actuator units VZBA, 3-way, stainless steel

Technical data

ATEX	
ATEX category for gas	II 2G
ATEX category for dust	II 2D
Max. surface temperature of assembly	TX
Explosion group of assembly	IIC
Explosion ambient temperature	-10 °C ≤ Ta ≤ +60 °C

Materials	Material number
Housing	High-alloy stainless steel 1.4408
Ball	
Shaft	High-alloy stainless steel 1.4401
Seals	PTFE reinforced PTFE
Note on materials	RoHS-compliant Contains paint-wetting impairment substances

Weight – Double-acting

Nominal width DN	Process valve connection	Weight [g]
8	Rp1/4	1750
10	Rp3/8	1750
15	Rp1/2	1750
20	Rp3/4	2050

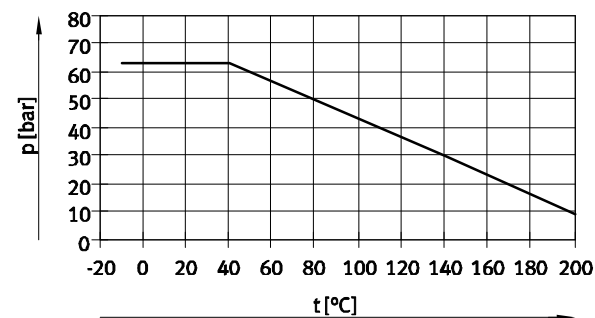
Nominal width DN	Process valve connection	Weight [g]
25	Rp1	2650
32	Rp1 1/4	4750
40	Rp1 1/2	5750
50	Rp2	9800

Weight – Single-acting

Nominal width DN	Process valve connection	Weight [g]
8	Rp1/4	2950
10	Rp3/8	2950
15	Rp1/2	2950
20	Rp3/4	3250

Nominal width DN	Process valve connection	Weight [g]
25	Rp1	3850
32	Rp1 1/4	6070
40	Rp1 1/2	10,812
50	Rp2	12,900

Permissible operating pressure p as a function of the temperature of the medium t



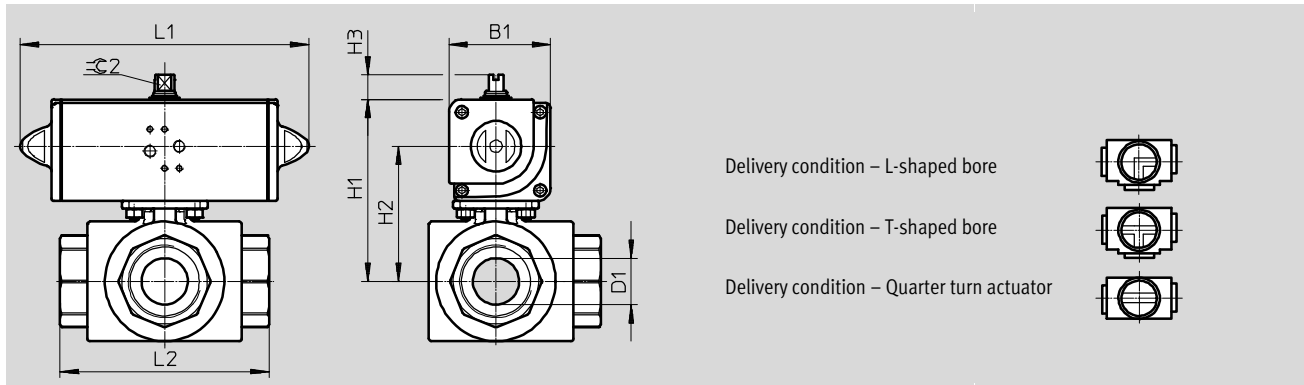
Ball valve actuator units VZBA, 3-way, stainless steel

Technical data

Dimensions

DAPS – Double-acting

Download CAD data → www.festo.com



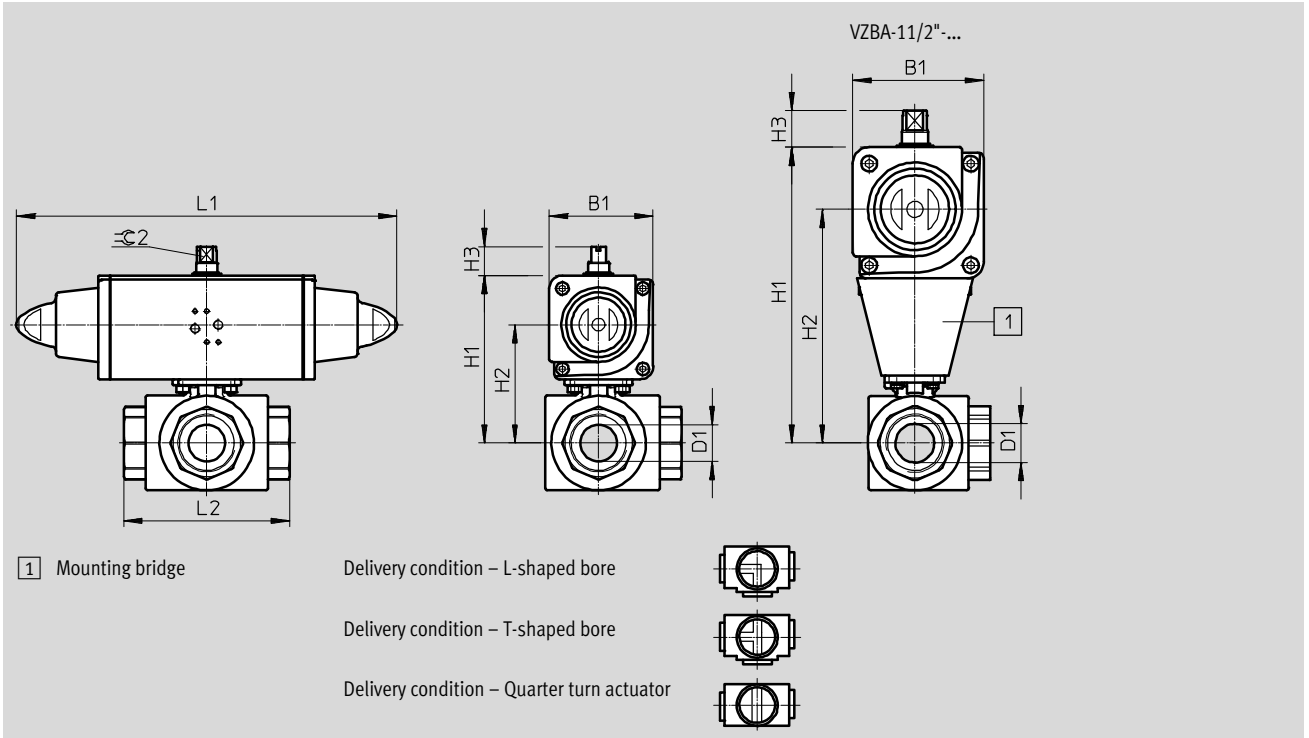
Type	B1	D1 ∅	H1	H2	H3	L1	L2	∅ 2
VZBA-1/4"-GGG-63-32L-F0304-V4V4T-PP30-R-90-C	59.2	11.6	95.1	67.4	20	174	80	9
VZBA-1/4"-GGG-63-32T-F0304-V4V4T-PP30-R-90-C	59.2	11.6	95.1	67.4	20	174	80	9
VZBA-3/8"-GGG-63-32L-F0304-V4V4T-PP30-R-90-C	59.2	12.7	95.1	67.4	20	174	80	9
VZBA-3/8"-GGG-63-32T-F0304-V4V4T-PP30-R-90-C	59.2	12.7	95.1	67.4	20	174	80	9
VZBA-1/2"-GGG-63-32L-F0304-V4V4T-PP30-R-90-C	59.2	12.7	95.1	67.4	20	174	80	9
VZBA-1/2"-GGG-63-32T-F0304-V4V4T-PP30-R-90-C	59.2	12.7	95.1	67.4	20	174	80	9
VZBA-3/4"-GGG-63-32L-F0405-V4V4T-PP30-R-90-C	59.2	16	100.1	72.4	20	174	87.5	9
VZBA-3/4"-GGG-63-32T-F0405-V4V4T-PP30-R-90-C	59.2	16	100.1	72.4	20	174	87.5	9
VZBA-1"-GGG-63-32L-F0405-V4V4T-PP30-R-90-C	59.2	20	104.35	76.65	20	174	100	9
VZBA-1"-GGG-63-32T-F0405-V4V4T-PP30-R-90-C	59.2	20	104.35	76.65	20	174	100	9
VZBA-1 1/4"-GGG-63-32L-F0405-V4V4T-PP60-R-90-C	70.4	25.4	121.4	88.7	20	198	123	10
VZBA-1 1/4"-GGG-63-32T-F0405-V4V4T-PP60-R-90-C	70.4	25.4	121.4	88.7	20	198	123	10
VZBA-1 1/2"-GGG-63-32L-F0405-V4V4T-PP60-R-90-C	70.4	31.8	125.9	93.2	20	198	142.2	10
VZBA-1 1/2"-GGG-63-32T-F0405-V4V4T-PP60-R-90-C	70.4	31.8	125.9	93.2	20	198	142.2	10
VZBA-2"-GGG-63-32L-F0507-V4V4T-PP106-R-90-C	83.3	38.1	149.3	110.8	20	237.1	170.6	12
VZBA-2"-GGG-63-32T-F0507-V4V4T-PP106-R-90-C	83.3	38.1	149.3	110.8	20	237.1	170.6	12

Ball valve actuator units VZBA, 3-way, stainless steel

Technical data

Dimensions

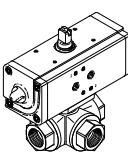
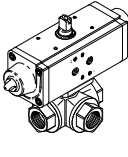
DAPS – Single-acting

Download CAD data → www.festo.com

Type	B1	D1 ∅	H1	H2	H3	L1	L2	∅2
VZBA-1/4"-GGG-63-32L-F0304-V4V4T-PS30-R-90-4-C	70.4	11.6	106.3	73.6	20	259	80	10
VZBA-1/4"-GGG-63-32T-F0304-V4V4T-PS30-R-90-4-C	70.4	11.6	106.3	73.6	20	259	80	10
VZBA-3/8"-GGG-63-32L-F0304-V4V4T-PS30-R-90-4-C	70.4	12.7	106.3	73.6	20	259	80	10
VZBA-3/8"-GGG-63-32T-F0304-V4V4T-PS30-R-90-4-C	70.4	12.7	106.3	73.6	20	259	80	10
VZBA-1/2"-GGG-63-32L-F0304-V4V4T-PS30-R-90-4-C	70.4	12.7	106.3	73.6	20	259	80	10
VZBA-1/2"-GGG-63-32T-F0304-V4V4T-PS30-R-90-4-C	70.4	12.7	106.3	73.6	20	259	80	10
VZBA-3/4"-GGG-63-32L-F0405-V4V4T-PS30-R-90-4-C	70.4	16	111.3	78.6	20	259	87.5	10
VZBA-3/4"-GGG-63-32T-F0405-V4V4T-PS30-R-90-4-C	70.4	16	111.3	78.6	20	259	87.5	10
VZBA-1"-GGG-63-32L-F0405-V4V4T-PS30-R-90-4-C	70.4	20	115.55	82.85	20	259	100	10
VZBA-1"-GGG-63-32T-F0405-V4V4T-PS30-R-90-4-C	70.4	20	115.55	82.85	20	259	100	10
VZBA-11/4"-GGG-63-32L-F0405-V4V4T-PS53-R-90-4-C	83.3	25.4	134.3	95.8	20	304.3	123	12
VZBA-11/4"-GGG-63-32T-F0405-V4V4T-PS53-R-90-4-C	83.3	25.4	134.3	95.8	20	304.3	123	12
VZBA-11/2"-GGG-63-32L-F0405-V4V4T-PS90-R-90-4-C	107.5	31.8	243	192	30	393.7	142.2	15
VZBA-11/2"-GGG-63-32T-F0405-V4V4T-PS90-R-90-4-C	107.5	31.8	243	192	30	393.7	142.2	15
VZBA-2"-GGG-63-32L-F0507-V4V4T-PS90-R-90-4-C	107.5	38.1	173.5	122.5	30	393.7	170.6	15
VZBA-2"-GGG-63-32T-F0507-V4V4T-PS90-R-90-4-C	107.5	38.1	173.5	122.5	30	393.7	170.6	15

Ball valve actuator units VZBA, 3-way, stainless steel

Technical data

Ordering data									
DAPS – Double-acting	Connection Process valve	Bore	Flow rate Kv [m ³ /h] Type			Part No.	Type		
			L	T right-angled	T straight				
	Rp1/4	L	4.5	–	–	1914785	VZBA-1/4"-GGG-63-32L-F0304-V4V4T-PP30-R-90-C		
	Rp3/8		4.5	–	–	1914786	VZBA-3/8"-GGG-63-32L-F0304-V4V4T-PP30-R-90-C		
	Rp1/2		4.7	–	–	1914787	VZBA-1/2"-GGG-63-32L-F0304-V4V4T-PP30-R-90-C		
	Rp3/4		5.1	–	–	1914788	VZBA-3/4"-GGG-63-32L-F0405-V4V4T-PP30-R-90-C		
	Rp1		11.8	–	–	1914789	VZBA-1"-GGG-63-32L-F0405-V4V4T-PP30-R-90-C		
	Rp1 1/4		19.6	–	–	1914790	VZBA-11/4"-GGG-63-32L-F0405-V4V4T-PP60-R-90-C		
	Rp1 1/2		33.2	–	–	1914791	VZBA-11/2"-GGG-63-32L-F0405-V4V4T-PP60-R-90-C		
	Rp2		53.7	–	–	1914792	VZBA-2"-GGG-63-32L-F0507-V4V4T-PP106-R-90-C		
	Rp1/4	T	–	4.5	8	1915072	VZBA-1/4"-GGG-63-32T-F0304-V4V4T-PP30-R-90-C		
	Rp3/8		–	4.5	8	1915073	VZBA-3/8"-GGG-63-32T-F0304-V4V4T-PP30-R-90-C		
	Rp1/2		–	4.8	8.3	1915074	VZBA-1/2"-GGG-63-32T-F0304-V4V4T-PP30-R-90-C		
	Rp3/4		–	4.8	8.3	1915075	VZBA-3/4"-GGG-63-32T-F0405-V4V4T-PP30-R-90-C		
	Rp1		–	10.9	22.4	1915076	VZBA-1"-GGG-63-32T-F0405-V4V4T-PP30-R-90-C		
	Rp1 1/4		–	18	36.5	1915077	VZBA-11/4"-GGG-63-32T-F0405-V4V4T-PP60-R-90-C		
	Rp1 1/2		–	30	62	1915078	VZBA-11/2"-GGG-63-32T-F0405-V4V4T-PP60-R-90-C		
	Rp2		–	48.8	100	1915079	VZBA-2"-GGG-63-32T-F0507-V4V4T-PP106-R-90-C		
	DAPS – Single-acting								
			Rp1/4	L	4.5	–	–	1915543	VZBA-1/4"-GGG-63-32L-F0304-V4V4T-PS30-R-90-4-C
Rp3/8		4.5	–		–	1915544	VZBA-3/8"-GGG-63-32L-F0304-V4V4T-PS30-R-90-4-C		
Rp1/2		4.7	–		–	1915545	VZBA-1/2"-GGG-63-32L-F0304-V4V4T-PS30-R-90-4-C		
Rp3/4		5.1	–		–	1915546	VZBA-3/4"-GGG-63-32L-F0405-V4V4T-PS30-R-90-4-C		
Rp1		11.8	–		–	1915547	VZBA-1"-GGG-63-32L-F0405-V4V4T-PS30-R-90-4-C		
Rp1 1/4		19.6	–		–	1915548	VZBA-11/4"-GGG-63-32L-F0405-V4V4T-PS53-R-90-4-C		
Rp1 1/2		33.2	–		–	1915549	VZBA-11/2"-GGG-63-32L-F0405-V4V4T-PS90-R-90-4-C		
Rp2		53.7	–		–	1915550	VZBA-2"-GGG-63-32L-F0507-V4V4T-PS90-R-90-4-C		
Rp1/4		T	–	4.5	8	1915744	VZBA-1/4"-GGG-63-32T-F0304-V4V4T-PS30-R-90-4-C		
Rp3/8			–	4.5	8	1915745	VZBA-3/8"-GGG-63-32T-F0304-V4V4T-PS30-R-90-4-C		
Rp1/2			–	4.8	8.3	1915746	VZBA-1/2"-GGG-63-32T-F0304-V4V4T-PS30-R-90-4-C		
Rp3/4			–	4.8	8.3	1915747	VZBA-3/4"-GGG-63-32T-F0405-V4V4T-PS30-R-90-4-C		
Rp1			–	10.9	22.4	1915748	VZBA-1"-GGG-63-32T-F0405-V4V4T-PS30-R-90-4-C		
Rp1 1/4			–	18	36.5	1915749	VZBA-11/4"-GGG-63-32T-F0405-V4V4T-PS53-R-90-4-C		
Rp1 1/2			–	30	62	1915750	VZBA-11/2"-GGG-63-32T-F0405-V4V4T-PS90-R-90-4-C		
Rp2			–	48.8	100	1915751	VZBA-2"-GGG-63-32T-F0507-V4V4T-PS90-R-90-4-C		

Ball valve actuator units VZBM, 2-way, brass

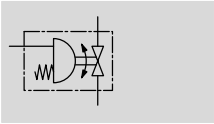
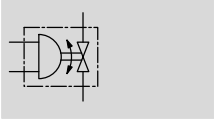
Type codes




		VZBM	-	A	-	3/4"	-	RP	-	25	-	D	-	2	-	B2	-	PA	10	
Type		VZBM																		
	Ball valve																			
Design		A																		
	Ball valve actuator unit																			
Nominal width DN																				
1/4"	DN8																			
3/8"	DN10																			
1/2"	DN15																			
3/4"	DN20																			
1"	DN25																			
1 1/4"	DN32																			
1 1/2"	DN40																			
2"	DN50																			
Process valve connection type		RP																		
	Rp thread																			
Nominal pressure																				
25	25 bar																			
40	40 bar																			
Design		D																		
	Two-part																			
Valve function		2																		
	2/2-way																			
Housing material		B2																		
	Brass, nickel-plated																			
Actuator		PA																		
	DFPD, double-acting																			
PB	DFPD, single-acting																			
Size																				
10	10																			
20	20																			
40	40																			
80	80																			

Ball valve actuator units VZBM, 2-way, brass

Technical data

Function



-  Swivel angle
0 ... 90°
-  Flow rate
5.9 ... 243 m³/h
-  Connecting thread
Rp1/4 ... Rp2



General technical data

Nominal width DN	8	10	15	20	25	32	40	50
Quarter turn actuator								
Type of mounting	In-line installation							
Mounting position	Any							
Swivel angle [°]	90							
Closing direction	Closes to the right							
Ball valve								
Design	2-way ball valve							
Type of actuation	Pneumatic							
Switching position indication	Slot direction = flow direction							
Nominal pressure of process valve PN	40		25					
Flow rate Kv [m ³ /h]	5.9	9.4	15	28	39	84	156	243

Operating and environmental conditions

Nominal width DN	8	10	15	20	25	32	40	50
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]							
Operating pressure [bar]	5.5 ... 8							
Ambient temperature [°C]	-20 ... +80							
Temperature of medium ¹⁾ [°C]	-20 ... +130			-15 ... +90				
Medium	Compressed air to ISO 8573-1:2010 [-:-:-]							
	Inert gases							
	Water – no water vapour							
	Neutral fluids							
Note on the operating/pilot medium	Pressure dew point 10°C below ambient/medium temperature							
	Lubricated operation possible (in which case lubricated operation will always be required)							
Corrosion resistance class CRC ²⁾	1							

1) As a function of operating pressure

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

Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Ball valve actuator units VZBM, 2-way, brass

Technical data

Materials		Material number
Housing	Brass, nickel-plated	CW617N
Ball	Brass, chrome-plated	CW614N
Shaft	Brass	CW614N
Seals		
	HNBR	
	PTFE	
With Rp1/2 ... Rp2 additionally	FPM	
Note on materials		
	RoHS-compliant	
	Contains paint-wetting impairment substances	

Weight – Double-acting

Nominal width DN	Process valve connection	Weight [g]
8	Rp1/4	1393
10	Rp3/8	1371
15	Rp1/2	1187
20	Rp3/4	1287

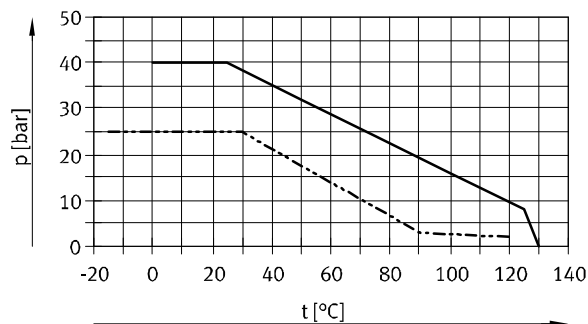
Nominal width DN	Process valve connection	Weight [g]
25	Rp1	1454
32	Rp1 1/4	1711
40	Rp1 1/2	2443
50	Rp2	3694

Weight – Single-acting

Nominal width DN	Process valve connection	Weight [g]
8	Rp1/4	1839
10	Rp3/8	1817
15	Rp1/2	1363
20	Rp3/4	1733

Nominal width DN	Process valve connection	Weight [g]
25	Rp1	1900
32	Rp1 1/4	2157
40	Rp1 1/2	3329
50	Rp2	5723

Permissible operating pressure p as a function of the temperature of the medium t



— Rp1/4 ... Rp3/8
 - - - Rp1/2 ... Rp2

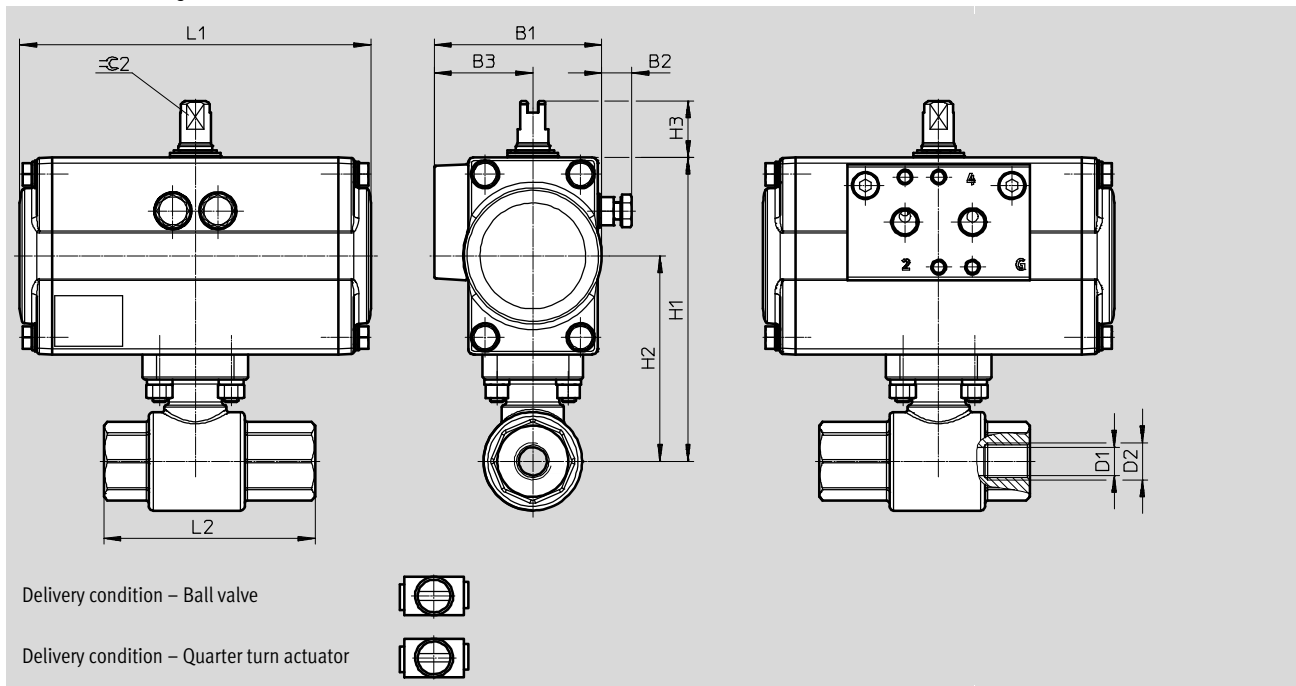
Ball valve actuator units VZBM, 2-way, brass

Technical data

Dimensions

Download CAD data → www.festo.com

DFPD – Double-acting



Type	B1	B2	B3	D1 Ø	D2	H1	H2	H3	L1	L2	h11
VZBM-A-1/4"-...	59.5	10.7	35	10	RP1/4	108	73	20	124.7	75	9
VZBM-A-3/8"-...	59.5	10.7	35	10	RP3/8	108	73	20	124.7	75	9
VZBM-A-1/2"-...	59.5	10.7	35	15	RP1/2	102	67	20	124.7	61	9
VZBM-A-3/4"-...	59.5	10.7	35	20	RP3/4	106	71	20	124.7	70	9
VZBM-A-1"-...	59.5	10.7	35	25	RP1	114	79	20	124.7	84	9
VZBM-A-1 1/4"-...	59.5	10.7	35	32	RP1 1/4	119	84	20	124.7	97	9
VZBM-A-1 1/2"-...	68.5	9.2	38.5	40	RP1 1/2	134	94	20	133.3	108	9
VZBM-A-2"-...	81.5	8.2	45	50	RP2	152	108	20	151.4	130	12

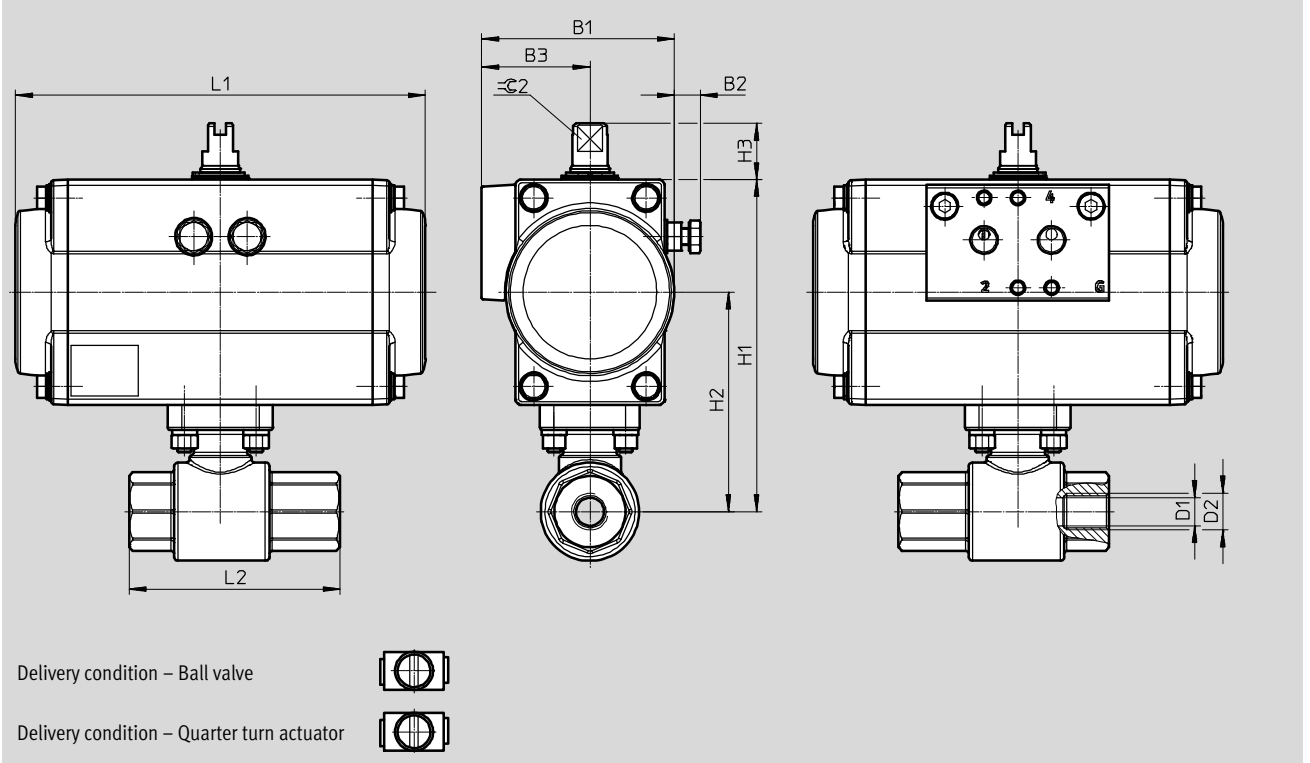
Ball valve actuator units VZBM, 2-way, brass

Technical data

Dimensions

DFFPD – Single-acting

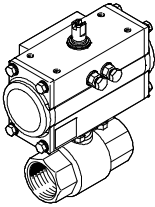
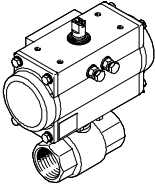
Download CAD data → www.festo.com



Type	B1	B2	B3	D1 Ø	D2	H1	H2	H3	L1	L2	h11 ⊕ 2
VZBM-A-1/4"-...	68.5	9.2	38.5	10	RP1/4	118	78	20	145.7	75	9
VZBM-A-3/8"-...	68.5	9.2	38.5	10	RP3/8	118	78	20	145.7	75	9
VZBM-A-1/2"-...	68.5	9.2	38.5	15	RP1/2	112	72	20	145.7	61	9
VZBM-A-3/4"-...	68.5	9.2	38.5	20	RP3/4	116	76	20	145.7	70	9
VZBM-A-1"-...	68.5	9.2	38.5	25	RP1	124	84	20	145.7	84	9
VZBM-A-1 1/4"-...	68.5	9.2	38.5	32	RP1 1/4	129	89	20	145.7	97	9
VZBM-A-1 1/2"-...	81.5	8.2	45	40	RP1 1/2	146	100	20	170.4	108	9
VZBM-A-2"-...	99	9	53	50	RP2	172	117	20	223.1	130	12

Ball valve actuator units VZBM, 2-way, brass

Technical data

Ordering data			
DFPD – Double-acting	Connecting thread	Part No.	Type
	Rp1/4	8070234	VZBM-A-1/4"-RP-40-D-2-B2-PA10
	Rp3/8	8070235	VZBM-A-3/8"-RP-40-D-2-B2-PA10
	Rp1/2	8070236	VZBM-A-1/2"-RP-25-D-2-B2-PA10
	Rp3/4	8070237	VZBM-A-3/4"-RP-25-D-2-B2-PA10
	Rp1	8070238	VZBM-A-1"-RP-25-D-2-B2-PA10
	Rp1 1/4	8070239	VZBM-A-1 1/4"-RP-25-D-2-B2-PA10
	Rp1 1/2	8070240	VZBM-A-1 1/2"-RP-25-D-2-B2-PA20
	Rp2	8070241	VZBM-A-2"-RP-25-D-2-B2-PA40
DFPD – Single-acting			
	Rp1/4	8070242	VZBM-A-1/4"-RP-40-D-2-B2-PB20
	Rp3/8	8070243	VZBM-A-3/8"-RP-40-D-2-B2-PB20
	Rp1/2	8070244	VZBM-A-1/2"-RP-25-D-2-B2-PB20
	Rp3/4	8070245	VZBM-A-3/4"-RP-25-D-2-B2-PB20
	Rp1	8070246	VZBM-A-1"-RP-25-D-2-B2-PB20
	Rp1 1/4	8070247	VZBM-A-1 1/4"-RP-25-D-2-B2-PB20
	Rp1 1/2	8070248	VZBM-A-1 1/2"-RP-25-D-2-B2-PB40
	Rp2	8070249	VZBM-A-2"-RP-25-D-2-B2-PB80

Ball valve actuator units VZBM, 3-way, brass

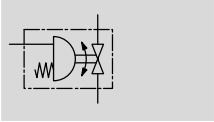
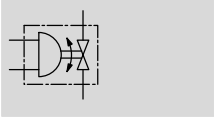
Type codes

		VZBM	-	A	-	3/4"	-	RP	-	25	-	F	-	3L	-	B2	-	PA	20	
Type																				
VZBM	Ball valve																			
Design																				
A	Ball valve actuator unit																			
Nominal width DN																				
1/4"	DN8																			
3/8"	DN10																			
1/2"	DN15																			
3/4"	DN20																			
1"	DN25																			
1 1/4"	DN32																			
1 1/2"	DN40																			
2"	DN50																			
Process valve connection type																				
RP	Rp thread																			
Nominal pressure																				
25	25 bar																			
40	40 bar																			
Design																				
F	Four-part																			
Valve function																				
3L	3/2-way, L-shaped bore																			
3T	3/2-way, T-shaped bore																			
Housing material																				
B2	Brass, nickel-plated																			
Actuator																				
PA	DFPD, double-acting																			
PB	DFPD, single-acting																			
Size																				
10	10																			
20	20																			
40	40																			
80	80																			
120	120																			

Ball valve actuator units VZBM, 3-way, brass

Technical data

Function



- Swivel angle
0 ... 90°
- Flow rate
5.9 ... 292 m³/h
- Connecting thread
Rp1/4 ... Rp2



General technical data

Nominal width DN	8	10	15	20	25	32	40	50
Quarter turn actuator								
Type of mounting	In-line installation							
Mounting position	Any							
Swivel angle [°]	90							
Closing direction	Closes to the right							
Ball valve								
Design	3-way ball valve							
Type of actuation	Pneumatic							
Switching position indication	Slot direction = flow direction							
Nominal pressure of process valve PN	25							
Flow rate Kv [m ³ /h]	5.9	9.4	17	41	70	121	200	292

Operating and environmental conditions

Nominal width DN	8	10	15	20	25	32	40	50
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]							
Operating pressure [bar]	5.5 ... 8							
Ambient temperature [°C]	-20 ... +80							
Temperature of medium ¹⁾ [°C]	-20 ... +130							
Medium	Compressed air to ISO 8573-1:2010 [-:-:-]							
	Inert gases							
	Water – no water vapour							
	Neutral fluids							
Note on the operating/pilot medium	Pressure dew point 10°C below ambient/medium temperature							
	Lubricated operation possible (in which case lubricated operation will always be required)							
Corrosion resistance class CRC ²⁾	1							

1) As a function of operating pressure

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

Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Ball valve actuator units VZBM, 3-way, brass

Technical data

Materials		Material number
Housing	Brass, nickel-plated	CW617N
Ball	Brass, chrome-plated	CW614N
Shaft	Brass	CW614N
Seals	HNBR	
	PTFE	
Note on materials	RoHS-compliant	
	Contains paint-wetting impairment substances	

Weight – Double-acting, type L

Nominal width DN	Process valve connection	Weight [g]
8	Rp1/4	1511
10	Rp3/8	1481
15	Rp1/2	1441
20	Rp3/4	2011

Nominal width DN	Process valve connection	Weight [g]
25	Rp1	2584
32	Rp1 1/4	4911
40	Rp1 1/2	6597
50	Rp2	7807

Weight – Single-acting, type L

Nominal width DN	Process valve connection	Weight [g]
8	Rp1/4	1957
10	Rp3/8	1927
15	Rp1/2	1887
20	Rp3/4	2914

Nominal width DN	Process valve connection	Weight [g]
25	Rp1	3461
32	Rp1 1/4	6953
40	Rp1 1/2	8973
50	Rp2	10183

Weight – Double-acting, type T

Nominal width DN	Process valve connection	Weight [g]
8	Rp1/4	1511
10	Rp3/8	1441
15	Rp1/2	1441
20	Rp3/4	2001

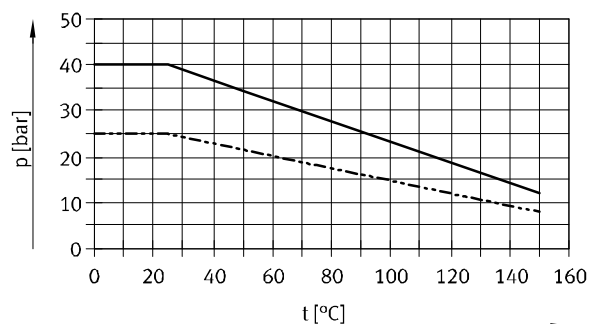
Nominal width DN	Process valve connection	Weight [g]
25	Rp1	2554
32	Rp1 1/4	4841
40	Rp1 1/2	6527
50	Rp2	7657

Weight – Single-acting, type T

Nominal width DN	Process valve connection	Weight [g]
8	Rp1/4	1957
10	Rp3/8	1887
15	Rp1/2	1887
20	Rp3/4	2904

Nominal width DN	Process valve connection	Weight [g]
25	Rp1	3431
32	Rp1 1/4	6883
40	Rp1 1/2	8903
50	Rp2	10033

Permissible operating pressure p as a function of the temperature of the medium t



— Rp1/4 ... Rp1 1/4
 - - - Rp1 1/2 ... Rp2

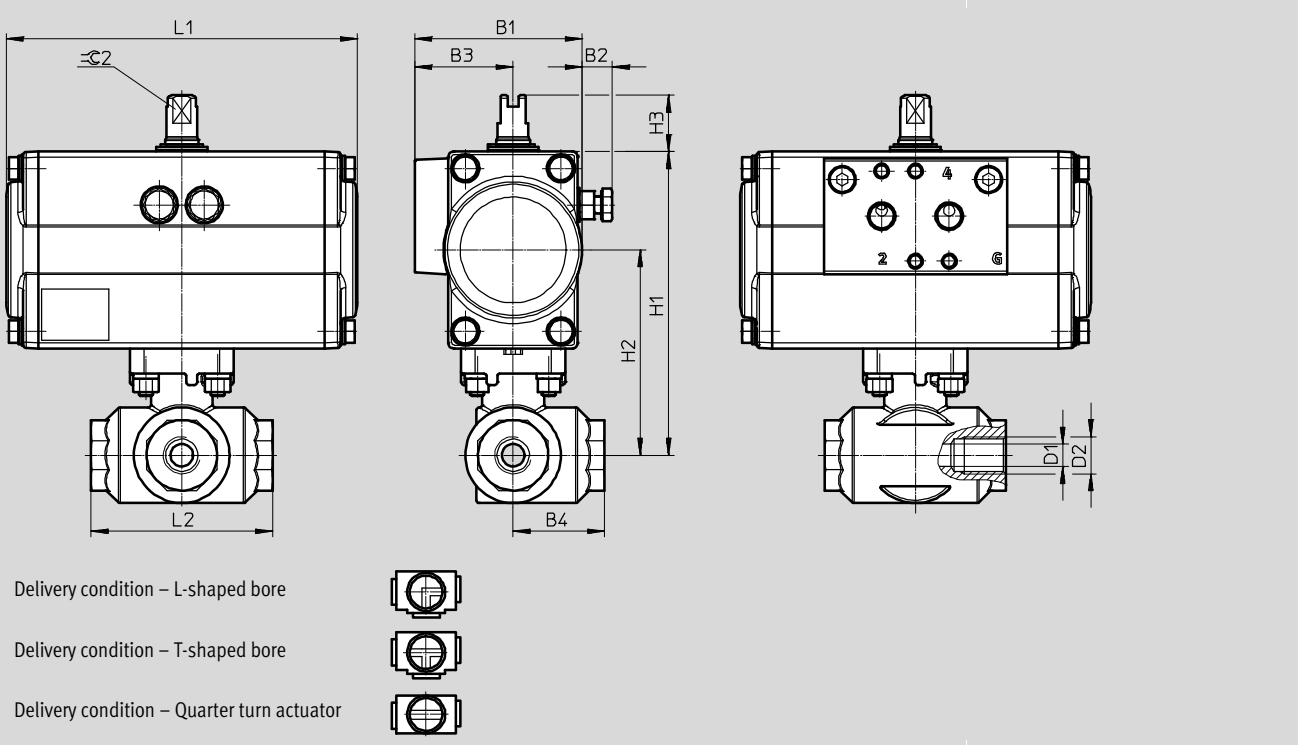
Ball valve actuator units VZBM, 3-way, brass

Technical data

Dimensions

Download CAD data → www.festo.com

DFPD – Double-acting



Type	B1	B2	B3	B4	D1 Ø	D2	H1	H2	H3	L1	L2	≅ 2 h11
VZBM-A-1/4"-...	59.5	10.7	35	32.5	8	RP1/4	108	73	20	124.7	64.5	9
VZBM-A-3/8"-...	59.5	10.7	35	32.5	10	RP3/8	108	73	20	124.7	64.5	9
VZBM-A-1/2"-...	59.5	10.7	35	32.5	14.1	RP1/2	108	73	20	124.7	64.5	9
VZBM-A-3/4"-...	68.5	9.2	38.5	38	17.6	RP3/4	122	82	20	133.3	76	9
VZBM-A-1"-...	68.5	9.2	38.5	48.5	25	RP1	126.5	86.5	20	133.3	97	9
VZBM-A-1 1/4"-...	81.5	8.2	45	59	32	RP1 1/4	153.3	107.3	20	151.4	118	12
VZBM-A-1 1/2"-...	99	9	53	67.5	38	RP1 1/2	155.5	118.5	20	189.3	134.5	15
VZBM-A-2"-...	99	9	53	78.5	45	RP2	166	129	20	189.3	157	15

06

Ball valves and ball valve units

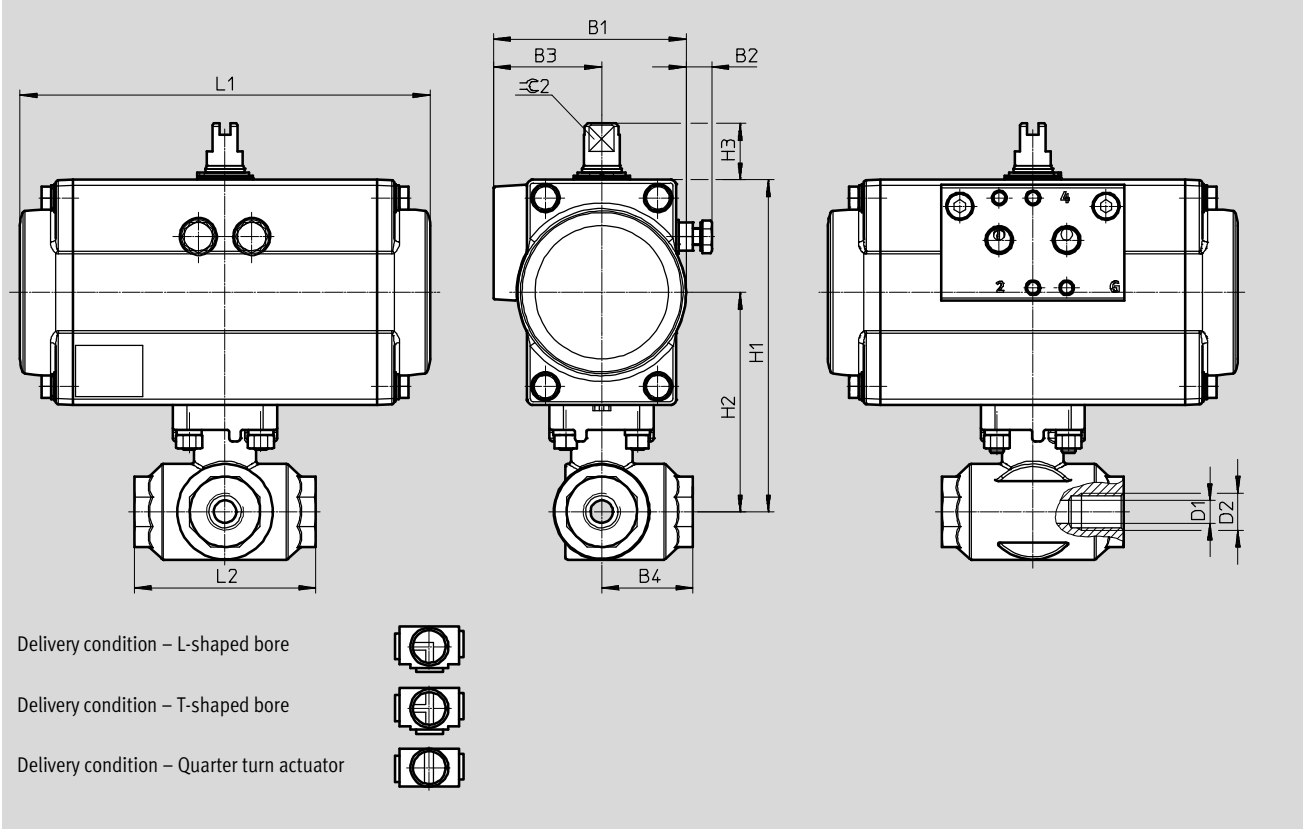
Ball valve actuator units VZBM, 3-way, brass

Technical data

Dimensions

DFPD – Single-acting

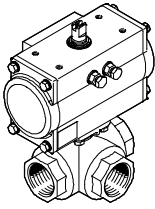
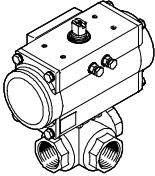
Download CAD data → www.festo.com

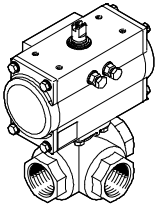
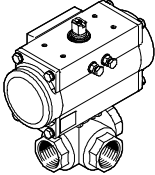


Type	B1	B2	B3	B4	D1 ∅	D2	H1	H2	H3	L1	L2	$\approx C2$ h11
VZBM-A-1/4"-...	68.5	9.2	38.5	32.5	8	RP1/4	118	78	20	145.7	64.5	9
VZBM-A-3/8"-...	68.5	9.2	38.5	32.5	10	RP3/8	118	78	20	145.7	64.5	9
VZBM-A-1/2"-...	68.5	9.2	38.5	32.5	14.1	RP1/2	118	78	20	145.7	64.5	9
VZBM-A-3/4"-...	81.5	8.2	45	38	17.6	RP3/4	132	88	20	170.4	76	12
VZBM-A-1"-...	81.5	8.2	45	48.5	25	RP1	138.5	92.5	20	170.4	97	12
VZBM-A-1 1/4"-...	99	9	53	59	32	RP1 1/4	171.3	116.3	20	223.1	118	15
VZBM-A-1 1/2"-...	111.5	12.3	60.5	67.5	38	RP1 1/2	186.5	124.5	20	252.3	134.5	15
VZBM-A-2"-...	111.5	12.3	60.5	78.5	45	RP2	197	135.5	20	252.3	157	15

Ball valve actuator units VZBM, 3-way, brass

Technical data

Ordering data			
DFPD – Double-acting, type L	Connecting thread	Part No.	Type
	Rp1/4	8070250	VZBM-A-1/4"-RP-25-F-3L-B2-PA10
	Rp3/8	8070251	VZBM-A-3/8"-RP-25-F-3L-B2-PA10
	Rp1/2	8070252	VZBM-A-1/2"-RP-25-F-3L-B2-PA10
	Rp3/4	8070253	VZBM-A-3/4"-RP-25-F-3L-B2-PA20
	Rp1	8070254	VZBM-A-1"-RP-25-F-3L-B2-PA20
	Rp1 1/4	8070255	VZBM-A-1 1/4"-RP-25-F-3L-B2-PA40
	Rp1 1/2	8070256	VZBM-A-1 1/2"-RP-25-F-3L-B2-PA80
	Rp2	8070257	VZBM-A-2"-RP-25-F-3L-B2-PA80
DFPD – Single-acting, type L			
	Rp1/4	8070266	VZBM-A-1/4"-RP-25-F-3L-B2-PB20
	Rp3/8	8070267	VZBM-A-3/8"-RP-25-F-3L-B2-PB20
	Rp1/2	8070268	VZBM-A-1/2"-RP-25-F-3L-B2-PB20
	Rp3/4	8070269	VZBM-A-3/4"-RP-25-F-3L-B2-PB40
	Rp1	8070270	VZBM-A-1"-RP-25-F-3L-B2-PB40
	Rp1 1/4	8070271	VZBM-A-1 1/4"-RP-25-F-3L-B2-PB80
	Rp1 1/2	8070272	VZBM-A-1 1/2"-RP-25-F-3L-B2-PB120
	Rp2	8070273	VZBM-A-2"-RP-25-F-3L-B2-PB120

Ordering data			
DFPD – Double-acting, type T	Connecting thread	Part No.	Type
	Rp1/4	8070258	VZBM-A-1/4"-RP-25-F-3T-B2-PA10
	Rp3/8	8070259	VZBM-A-3/8"-RP-25-F-3T-B2-PA10
	Rp1/2	8070260	VZBM-A-1/2"-RP-25-F-3T-B2-PA10
	Rp3/4	8070261	VZBM-A-3/4"-RP-25-F-3T-B2-PA20
	Rp1	8070262	VZBM-A-1"-RP-25-F-3T-B2-PA20
	Rp1 1/4	8070263	VZBM-A-1 1/4"-RP-25-F-3T-B2-PA40
	Rp1 1/2	8070264	VZBM-A-1 1/2"-RP-25-F-3T-B2-PA80
	Rp2	8070265	VZBM-A-2"-RP-25-F-3T-B2-PA80
DFPD – Single-acting, type T			
	Rp1/4	8070274	VZBM-A-1/4"-RP-25-F-3T-B2-PB20
	Rp3/8	8070275	VZBM-A-3/8"-RP-25-F-3T-B2-PB20
	Rp1/2	8070276	VZBM-A-1/2"-RP-25-F-3T-B2-PB20
	Rp3/4	8070277	VZBM-A-3/4"-RP-25-F-3T-B2-PB40
	Rp1	8070278	VZBM-A-1"-RP-25-F-3T-B2-PB40
	Rp1 1/4	8070279	VZBM-A-1 1/4"-RP-25-F-3T-B2-PB80
	Rp1 1/2	8070280	VZBM-A-1 1/2"-RP-25-F-3T-B2-PB120
	Rp2	8070281	VZBM-A-2"-RP-25-F-3T-B2-PB120

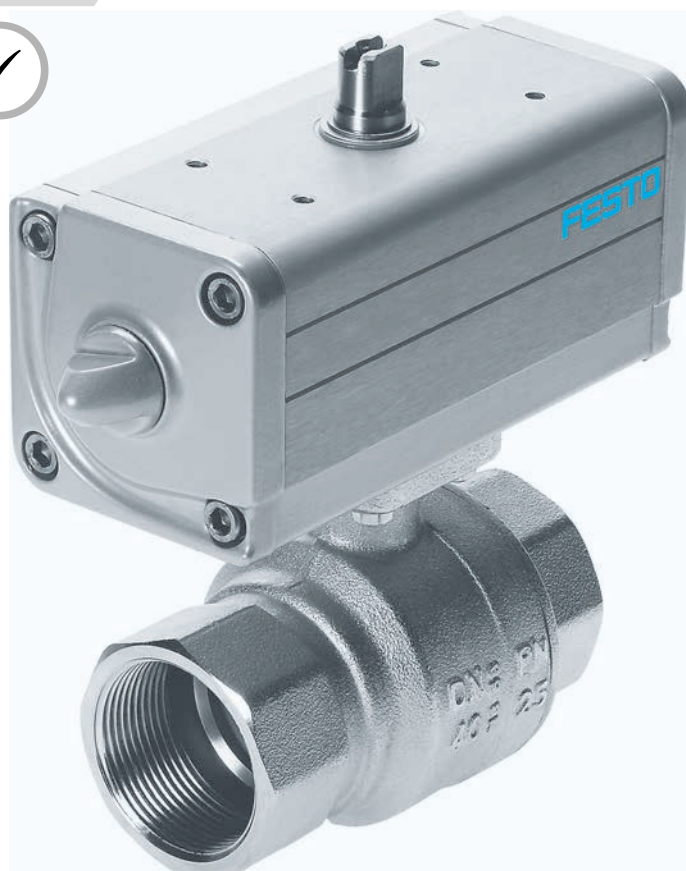
Ball valve actuator units VZPR



Overview, configuration and ordering
→ www.festo.com/catalogue/vzpr



Additional information, support and user documentation
→ www.festo.com/sp/vzpr





- + Combination of a pneumatic quarter turn actuator and a ball valve
- + Connecting thread Rp $\frac{1}{4}$... Rp2 $\frac{1}{2}$
- + Flow rate 5.9 ... 535 m³/h

- + Brass version
- + Connection pattern to NAMUR VDI/VDE 3845
- + PN class to DIN EN 1333

Ball valve actuator units VZPR

Key features and product range overview

General

-  - Connecting thread
Rp1/4 ... Rp2 1/2
-  - Flow rate Kv
5.9 ... 535 m³/h

Construction

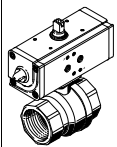
- Brass design VZPR-...
- Port pattern to NAMUR
VDI/VDE 3845
- PN class to DIN EN 1333

Characteristics

- Combination of a pneumatic quarter-turn actuator and a ball valve
- Flow is fully opened or closed in both directions
- 5/2-way valve with NAMUR port pattern can be mounted directly on the drive unit
- Limit switch attachments for end-position sensing can be mounted directly on the drive unit

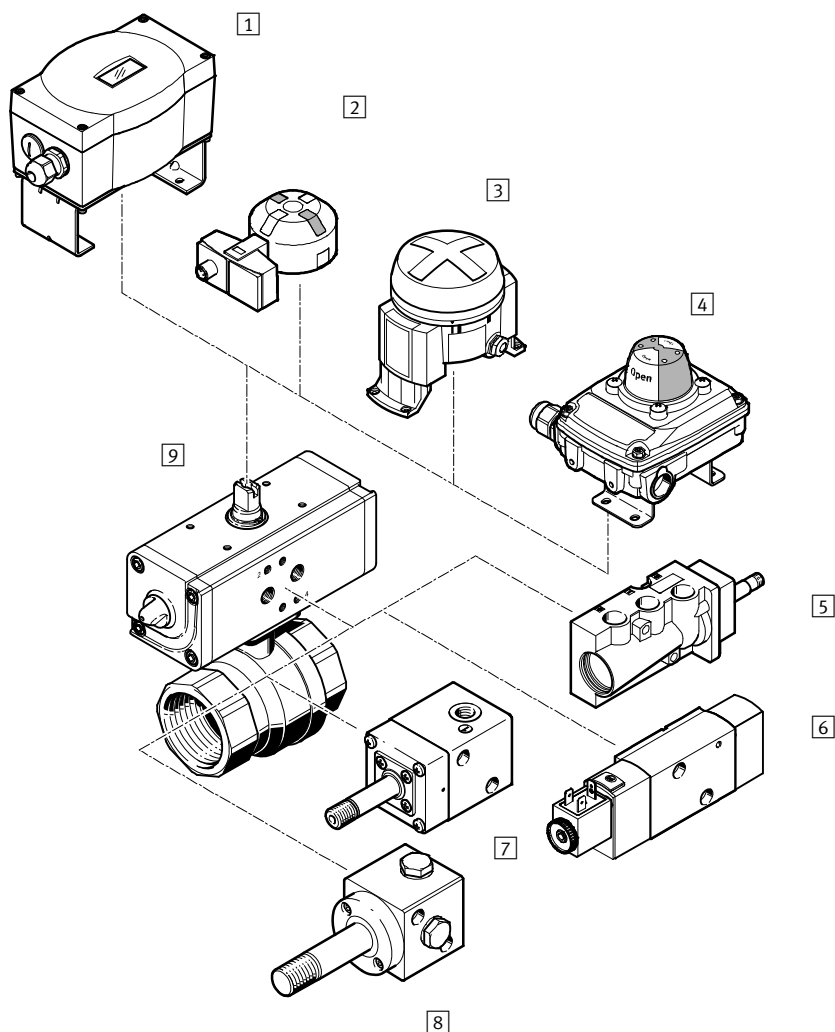
Valves with NAMUR port pattern
➔ Internet: namur

Limit switch attachments with NAMUR mounting-hole pattern
➔ page 279

Version	Type	Connecting thread ¹⁾	Nominal diameter [mm]	Nominal pressure of process valve [bar]	➔ Page/Internet
Brass					
	VZPR-BPD-...	Rp1/4	15	PN 40	611
		Rp3/8	15	PN 40	
		Rp1/2	15	PN 40	
		Rp3/4	20	PN 40	
		Rp1	25	PN 40	
		Rp1 1/4	32	PN 40	
		Rp1 1/2	40	PN 25	
		Rp2	50	PN 25	
Rp2 1/2	63	PN 25			

1) Cylindrical barrel with female thread to DIN ISO 228-1

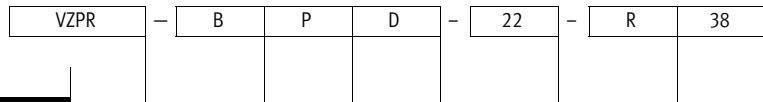
Peripherals overview



Mounting components and accessories		→ Page/Internet
	Brief description	
1	Positioner CMSX	For position control of quarter turn actuators in process automation systems 289
2	Sensor boxes SRBG	For electrical feedback and position monitoring of process valves which are actuated with quarter turn actuators 235
3	Limit switch attachments DAPZ	Round design, variant AR Electrical, inductive or inductive and explosion-proof sensing 279
4	Sensor boxes SRBC	For electrical feedback and position monitoring of process valves which are actuated with quarter turn actuators 217
5	Solenoid valves NVF3	For F solenoid coil and explosion-proof F solenoid coil nvf3
6	Solenoid valves VSNC	For single- and double-acting quarter turn actuators with a connection pattern to VDI/VDE 3845 23
7	Solenoid valves VOFC	Solenoid valve with solenoid coil, connection pattern to Namur 85
8	Solenoid valves VOFD	Solenoid valve with solenoid coil, connection pattern to Namur 151
9	Ball valve actuator unit VZPR	Combination of quarter turn actuator and ball valve, versions in brass 611

Ball valve actuator units VZPR

Type codes

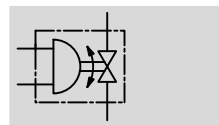




Type	
VZPR	Ball valve actuator
Valve	
B	Ball valve
Drive	
P	Quarter-turn actuator DAPS
Mode of operation	
D	Double-acting
Valve function	
22	2/2-way valve
Closing direction	
R	Closes to right
Connecting thread	
14	Rp1/4
38	Rp3/8
12	Rp1/2
34	Rp3/4
1	Rp1
114	Rp1 1/4
112	Rp1 1/2
2	Rp2
212	Rp2 1/2

Ball valve actuator units VZPR-BPD



Technical data

Function



-  Swivel angle
0 ... 90°
-  Flow rate Kv
5.9 ... 535 m³/h



-  Connecting thread
Rp1/4 ... Rp2 1/2
-  Torque
15 ... 180 Nm

General technical data		Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp1 1/4	Rp1 1/2	Rp2	Rp2 1/2
Quarter-turn actuator										
Pneumatic connection		G1/8								
Constructional design		Scotch yoke mechanism, double-acting								
Type of mounting		Via female threads								
Mounting position		Any								
Swivel angle	[°]	90								
Closing direction		Closes to right								
Torque at 5.6 bar and 0° swivel angle	[Nm]	15	15	15	30	30	60	60	106	180
Ball valve										
Valve function		2/2								
Constructional design		2-way ball valve								
Sealing principle		Soft								
Actuation type		Pneumatic								
Direction of flow		Reversible								
Nominal diameter	[mm]	15	15	15	20	25	32	40	50	63
Flow rate Kv	[m ³ /h]	5.9	9.4	17	41	70	121	200	292	535

Operating and environmental conditions		Rp1/4	Rp3/8	Rp1/2	Rp3/4	Rp1	Rp1 1/4	Rp1 1/2	Rp2	Rp2 1/2
Connecting thread										
Ambient temperature	[°C]	-20 ... +80								
Temperature of medium	[°C]	-20 ... +150								
Quarter-turn actuator										
Operating pressure ¹⁾	[bar]	1 ... 8.4								
Operating medium		Dried air, lubricated or unlubricated								
Ball valve										
Nominal pressure of process valve ²⁾		PN 40	PN 40	PN 40	PN 40	PN 40	PN 40	PN 25	PN 25	PN 25
Operating medium		Compressed air, water, neutral gasses, neutral fluids, vacuum								

1) Minimum operating pressures vary for single-acting quarter-turn actuators depending upon spring quantity.

2) PN class to DIN EN 1333.

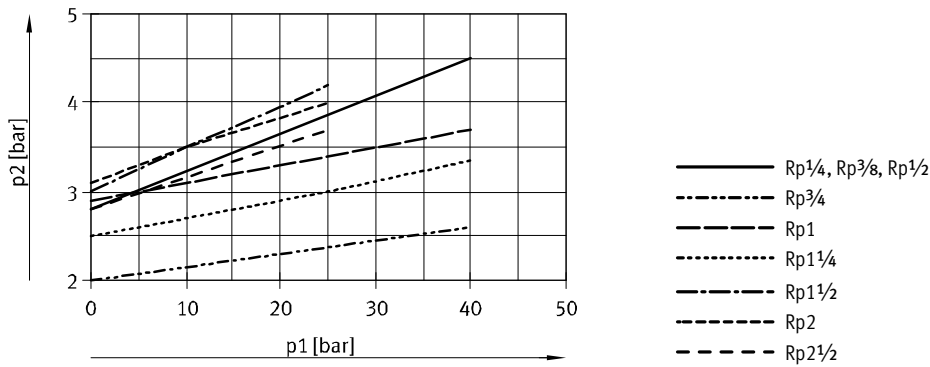
Ball valve actuator units VZPR-BPD

Technical data

Materials		
Housing		Brass
Ball		Brass
Seals	Housing	Polytetrafluoroethylene, fibre glass reinforced
	Shaft	Fluoro elastomer

Weight [g]			
Connecting thread		Connecting thread	
Rp $\frac{1}{4}$	1300	Rp1 $\frac{1}{4}$	3200
Rp $\frac{3}{8}$	1300	Rp1 $\frac{1}{2}$	3800
Rp $\frac{1}{2}$	1200	Rp2	5400
Rp $\frac{3}{4}$	1500	Rp2 $\frac{1}{2}$	7300
Rp1	1800		

Operating pressure p₂ as a function of nominal operating pressure p₁

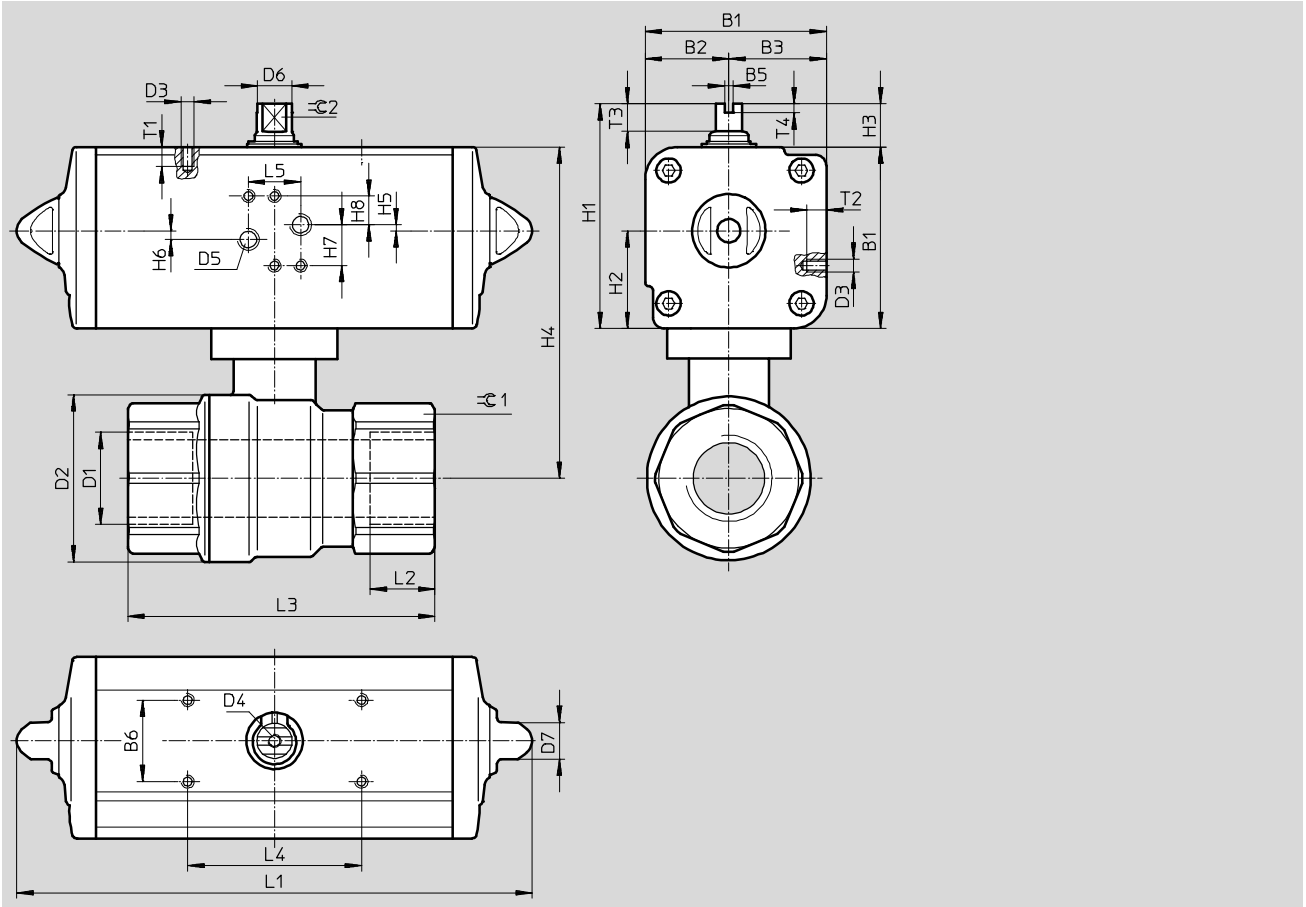


Ball valve actuator units VZPR-BPD

Technical data

Dimensions

Download CAD data → www.festo.com

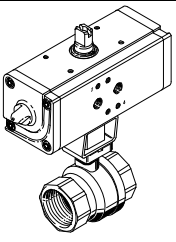


Connecting thread D1	B1	B2	B3	B5	B6	D2 Ø max.	D3	D4	D5	D6 Ø	D7 Ø	H1	H2	H3	H4
Rp1/4	52.2	24.2	28	4	30	35	M5	M6	G1/8	9.2	13	72.2	28	20	92.2
Rp3/8						45				10.9	13	79.2	31.5	20	104.2
Rp1/2	59.2	27.7	31.5	4	30	55	M5	M6	G1/8	10.9	13	79.2	31.5	20	104.2
Rp3/4						65				14.5	13	90.4	37.7	20	130.2
Rp1	70.4	32.7	37.7	4	30	75	M5	M6	G1/8	14.5	13	90.4	37.7	20	135.4
Rp1 1/4						90				16.2	17	103.3	44.8	20	158.3
Rp1 1/2	83.3	38.5	44.8	4	30	90	M5	M6	G1/8	16.2	17	103.3	44.8	20	158.3
Rp2						110				20.2	22	137.5	56.5	30	192.5
Rp2 1/2	107.5	51	56.5	4	30	110	M5	M6	G1/8	20.2	22	137.5	56.5	30	192.5

Connecting thread D1	H5	H6	H7	H8	L1	L2	L3	L4	L5	T1	T2	T3	T4	∅C1	∅C2
Rp1/4	0.8	3.2	18	14	159	15	75	80	24	6	7	10	4	26	8
Rp3/8					174	16	80							32	9
Rp1/2	0.8	3.2	18	14	174	16	80	80	24	6	7	10	4	32	9
Rp3/4					198	19	90							41	10
Rp1	-	4	18	14	198	21	110	80	24	6	7	13	4	50	10
Rp1 1/4					21	120	55							10	
Rp1 1/2	-	4	18	14	236.5	25	140	80	24	6	7	13	4	70	12
Rp2					289.9	24	143							83	15
Rp2 1/2	-	4	18	14	289.9	24	143	80	24	6	7	16	4	83	15

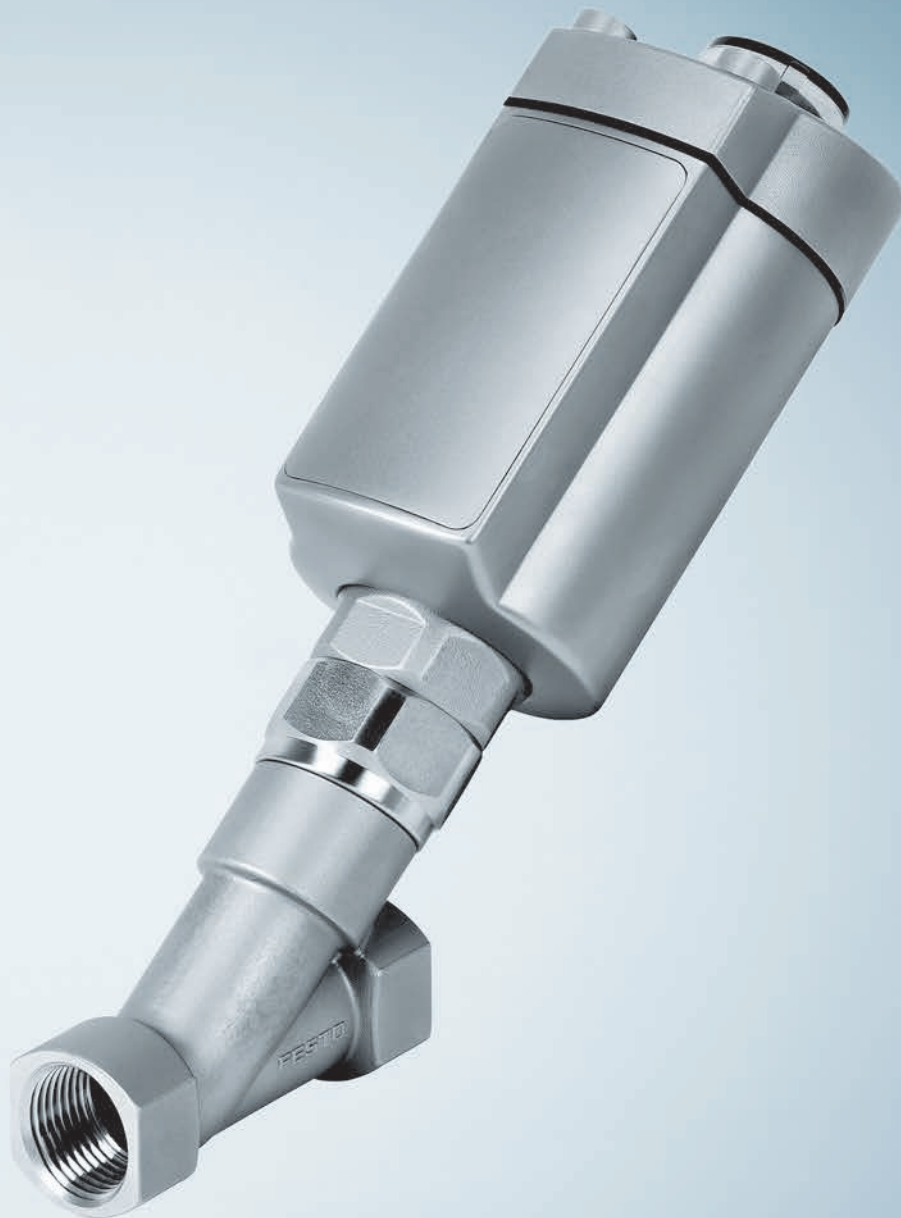
Ball valve actuator units VZPR-BPD

Technical data

Ordering data – Ball valve actuators		Part No.	Type
	Connecting thread		
	Rp1/4	540510	VZPR-BPD-22-R14
	Rp3/8	540511	VZPR-BPD-22-R38
	Rp1/2	540512	VZPR-BPD-22-R12
	Rp3/4	540513	VZPR-BPD-22-R34
	Rp1	540514	VZPR-BPD-22-R1
	Rp1 1/4	540515	VZPR-BPD-22-R114
	Rp1 1/2	540516	VZPR-BPD-22-R112
	Rp2	540517	VZPR-BPD-22-R2
Rp2 1/2	540874	VZPR-BPD-22-R212	

07 Angle seat valves

Angle seat valves made of gunmetal (red brass) and stainless steel, fully assembled and actuated by a direct supply of compressed air





VZXF ★

Angle seat valves

- + Sturdy design
- + Easy-to-clean design

→ page 619



VZXA

Angle seat valves

- + Modular design
- + Sturdy and easy-to-clean
stainless-steel process valve
- + Single- or double-acting

→ page 655

Contents

Angle seat valves VZXF	619
Angle seat valves VZXA	655

Angle seat valves

VZXF



Overview, configuration and ordering
→ www.festo.com/catalogue/vzxf



Additional information, support and user documentation
→ www.festo.com/sp/vzxf



Quick ordering of basic designs
→ page 629, 644



Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/ex



- + Connection 1/2, 3/4, 1, 1 1/4, 1 1/2, 2
- + G thread or NPT thread
- + Pressure range 0 ... 40 bar
- + Valve function 2/2-way NC

- + Can also be used with lightly contaminated media
- + Can be used for vapour applications
- + Direct pilot air supply

Angle seat valves VZXF

Key features

Function


Angle seat valves are externally controlled valves. These valves are actuated by a direct supply of compressed air. In this process, the seat of the process valve is raised by a pneumatic actuator. In the normal


position, the valve is closed by a spring. When the actuator is supplied with operating pressure, it raises the control piston as well as the valve disc – the valve opens.

The valve seat is slanted at an angle of approx. 50° in relation to the media flow. The flow direction is determined by the design of the valve. Angle seat valves are used in

applications in which absolute purity of the medium cannot be ensured, in which high-viscosity media are to be controlled or in vapour applications.

Design

-  - Connecting thread
G1/2 ... G2

-  - Flow rate Kv
3.3 ... 47.5 m³/h

- Gunmetal (red brass) variant
- Stainless steel casting variant
- Stainless steel casting variant, nickel-plated actuator head

General

- Angle seat valves are simple and sturdy and are thus perfectly suitable for almost all media with a viscosity of up to 600 mm²/s
- Angle seat valves control suitable gaseous and liquid media in rigid piping systems without the need for any pressure differential
- No differential pressure required between the input and output
- Low flow resistance
- Insensitive to vapour or slightly contaminated media
- Long service life
- Low maintenance
- The valves have a high chemical and thermal resistance thanks to their design
- The NC function ensures that the valve is closed in the event of pressure loss in the control circuit
- Different designs of angle seat valves are available depending on the pressure of the medium
- There is a choice of two versions: "closing in the direction of media flow" is used for gaseous media. "Closing against the direction of media flow" is used for liquid media

Explosion protection

- ATEX certification is used in production areas which are potentially in certain conditions. The VZXF angle seat valves are certified for use in equipment group II, equipment category 2

PWIS-free

- PWIS-free is chosen for use in production areas in which the influence of paint-wetting impairment substances must be avoided at all costs

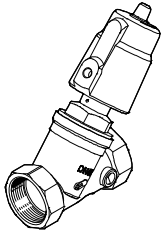
Vacuum version

- The variant that is suitable for vacuum is used in packaging machines which need to generate a vacuum

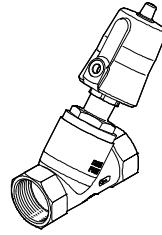
Key features

Variants

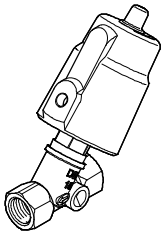
VZXF-L-...-M-A-G112-350-H3B1-50-8



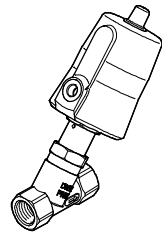
VZXF-L-...-M-A-G112-350-M1-V4V4T-50-7



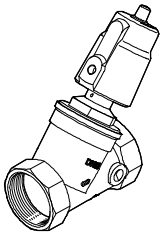
VZXF-L-...-M-A-G12-120-M1-H3B1-50-16



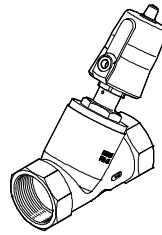
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VZXF-L-...-M-B-G2-430-H3B1-50-3

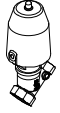
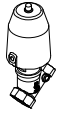
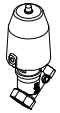
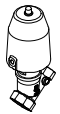
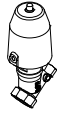


VZXF-L-...-M-B-G2-450-M1-V4V4T-50-3



Angle seat valves VZXF

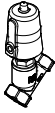
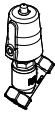
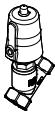

Product range overview

Version	Type code	Process valve connection	Nominal width DN	Temperature of medium [°C]	Flow rate Kv [m³/h]	Process valve nominal pressure PN	→ Page/Internet	
Gunmetal (red brass)	Temperature of medium -10 ... +80°C							
		VZXF-L-...-H3B1-...	G1/2	15	-10 ... +80	3.5 ... 28	16	626
			G3/4	20				
			G1	25				
			G1 1/4	32				
			G1 1/2	40				
			G2	50				
	Temperature of medium -40 ... +200°C							
		VZXF-L-...-H3B1T-..., VZXF-L-...-H3ALT-...	G1/2	15	-40 ... +200	3.5 ... 40	16	630
			G3/4	20				
			G1	25				
			G1 1/4	32				
			G1 1/2	40				
			G2	50				
	Vacuum version							
	VZXF-L-...-H3B1V-..., VZXF-L-...-H3ALV-...	G1/2	15	-10 ... +80	3.5 ... 40	16	634	
		G3/4	20					
		G1	25					
		G1 1/4	32					
		G1 1/2	40					
		G2	50					
PWIS-free								
	VZXF-L-...-H3B1V-...	G1/2	15	-10 ... +80	3.7 ... 16.5	16	636	
		G3/4	20					
		G1	25					
		G1 1/2	40					
With EX certification								
	VZXF-L-...-H3B1V-...-EX4	G1/2	15	-10 ... +80	3.5 ... 28	16	638	
		G3/4	20					
		G1	25					
		G1 1/4	32					
		G1 1/2	40					
		G2	50					

07

Angle seat valves

Product range overview

Version	Type code	Process valve connection	Nominal width DN	Temperature of medium [°C]	Flow rate Kv [m³/h]	Process valve nominal pressure PN	→ Page/Internet	
Stainless steel casting	Temperature of medium –40 ... +200°C							
		VZXF-L-...-V4V4T-...	G1/2	15	–40 ... +200	3.3 ... 43	40	642
			G3/4	20				
			G1	25				
			G1 1/4	32				
			G1 1/2	40				
			G2	50				
	Nickel-plated actuator head							
		VZXF-L-...-V4B2T-..., VZXF-L-...-V4ANT-...	G1/2	15	–40 ... +200	3.3 ... 43	40	645
			G3/4	20				
			G1	25				
			G1 1/4	32				
			G1 1/2	40				
			G2	50				
	Vacuum version							
		VZXF-L-...-V4B2V-..., VZXF-L-...-V4ANV-...	G1/2	15	–10 ... +80	3.8 ... 43	40	648
			G3/4	20				
			G1	25				
			G1 1/4	32				
			G1 1/2	40				
G2			50					
With EX certification								
	VZXF-L-...-V4V4T-...-EX4	G1/2	15	–40 ... +200	3.3 ... 34.5	40	650	
		G3/4	20					
		G1	25					
		G1 1/4	32					
		G1 1/2	40					
		G2	50					

Angle seat valves VZXF

Type codes

VZXF - L - M22C - M - A - G12 - 120 -

Type code	
VZXF	Angle seat valve, externally controlled
Type of directional control valve	
L	In-line valve
Valve function	
M22C	2/2-way valve, normally closed
Reset method for monostable valves	
M	Mechanical spring
Flow direction	
A	Over valve seat, for gaseous media
B	Below valve seat, for gaseous and liquid media
Line connection	
G12	G1/2 thread
G34	G3/4 thread
G1	G1 thread
G114	G1 1/4 thread
G112	G1 1/2 thread
G2	G2 thread
Nominal width DN	
120	12 mm
130	13 mm
160	16 mm
180	18 mm
230	23 mm
240	24 mm
290	29 mm
310	31 mm
350	35 mm
430	43 mm
450	45 mm
Temperature range of medium	
-	Standard, -10 ... +80 °C
M1	-40 ... +200 °C

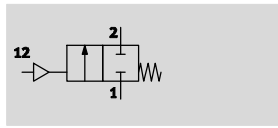
Type code


		H3	B1		-	50	-	16	-		-	EX4
Housing materials												
H3	Gunmetal (red brass)											
V4	Stainless steel											
Actuator housing material												
AL	Aluminium											
AN	Aluminium, nickel-plated											
B1	Brass											
B2	Brass, nickel-plated											
V4	Stainless steel											
Sealing material												
-	Standard, NBR											
T	PTFE											
V	FPM											
Actuator size												
50	50 mm											
80	80 mm											
Pressure of medium												
V	-0.9 ... 0 bar											
3	Max. 3 bar											
4	Max. 4 bar											
5	Max. 5 bar											
6	Max. 6 bar											
7	Max. 7 bar											
8	Max. 8 bar											
9	Max. 9 bar											
10	Max. 10 bar											
12	Max. 12 bar											
16	Max. 16 bar											
20	Max. 20 bar											
22	Max. 22 bar											
25	Max. 25 bar											
40	Max. 40 bar											
PWIS content												
-	Standard											
C	PWIS-free											
EU certification												
-	None											
EX4	II 2GD											


Angle seat valves VZXF

Gunmetal (red brass), temperature of medium –10 ... +80 °C

Function



-  - Flow rate Kv
3.5 ... 28 m³/h

-  - Connecting thread
G1/2 ... G2



General technical data		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Line connection		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Nominal width DN	[mm]	12	16	23	29	35	43
Design	Poppet valve with piston actuator						
Type of actuation	Pneumatic						
Type of mounting	In-line installation						
Line connection	Threaded collar to DIN ISO 228-1						
Sealing principle	Soft						
Mounting position	Any						
Valve function	2/2-way, closed, monostable						
Pneumatic connection	Female thread G1/8						
Flow direction	Non-reversible						
Type of control	Externally controlled						
Reset method	Mechanical spring						
Exhaust function	Without flow control option						
Flow direction	VZXF-...-A-...	Over valve seat, for gaseous media					
	VZXF-...-B-...	Under valve seat, for gaseous and liquid media					

Gunmetal (red brass), temperature of medium –10 ... +80 °C

Operating and environmental conditions		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Line connection							
Nominal pressure of process valve PN		16					
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]					
Operating pressure	[bar]	6 ... 10					
Medium		Vapour					
		Inert gases					
		Filtered compressed air, grade of filtration 200 µm					
	VZXF-...-B-... additionally	Mineral oil-based hydraulic fluid					
		Mineral oil					
		Neutral fluids					
		Water					
Max. viscosity	[mm ² /s]	600					
Ambient temperature	[°C]	–10 ... +60					
Temperature of medium	[°C]	–10 ... +80					
CE marking (see declaration of conformity) ¹⁾		–				To EU Pressure Equipment Directive	

1) Additional information www.festo.com/sp → Certificates.

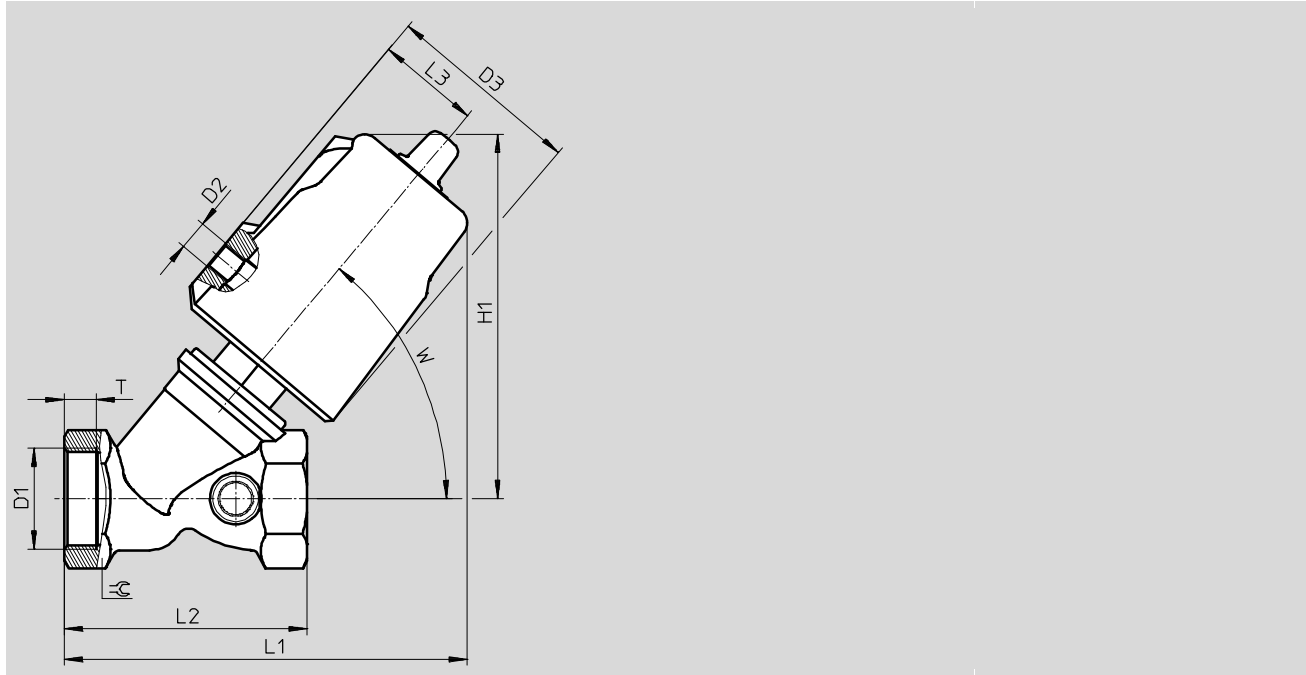
Materials	Material number
Process valve housing	Gunmetal (red brass) CC499K
Actuator housing	Brass
Spindle washer	NBR
Seat seal	PTFE
Note on materials	Contains PWIS (paint-wetting impairment substances)
	RoHS-compliant

Angle seat valves VZXF

Gunmetal (red brass), temperature of medium -10 ... +80 °C

Dimensions

Download CAD data → www.festo.com




Type code	D1	D2	D3 Ø	H1	L1	L2	L3	T	W	∠
VZXF-L-...-G12-...	G1/2	G1/8	62	112	123	66	34	8	50°	27
VZXF-L-...-G34-...	G3/4			117	130	75		9		33
VZXF-L-...-G1-...	G1			121	133	80		10.5		41
VZXF-L-...-G114-...	G1 1/4			139	154	97		12.5		50
VZXF-L-...-G112-...	G1 1/2			145	161	107		14.5		56
VZXF-L-...-G2-...	G2			154	171	124		16.5		68


07

Angle seat valves

Gunmetal (red brass), temperature of medium –10 ... +80°C

★ Core product range

Ordering data						
	Line connection	Flow rate Kv [m ³ /h]	Pressure of medium [bar]	Corrosion resistance CRC ¹⁾	Product weight [g]	Part no. Type code
	G1/2	3.7	0 ... 16	1	1200	★ 1002501 VZXF-L-M22C-M-B-G12-120-H3B1-50-16
	G3/4	5.2	0 ... 16		1300	★ 1002503 VZXF-L-M22C-M-B-G34-160-H3B1-50-16
	G1	9.6	0 ... 10		1500	★ 1002505 VZXF-L-M22C-M-B-G1-230-H3B1-50-10

Ordering data						
	Line connection	Flow rate Kv [m ³ /h]	Pressure of medium [bar]	Corrosion resistance CRC ¹⁾	Product weight [g]	Part no. Type code
	G1/2	3.5	0 ... 16	1	1200	1002500 VZXF-L-M22C-M-A-G12-120-H3B1-50-16
	G3/4	6.7	0 ... 16		1300	1002502 VZXF-L-M22C-M-A-G34-160-H3B1-50-16
	G1	10.8	0 ... 16		1500	1002504 VZXF-L-M22C-M-A-G1-230-H3B1-50-16
	G1 1/4	6	0 ... 7		1900	1002507 VZXF-L-M22C-M-B-G114-290-H3B1-50-7
		19	0 ... 10			1002506 VZXF-L-M22C-M-A-G114-290-H3B1-50-10
	G1 1/2	16.5	0 ... 6		2300	1002509 VZXF-L-M22C-M-B-G112-350-H3B1-50-6
		23				1002508 VZXF-L-M22C-M-A-G112-350-H3B1-50-8
	G2	23	0 ... 3		2800	1002511 VZXF-L-M22C-M-B-G2-430-H3B1-50-3
		28	0 ... 4			1002510 VZXF-L-M22C-M-A-G2-430-H3B1-50-4

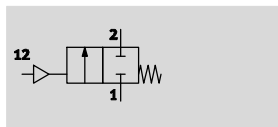
1) Corrosion resistance class CRC 1 to Festo standard FN 940070


Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Angle seat valves VZXF


Gunmetal (red brass), temperature of medium –40 ... +200 °C

Function



-  - Flow rate Kv
3.5 ... 40 m³/h



-  - G1/2 ... G2

General technical data

Line connection	G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Nominal width DN [mm]	12	16	23	29	35	43
Design	Poppet valve with piston actuator					
Type of actuation	Pneumatic					
Type of mounting	In-line installation					
Line connection	Threaded collar to DIN ISO 228-1					
Sealing principle	Soft					
Mounting position	Any					
Valve function	2/2-way, closed, monostable					
Pneumatic connection	Female thread G1/8					
Flow direction	Non-reversible					
Type of control	Externally controlled					
Reset method	Mechanical spring					
Exhaust function	Without flow control option					
Flow direction	VZXF...-A-...	Over valve seat, for gaseous media				
	VZXF...-B-...	Under valve seat, for gaseous and liquid media				

Gunmetal (red brass), temperature of medium –40 ... +200 °C

Operating and environmental conditions		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Line connection							
Nominal pressure of process valve PN		16					
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]					
Operating pressure	[bar]	6 ... 10					
Medium		Vapour					
		Inert gases					
		Filtered compressed air, grade of filtration 200 µm					
	VZXF-...-B-... additionally	Mineral oil-based hydraulic fluid					
		Mineral oil					
		Neutral fluids					
		Water					
Max. viscosity	[mm ² /s]	600					
Ambient temperature	[°C]	–10 ... +60					
Temperature of medium	[°C]	–40 ... +200					
CE marking (see declaration of conformity) ¹⁾		–				To EU Pressure Equipment Directive	

1) Additional information www.festo.com/sp → Certificates.

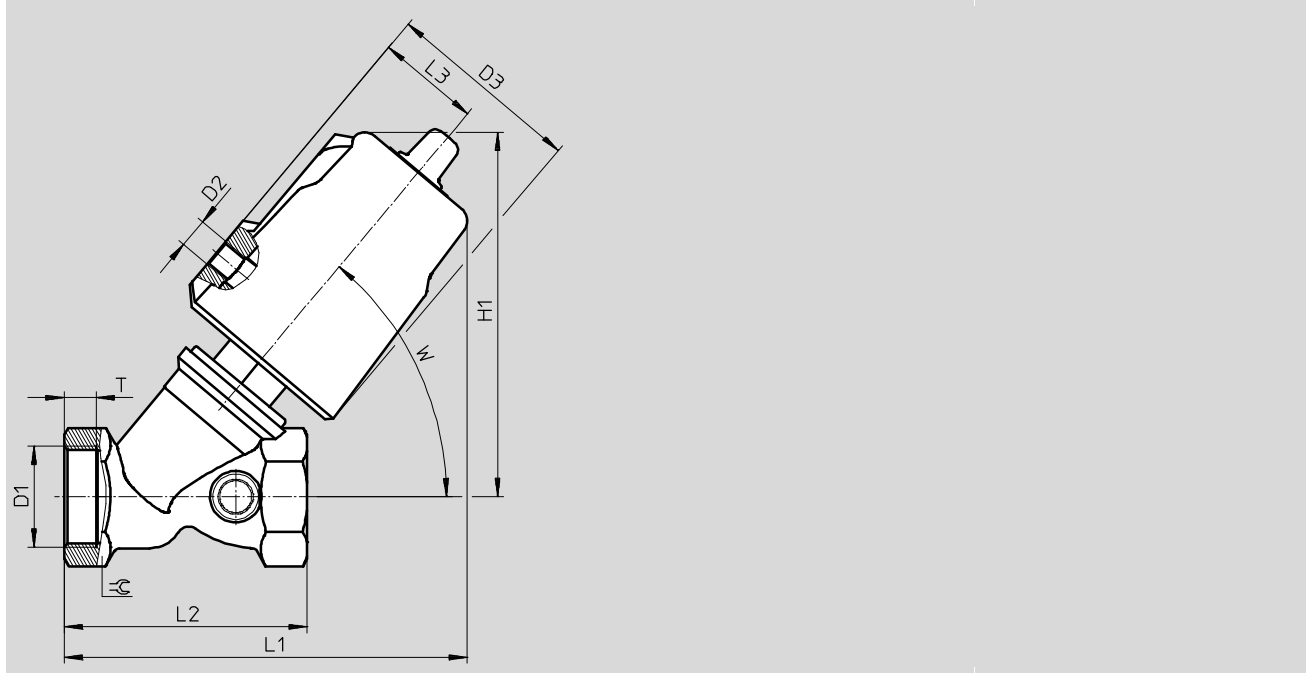
Materials		Material number
Process valve housing	Gunmetal (red brass)	CC499K
Actuator housing	...-H3ALT-...	Aluminium
	...-H3B1T-...	Brass
Spindle washer	PTFE	
Seat seal	PTFE	
Note on materials	Contains paint-wetting impairment substances	
	RoHS-compliant	

Angle seat valves VZXF

Gunmetal (red brass), temperature of medium -40 ... +200 °C

Dimensions

Download CAD data → www.festo.com

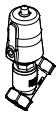


Type code	D1	D2	D3 Ø	H1	L1	L2	L3	T	W	☰
VZXF-L-...-G12-...-H3B1T-50-...	G1/2	G1/8	62	130	135.5	66	34	13	50°	27
VZXF-L-...-G34-...-H3B1T-50-...	G3/4			130	140	75		14.5		32
VZXF-L-...-G1-...-H3B1T-50-...	G1			133	143	80		10.5		41
VZXF-L-...-G114-...-H3B1T-50-...	G1 1/4			148	160	97		12.5		50
VZXF-L-...-G114-...-H3ALT-80-...	G1 1/4		94	180	190	97	49	12.5		50
VZXF-L-...-G112-...-H3B1T-50-...	G1 1/2		62	152.5	167	107	34	14.5		55
VZXF-L-...-G112-...-H3ALT-80-...	G1 1/2		94	186	197	107	49	14.5		55
VZXF-L-...-G2-...-H3B1T-50-...	G2		62	162	178	124	34	16.5		67
VZXF-L-...-G2-...-H3ALT-80-...	G2		94	196	207.5	124	49	16.5		67

07

Angle seat valves

Gunmetal (red brass), temperature of medium -40 ... +200 °C

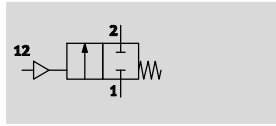
Ordering data						
	Line connection	Flow rate Kv [m ³ /h]	Pressure of medium [bar]	Corrosion resistance CRC ¹⁾	Product weight [g]	Part no. Type code
	G1/2	3.5	0 ... 16	1	1200	3535619 VZXF-L-M22C-M-A-G12-120-M1-H3B1T-50-16
		3.7				3535620 VZXF-L-M22C-M-B-G12-120-M1-H3B1T-50-16
	G3/4	5.2	0 ... 16	1	1300	3535644 VZXF-L-M22C-M-B-G34-160-M1-H3B1T-50-16
		6.7				3535643 VZXF-L-M22C-M-A-G34-160-M1-H3B1T-50-16
	G1	9.6	0 ... 10	1	1500	3535665 VZXF-L-M22C-M-B-G1-230-M1-H3B1T-50-10
		10.8	0 ... 16			3535664 VZXF-L-M22C-M-A-G1-230-M1-H3B1T-50-16
		14.5	0 ... 16	0	2000	3540768 VZXF-L-M22C-M-B-G1-230-M1-H3ALT-80-16
	G1 1/4	6	0 ... 7	1	1900	3535689 VZXF-L-M22C-M-B-G114-290-M1-H3B1T-50-7
		19	0 ... 10			3535684 VZXF-L-M22C-M-A-G114-290-M1-H3B1T-50-10
		19	0 ... 12	0	2300	3535712 VZXF-L-M22C-M-B-G114-290-M1-H3ALT-80-12
		21.5	0 ... 16			3535711 VZXF-L-M22C-M-A-G114-290-M1-H3ALT-80-16
	G1 1/2	16.5	0 ... 6	1	2300	3535721 VZXF-L-M22C-M-B-G112-350-M1-H3B1T-50-6
		23	0 ... 7			3535720 VZXF-L-M22C-M-A-G112-350-M1-H3B1T-50-7
		29.5	0 ... 8	0	2600	3535825 VZXF-L-M22C-M-B-G112-350-M1-H3ALT-80-8
		30.5	0 ... 16			3535824 VZXF-L-M22C-M-A-G112-350-M1-H3ALT-80-16
	G2	23	0 ... 3	1	2800	3535838 VZXF-L-M22C-M-B-G2-430-M1-H3B1T-50-3
		28	0 ... 4			3535837 VZXF-L-M22C-M-A-G2-430-M1-H3B1T-50-4
		30	0 ... 5	0	2900	3536436 VZXF-L-M22C-M-B-G2-430-M1-H3ALT-80-5
		40	0 ... 16			3536435 VZXF-L-M22C-M-A-G2-430-M1-H3ALT-80-16

- 1) Corrosion resistance class CRC 0 to Festo standard FN 940070
No corrosion stress. Applies to small, optically irrelevant standard parts such as threaded pins, circlips and clamping sleeves which are usually only available in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.
Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Angle seat valves VZXF

Gunmetal (red brass), vacuum version

Function



- - Flow rate Kv
3.5 ... 40 m³/h

- - G1/2 ... G2



General technical data						
Line connection	G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Nominal width DN [mm]	12	16	23	29	35	43
Design	Poppet valve with piston actuator					
Type of actuation	Pneumatic					
Type of mounting	In-line installation					
Line connection	Threaded collar to DIN ISO 228-1					
Sealing principle	Soft					
Mounting position	Any					
Valve function	2/2-way, closed, monostable					
Pneumatic connection	Female thread G1/8					
Flow direction	Non-reversible					
Type of control	Externally controlled					
Reset method	Mechanical spring					
Exhaust function	Without flow control option					
Flow direction	Over valve seat, for gaseous media					

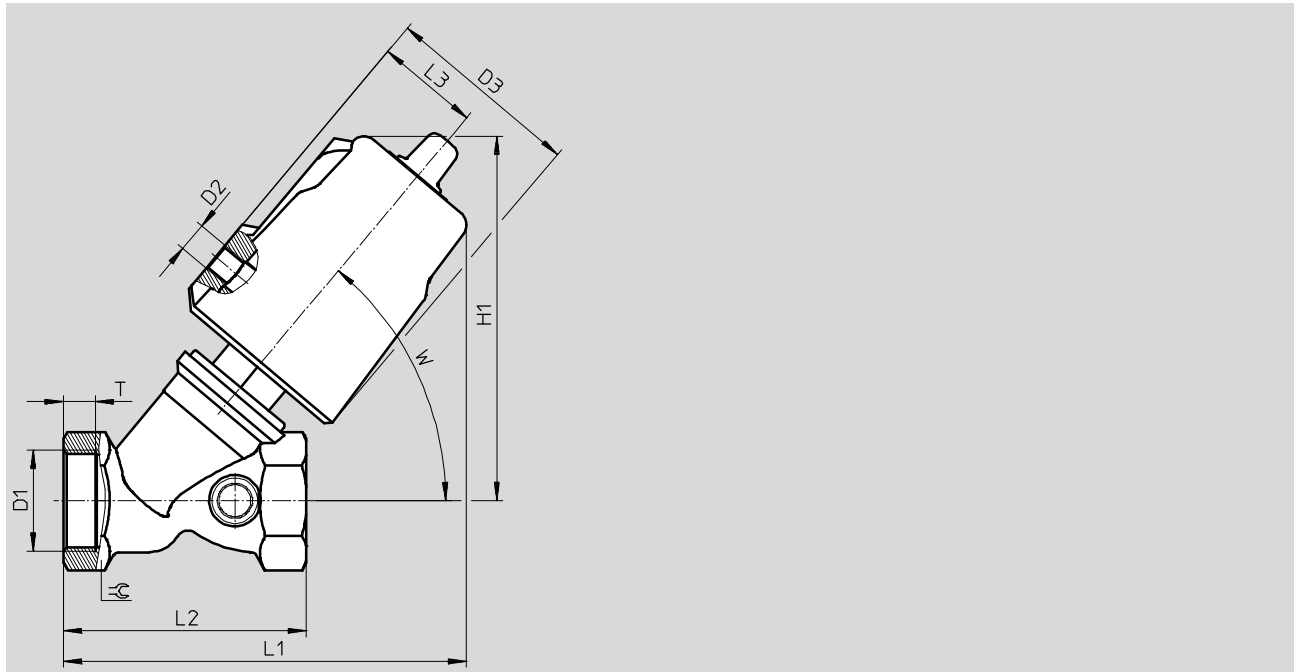
Operating and environmental conditions						
Line connection	G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Nominal pressure of process valve PN	16					
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]					
Operating pressure [bar]	6 ... 10					
Medium	Vapour					
	Inert gases					
	Filtered compressed air, grade of filtration 200 µm					
Max. viscosity [mm ² /s]	600					
Ambient temperature [°C]	-10 ... +60					
Temperature of medium [°C]	-10 ... +80					

Materials		Material number
Process valve housing	Gunmetal (red brass)	CC499K
Actuator housing	...-H3ALV-...	
	...-H3B1V-...	Brass
Spindle washer	FPM	
Seat seal	FPM	
Note on materials	Contains paint-wetting impairment substances	
	RoHS-compliant	

Gunmetal (red brass), vacuum version

Dimensions

Download CAD data → www.festo.com



Type code	D1	D2	D3 Ø	H1	L1	L2	L3	T	W	∓
VZXF-L-...-G12-...-H3B1V-50-...	G1/2	G1/8	62	113.5	123	66	34	13	50°	27
VZXF-L-...-G34-...-H3B1V-50-...	G3/4			118	130	75	34	14.5		32
VZXF-L-...-G1-...-H3B1V-50-...	G1			121	133	80	34	10.5		41
VZXF-L-...-G1-...-H3ALV-80-...	G1		94	168	174.5	80	49	10.5		41
VZXF-L-...-G114-...-H3B1V-50-...	G1 1/4		62	138.5	153.5	97	34	12.5		50
VZXF-L-...-G114-...-H3ALV-80-...	G1 1/4		94	174.5	185	97	49	12.5		50
VZXF-L-...-G112-...-H3B1V-50-...	G1 1/2		62	146	160	107	34	14.5		55
VZXF-L-...-G112-...-H3ALV-80-...	G1 1/2		94	180.5	192	107	49	14.5		55
VZXF-L-...-G2-...-H3ALV-80-...	G2		94	190	202.5	124	49	16.5		68

Ordering data

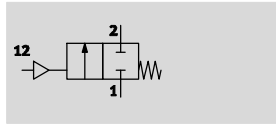
	Line connection	Flow rate Kv [m³/h]	Pressure of medium [bar]	Corrosion resistance CRC ¹⁾	Product weight [g]	Part no.	Type code
	G1/2	3.5	-0.9	1	1200	3538869	VZXF-L-M22C-M-A-G12-120-H3B1V-50-V
	G3/4	6.7		1	1300	3539178	VZXF-L-M22C-M-A-G34-160-H3B1V-50-V
	G1	10.8		1	1500	3539247	VZXF-L-M22C-M-A-G1-230-H3B1V-50-V
				0	2000	3536819	VZXF-L-M22C-M-A-G1-230-H3ALV-80-V
	G1 1/4	19		1	1900	3539352	VZXF-L-M22C-M-A-G114-290-H3B1V-50-V
				0	2300	3536830	VZXF-L-M22C-M-A-G114-290-H3ALV-80-V
	G1 1/2	23		1	2300	3539367	VZXF-L-M22C-M-A-G112-350-H3B1V-50-V
				0	2600	3536850	VZXF-L-M22C-M-A-G112-350-H3ALV-80-V
	G2	40		0	2900	3540796	VZXF-L-M22C-M-A-G2-430-H3ALV-80-V

1) Corrosion resistance class CRC 0 to Festo standard FN 940070
 No corrosion stress. Applies to small, optically irrelevant standard parts such as threaded pins, circlips and clamping sleeves which are usually only available in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.
 Corrosion resistance class CRC 1 to Festo standard FN 940070
 Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Angle seat valves VZXF

Gunmetal (red brass), PWIS-free

Function



- - Flow rate Kv
3.7 ... 16.5 m³/h

- - G1/2 ... G1 1/2



General technical data				
Line connection	G1/2	G3/4	G1	G1 1/2
Nominal width DN [mm]	12	16	23	35
Design	Poppet valve with piston actuator			
Type of actuation	Pneumatic			
Type of mounting	In-line installation			
Line connection	Threaded collar to DIN ISO 228-1			
Sealing principle	Soft			
Mounting position	Any			
Valve function	2/2-way, closed, monostable			
Pneumatic connection	Female thread G1/8			
Flow direction	Non-reversible			
Type of control	Externally controlled			
Reset method	Mechanical spring			
Exhaust function	Without flow control option			
Flow direction	Under valve seat, for gaseous and liquid media			

Operating and environmental conditions				
Line connection	G1/2	G3/4	G1	G1 1/2
Nominal pressure of process valve PN	16			
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]			
Operating pressure [bar]	6 ... 10			
Medium	Vapour			
	Inert gases			
	Filtered compressed air, grade of filtration 200 µm			
	Mineral oil-based hydraulic fluid			
	Mineral oil			
	Neutral fluids			
	Water			
Max. viscosity [mm ² /s]	600			
Ambient temperature [°C]	-10 ... +60			
Temperature of medium [°C]	-10 ... +80			
CE marking (see declaration of conformity) ¹⁾	-			To EU Pressure Equipment Directive

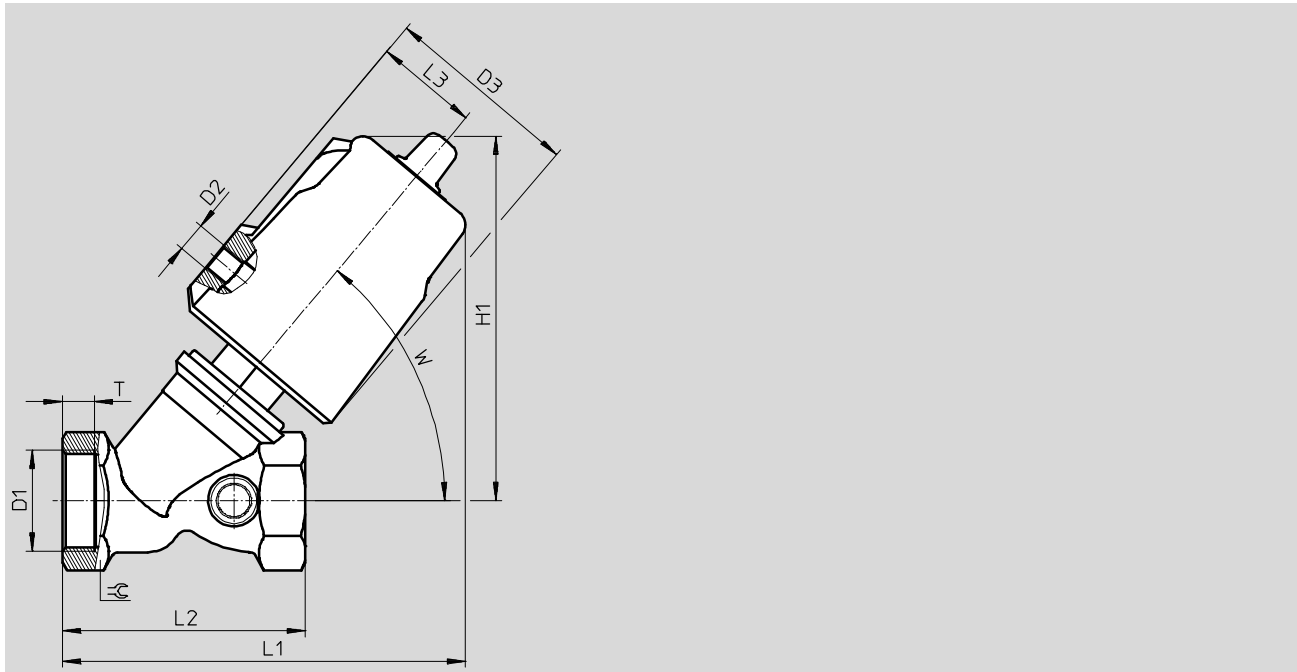
1) Additional information www.festo.com/sp → Certificates.

Materials	Material number
Process valve housing	Gunmetal (red brass) CC499K
Actuator housing	Brass
Spindle washer	FPM
Seat seal	FPM
Note on materials	RoHS-compliant

Gunmetal (red brass), PWIS-free

Dimensions

Download CAD data → www.festo.com



Type code	D1	D2	D3 Ø	H1	L1	L2	L3	T	W	50°
VZXF-L-...-G12-...	G1/2	G1/8	62	113.5	123	66	34	13	50°	27
VZXF-L-...-G34-...	G3/4			118	130	75	34	14.5		32
VZXF-L-...-G1-...	G1			121	133	80	34	10.5		41
VZXF-L-...-G112-...	G1 1/2		62	146	160	107	34	14.5		55

Ordering data

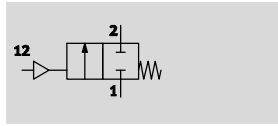
	Line connection	Flow rate Kv [m³/h]	Pressure of medium [bar]	Corrosion resistance CRC ¹⁾	Product weight [g]	Part no.	Type code
	G1/2	3.7	0 ... 16	1	1200	3539036	VZXF-L-M22C-M-B-G12-120-H3B1V-50-16-C
	G3/4	5.2	0 ... 16		1300	3539179	VZXF-L-M22C-M-B-G34-160-H3B1V-50-16-C
	G1	9.6	0 ... 10		1500	3539248	VZXF-L-M22C-M-B-G1-230-H3B1V-50-10-C
	G1 1/2	16.5	0 ... 6		2300	3539368	VZXF-L-M22C-M-B-G112-350-H3B1V-50-6-C

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Angle seat valves VZXF

Gunmetal (red brass) with EX certification

Function



- - Flow rate Kv
3.5 ... 28 m³/h

- - G1/2 ... G2



General technical data		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Line connection		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Nominal width DN	[mm]	12	16	23	29	35	43
Design	Poppet valve with piston actuator						
Type of actuation	Pneumatic						
Type of mounting	In-line installation						
Line connection	Threaded collar to DIN ISO 228-1						
Sealing principle	Soft						
Mounting position	Any						
Valve function	2/2-way, closed, monostable						
Pneumatic connection	Female thread G1/8						
Flow direction	Non-reversible						
Type of control	Externally controlled						
Reset method	Mechanical spring						
Exhaust function	Without flow control option						
Flow direction	VZXF-...-A-...	Over valve seat, for gaseous media					
	VZXF-...-B-...	Under valve seat, for gaseous and liquid media					

Operating and environmental conditions		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Line connection		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Nominal pressure of process valve PN		16					
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]					
Operating pressure	[bar]	6 ... 10					
Medium		Vapour					
		Inert gases					
		Filtered compressed air, grade of filtration 200 µm					
	VZXF-...-B-... additionally	Mineral oil-based hydraulic fluid					
		Mineral oil					
		Neutral fluids					
		Water					
Max. viscosity	[mm ² /s]	600					
Ambient temperature	[°C]	-10 ... +60					
Temperature of medium	[°C]	-10 ... +80					
CE marking (see declaration of conformity) ¹⁾		-				To EU Pressure Equipment Directive	

1) Additional information www.festo.com/sp → Certificates.

Gunmetal (red brass) with EX certification

ATEX	
ATEX category for gas	II 2G
Type of ignition protection for gas	c TXX
ATEX category for dust	II 2D
Type of ignition protection for dust	c TXX
Explosion-proof ambient temperature rating [°C]	-10°C ≤ Ta ≤ +60°C
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

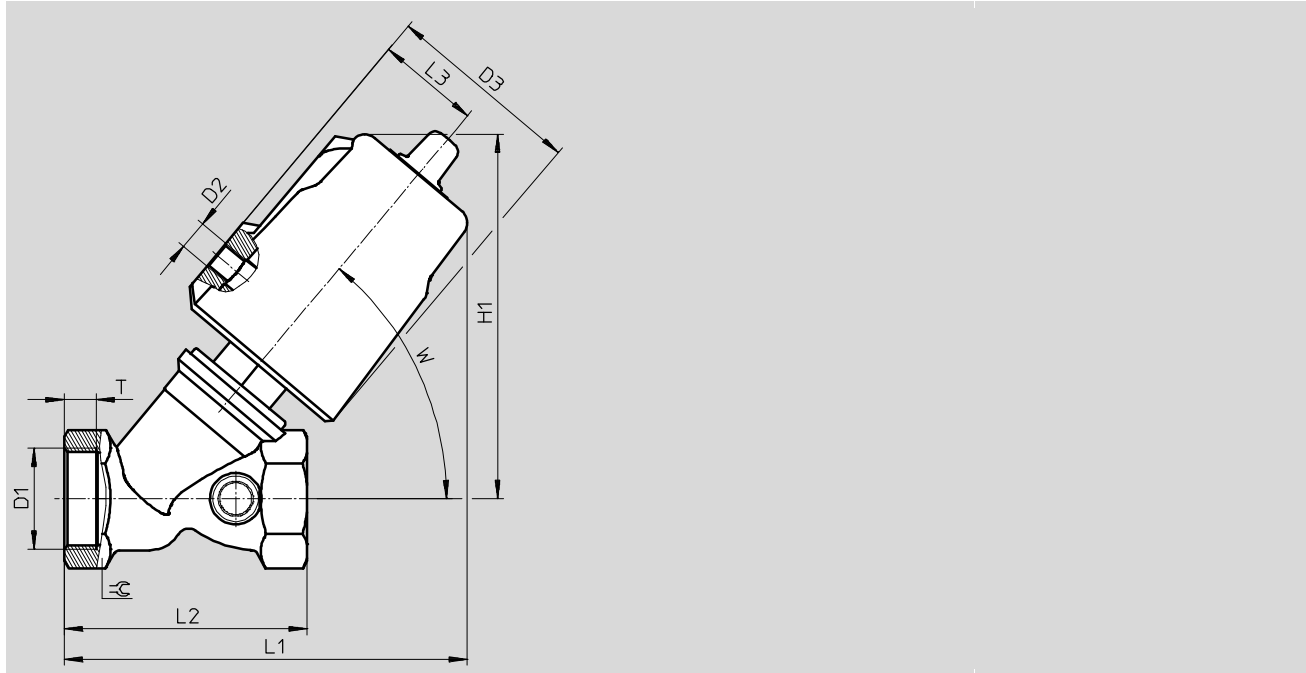
Materials	Material number
Process valve housing	Gunmetal (red brass) CC499K
Actuator housing	Brass
Spindle washer	NBR
Seat seal	PTFE
Note on materials	Contains paint-wetting impairment substances RoHS-compliant

Angle seat valves VZXF

Gunmetal (red brass) with EX certification

Dimensions

Download CAD data → www.festo.com

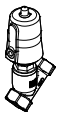


Type code	D1	D2	D3 Ø	H1	L1	L2	L3	T	W	EX
VZXF-L-...-G12-...	G1/2	G1/8	62	112	123	66	34	8	50°	27
VZXF-L-...-G34-...	G3/4			117	130	75	34	9		33
VZXF-L-...-G1-...	G1			121	133	80	34	10.5		41
VZXF-L-...-G114-...	G1 1/4			139	154	97	34	12.5		50
VZXF-L-...-G112-...	G1 1/2			145	161	107	34	14.5		56
VZXF-L-...-G2-...	G2			154	171	124	34	16.5		68

07

Angle seat valves

Gunmetal (red brass) with EX certification

Ordering data						
	Line connection	Flow rate Kv	Pressure of medium [bar]	Corrosion resistance CRC ¹⁾	Product weight [g]	Part no. Type code
		[m ³ /h]				
	G1/2	3.5	0 ... 16	1	1200	3539021 VZXF-L-M22C-M-A-G12-120-H3B1-50-16-EX4
		3.7				3539037 VZXF-L-M22C-M-B-G12-120-H3B1-50-16-EX4
	G3/4	5.2	0 ... 16		1300	3539181 VZXF-L-M22C-M-B-G34-160-H3B1-50-16-EX4
		6.7				3539180 VZXF-L-M22C-M-A-G34-160-H3B1-50-16-EX4
	G1	9.6	0 ... 10		1500	3539250 VZXF-L-M22C-M-B-G1-230-H3B1-50-10-EX4
		10.8				3539249 VZXF-L-M22C-M-A-G1-230-H3B1-50-16-EX4
	G1 1/4	6	0 ... 7		1900	3539354 VZXF-L-M22C-M-B-G114-290-H3B1-50-7-EX4
		19	0 ... 10			3539353 VZXF-L-M22C-M-A-G114-290-H3B1-50-10-EX4
	G1 1/2	16.5	0 ... 6		2300	3539370 VZXF-L-M22C-M-B-G112-350-H3B1-50-6-EX4
		23	0 ... 7			3539369 VZXF-L-M22C-M-A-G112-350-H3B1-50-7-EX4
	G2	23	0 ... 3		2800	3540293 VZXF-L-M22C-M-B-G2-430-H3B1-50-3-EX4
		28	0 ... 4			3540292 VZXF-L-M22C-M-A-G2-430-H3B1-50-4-EX4

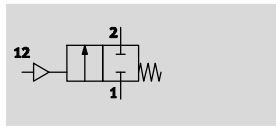
1) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Angle seat valves VZXF

Stainless steel casting, temperature of medium –40 ... +200°C

Function



- - Flow rate Kv
3.3 ... 43 m³/h

- - Connecting thread
G1/2 ... G2



General technical data		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Line connection		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Nominal width DN	[mm]	13	18	24	31	35	45
Design	Poppet valve with piston actuator						
Type of actuation	Pneumatic						
Type of mounting	In-line installation						
Line connection	Threaded collar to DIN ISO 228-1						
Sealing principle	Soft						
Mounting position	Any						
Valve function	2/2-way, closed, monostable						
Pneumatic connection	Female thread G1/8						
Flow direction	Non-reversible						
Type of control	Externally controlled						
Reset method	Mechanical spring						
Exhaust function	Without flow control option						
Flow direction	VZXF-...-A-...	Over valve seat, for gaseous media					
	VZXF-...-B-...	Under valve seat, for gaseous and liquid media					

Operating and environmental conditions		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Line connection		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Nominal pressure of process valve PN		40					
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]					
Operating pressure	[bar]	6 ... 10					
Medium		Vapour					
		Inert gases					
		Filtered compressed air, grade of filtration 200 µm					
	VZXF-...-B-... additionally	Mineral oil-based hydraulic fluid					
		Mineral oil					
		Neutral fluids					
		Water					
Max. viscosity	[mm ² /s]	600					
Ambient temperature	[°C]	–10 ... +60					
Temperature of medium	[°C]	–40 ... +200					
CE marking (see declaration of conformity) ¹⁾		–				To EU Pressure Equipment Directive	

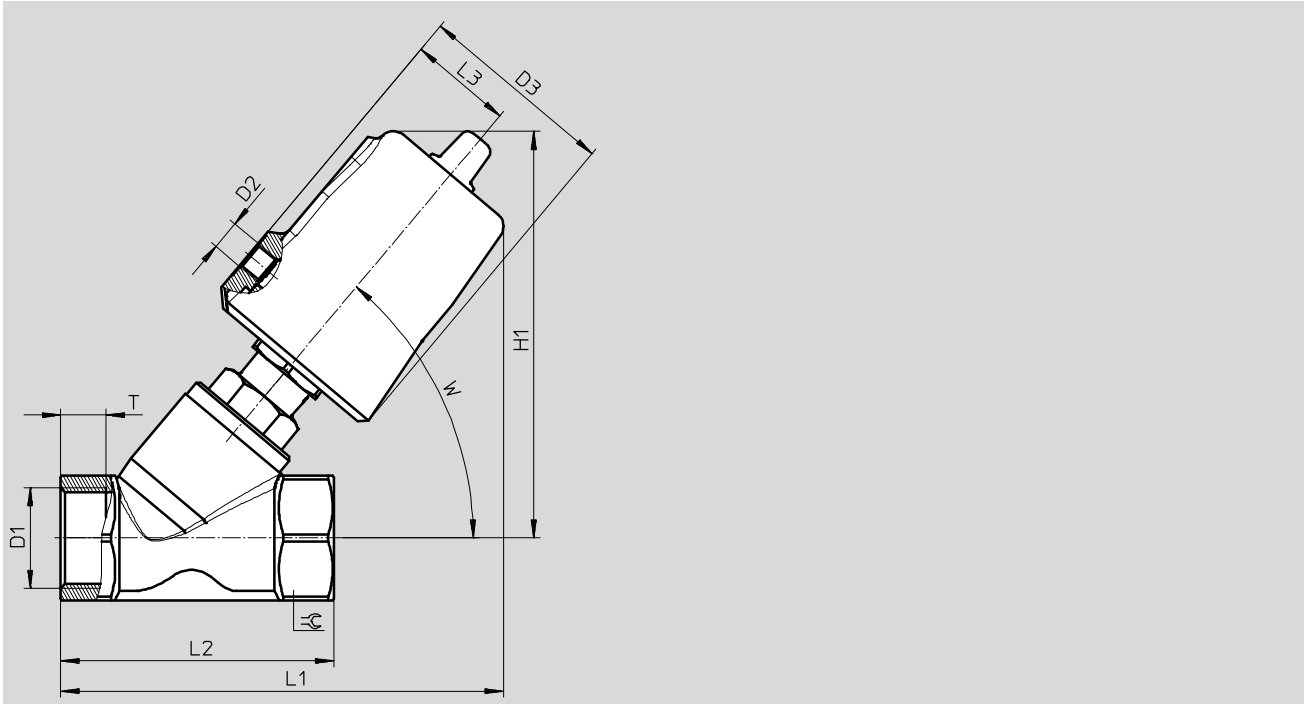
1) Additional information www.festo.com/sp → Certificates.

Materials	Material number
Process valve housing	Stainless steel casting 1.4408
Actuator housing	High-alloy stainless steel
Spindle washer	PTFE
Seat seal	PTFE
Note on materials	Contains PWIS (paint-wetting impairment substances) RoHS-compliant

Stainless steel casting, temperature of medium -40 ... +200°C

Dimensions

Download CAD data → www.festo.com

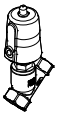



	D1	D2	D3 Ø	H1	L1	L2	L3	T	W	⊕
VZXF-L-...-G12-...-V4V4T-50-...	G1/2	G1/8	62	129	135	65	34	12	50°	27
VZXF-L-...-G34-...-V4V4T-50-...	G3/4		62	130	138	75	34	13		32
VZXF-L-...-G1-...-V4V4T-50-...	G1		62	135	146	90	34	15		42
VZXF-L-...-G1-...-V4V4T-80-...	G1		94	177	184		48			50
VZXF-L-...-G114-...-V4V4T-50-...	G1 1/4		62	151	155	110	34	17		55
VZXF-L-...-G114-...-V4V4T-80-...	G1 1/2		94	183	194		48			
VZXF-L-...-G112-...-V4V4T-50-...	G1 1/2		62	155	174	120	34	19		70
VZXF-L-...-G112-...-V4V4T-80-...	G1 1/2		94	187	202		48			
VZXF-L-...-G2-...-V4V4T-50-...	G2		62	167	193	150	34	21		70
VZXF-L-...-G2-...-V4V4T-80-...	G2		94	199	222		48			

Angle seat valves VZXF

Stainless steel casting, temperature of medium -40 ... +200°C

★ Core product range

Ordering data							
	Line connection	Flow rate Kv	Pressure of medium	Corrosion resistance CRC ¹⁾	Product weight [g]	Part no.	Type code
		[m ³ /h]	[bar]				
	G1/2	3.3	0 ... 40	3	1300	★ 1002513	VZXF-L-M22C-M-B-G12-130-M1-V4V4T-50-40
	G3/4	6.5	0 ... 20		1400	★ 1002515	VZXF-L-M22C-M-B-G34-180-M1-V4V4T-50-20
	G1	11	0 ... 10		1600	★ 1002517	VZXF-L-M22C-M-B-G1-240-M1-V4V4T-50-10

Ordering data							
	Line connection	Flow rate Kv	Pressure of medium	Corrosion resistance CRC ¹⁾	Product weight [g]	Part no.	Type code
		[m ³ /h]	[bar]				
	G1/2	3.8	0 ... 16	3	1300	1002512	VZXF-L-M22C-M-A-G12-130-M1-V4V4T-50-16
	G3/4	7.5	0 ... 16		1400	1002514	VZXF-L-M22C-M-A-G34-180-M1-V4V4T-50-16
	G1	12	0 ... 16		1600	1002516	VZXF-L-M22C-M-A-G1-240-M1-V4V4T-50-16
			0 ... 22		3600	1002526	VZXF-L-M22C-M-B-G1-240-M1-V4V4T-80-22
			0 ... 16		3600	1002525	VZXF-L-M22C-M-A-G1-240-M1-V4V4T-80-16
	G1 1/4	10.7	0 ... 7		2200	1002519	VZXF-L-M22C-M-B-G114-310-M1-V4V4T-50-7
			0 ... 10		3800	1002528	VZXF-L-M22C-M-B-G114-310-M1-V4V4T-80-10
			0 ... 9		2200	1002518	VZXF-L-M22C-M-A-G114-310-M1-V4V4T-50-9
			0 ... 16		3800	1002527	VZXF-L-M22C-M-A-G114-310-M1-V4V4T-80-16
	G1 1/2	17.5	0 ... 6		2500	1002521	VZXF-L-M22C-M-B-G112-350-M1-V4V4T-50-6
			0 ... 7		2500	1002520	VZXF-L-M22C-M-A-G112-350-M1-V4V4T-50-7
			0 ... 8		4300	1002530	VZXF-L-M22C-M-B-G112-350-M1-V4V4T-80-8
			0 ... 16		4300	1002529	VZXF-L-M22C-M-A-G112-350-M1-V4V4T-80-16
	G2	19.5	0 ... 3		3500	1002523	VZXF-L-M22C-M-B-G2-450-M1-V4V4T-50-3
			0 ... 4		3500	1002522	VZXF-L-M22C-M-A-G2-450-M1-V4V4T-50-4
			0 ... 5		5400	1002532	VZXF-L-M22C-M-B-G2-450-M1-V4V4T-80-5
			0 ... 12			1002531	VZXF-L-M22C-M-A-G2-450-M1-V4V4T-80-12

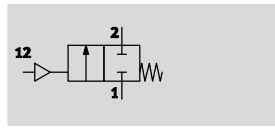
1) Corrosion resistance class CRC 3 to Festo standard FN 940070
 High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.


07


Angle seat valves

Stainless steel casting, nickel-plated actuator head

Function



-  - Flow rate Kv
3.3 ... 43 m³/h

-  - G1/2 ... G2



General technical data		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Line connection		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Nominal width DN	[mm]	13	18	24	31	35	45
Design	Poppet valve with actuator actuator						
Type of actuation	Pneumatic						
Type of mounting	In-line installation						
Line connection	Threaded collar to DIN ISO 228-1						
Sealing principle	Soft						
Mounting position	Any						
Valve function	2/2-way, closed, monostable						
Pneumatic connection	Female thread G1/8						
Flow direction	Non-reversible						
Type of control	Externally controlled						
Reset method	Mechanical spring						
Exhaust function	Without flow control option						
Flow direction	VZXF-...-A-...	Over valve seat, for gaseous media					
	VZXF-...-B-...	Under valve seat, for gaseous and liquid media					

Operating and environmental conditions		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Line connection		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Nominal pressure of process valve PN	40						
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]						
Operating pressure	[bar]	6 ... 10					
Medium		Vapour					
		Inert gases					
		Filtered compressed air, grade of filtration 200 µm					
	VZXF-...-B-... additionally	Mineral oil-based hydraulic fluid					
		Mineral oil					
		Neutral fluids					
		Water					
Max. viscosity	[mm ² /s]	600					
Ambient temperature	[°C]	-10 ... +60					
Temperature of medium	[°C]	-40 ... +200					
CE marking (see declaration of conformity) ¹⁾		-				To EU Pressure Equipment Directive	

1) Additional information www.festo.com/sp → Certificates.

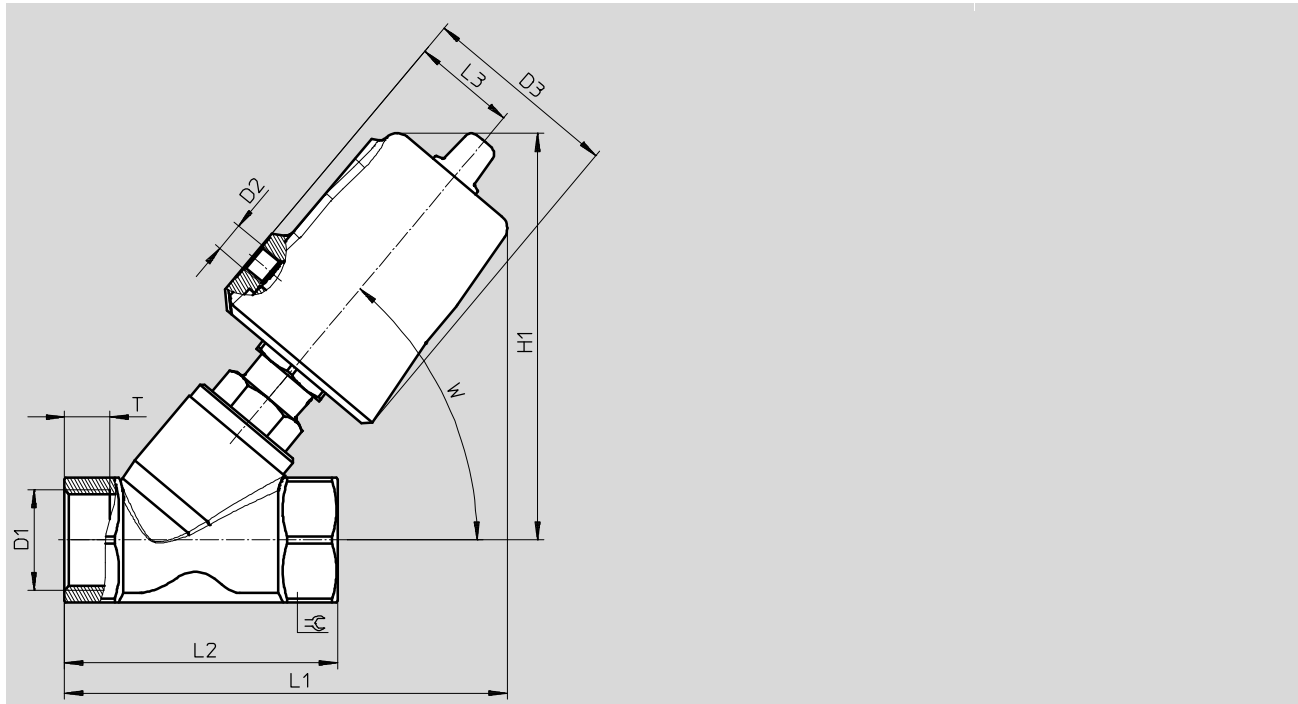
Materials	Material number
Process valve housing	Stainless steel casting 1.4408
Actuator housing	...-V4ANT- ... Aluminium, nickel-plated
	...-V4B2T- ... Brass, nickel-plated
Spindle washer	PTFE
Seat seal	PTFE
Note on materials	Contains paint-wetting impairment substances
	RoHS-compliant

Angle seat valves VZXF

Stainless steel casting, nickel-plated actuator head

Dimensions

Download CAD data → www.festo.com

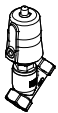


Type code	D1	D2	D3 Ø	H1	L1	L2	L3	T	W	50°
VZXF-L-...-G12-...-V4B2T-50-...	G1/2	G1/8	62	128	133	65	34	12	50°	27
VZXF-L-...-G34-...-V4B2T-50-...	G3/4		62	128	136.5	75		13		32
VZXF-L-...-G1-...-V4B2T-50-...	G1		62	133	145	90		15		41
VZXF-L-...-G1-...-V4ANT-80-...			94	176.5	183	90	49	15		41
VZXF-L-...-G114-...-V4B2T-50-...	G1 1/4		62	150	163.5	110	34	17		50
VZXF-L-...-G114-...-V4ANT-80-...			94	183	193	110		17		50
VZXF-L-...-G112-...-V4B2T-50-...	G1 1/2		62	153	172	120		19		55
VZXF-L-...-G112-...-V4ANT-80-...			94	187	202	120		19		55
VZXF-L-...-G2-...-V4B2T-50-...	G2		62	167	193	150	21	70		
VZXF-L-...-G2-...-V4ANT-80-...			94	199	221.5	150	49	21		70

07

Angle seat valves

Stainless steel casting, nickel-plated actuator head

Ordering data							
	Line connection	Flow rate Kv [m ³ /h]	Pressure of medium [bar]	Corrosion resistance CRC ¹⁾	Product weight [g]	Part no.	Type code
	G1/2	3.3	0 ... 40	2	1300	3539720	VZXF-L-M22C-M-B-G12-130-M1-V4B2T-50-40
	G3/4	6.5	0 ... 20	2	1400	3538842	VZXF-L-M22C-M-B-G34-180-M1-V4B2T-50-20
		7.5	0 ... 16			3539745	VZXF-L-M22C-M-A-G34-180-M1-V4B2T-50-16
	G1	11	0 ... 10	2	1600	3539783	VZXF-L-M22C-M-B-G1-240-M1-V4B2T-50-10
		12	0 ... 16	2	1600	3539782	VZXF-L-M22C-M-A-G1-240-M1-V4B2T-50-16
		12	0 ... 22	1	3600	3540198	VZXF-L-M22C-M-B-G1-240-M1-V4ANT-80-22
	G1 1/4	10.7	0 ... 7	2	2200	3539816	VZXF-L-M22C-M-B-G114-310-M1-V4B2T-50-7
		17.5	0 ... 10	1	3800	3540818	VZXF-L-M22C-M-B-G114-310-M1-V4ANT-80-10
		18.5	0 ... 9	2	2200	3539815	VZXF-L-M22C-M-A-G114-310-M1-V4B2T-50-9
		19	0 ... 16	1	3800	3540817	VZXF-L-M22C-M-A-G114-310-M1-V4ANT-80-16
	G1 1/2	17.5	0 ... 6	2	2500	3539927	VZXF-L-M22C-M-B-G112-350-M1-V4B2T-50-6
		25	0 ... 7	2	2500	3539926	VZXF-L-M22C-M-A-G112-350-M1-V4B2T-50-7
		28	0 ... 8	1	4300	3540250	VZXF-L-M22C-M-B-G112-350-M1-V4ANT-80-8
		29	0 ... 16	1	4300	3540248	VZXF-L-M22C-M-A-G112-350-M1-V4ANT-80-16
	G2	19.5	0 ... 3	2	3500	3540146	VZXF-L-M22C-M-B-G2-450-M1-V4B2T-50-3
		34.5	0 ... 4	2	3500	3540145	VZXF-L-M22C-M-A-G2-450-M1-V4B2T-50-4
		39	0 ... 5	1	5400	3540277	VZXF-L-M22C-M-B-G2-450-M1-V4ANT-80-5
		43	0 ... 12	1	5400	3540276	VZXF-L-M22C-M-A-G2-450-M1-V4ANT-80-12

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

Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

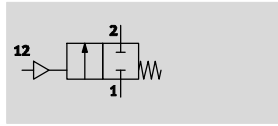
Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Angle seat valves VZXF

Stainless steel casting, vacuum version

Function



- - Flow rate Kv
3.8 ... 43 m³/h

- - G1/2 ... G2



General technical data							
Line connection		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Nominal width DN	[mm]	13	18	24	31	35	45
Design		Poppet valve with piston actuator					
Type of actuation		Pneumatic					
Type of mounting		In-line installation					
Line connection		Threaded collar to DIN ISO 228-1					
Sealing principle		Soft					
Mounting position		Any					
Valve function		2/2-way, closed, monostable					
Pneumatic connection		Female thread G1/8					
Flow direction		Non-reversible					
Type of control		Externally controlled					
Reset method		Mechanical spring					
Exhaust function		Without flow control option					
Flow direction		Over valve seat, for gaseous media					

Operating and environmental conditions							
Line connection		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Nominal pressure of process valve PN		40					
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]					
Operating pressure	[bar]	6 ... 10					
Medium		Vapour					
		Inert gases					
		Filtered compressed air, grade of filtration 200 µm					
Max. viscosity	[mm ² /s]	600					
Ambient temperature	[°C]	-10 ... +60					
Temperature of medium	[°C]	-10 ... +80					

Materials		Material number
Process valve housing	Stainless steel casting	1.4408
Actuator housing	...-V4ANV-... Aluminium, nickel-plated	
	...-V4B2V-... Brass, nickel-plated	
Spindle washer	FPM	
Seat seal	FPM	
Note on materials	Contains paint-wetting impairment substances	
	RoHS-compliant	

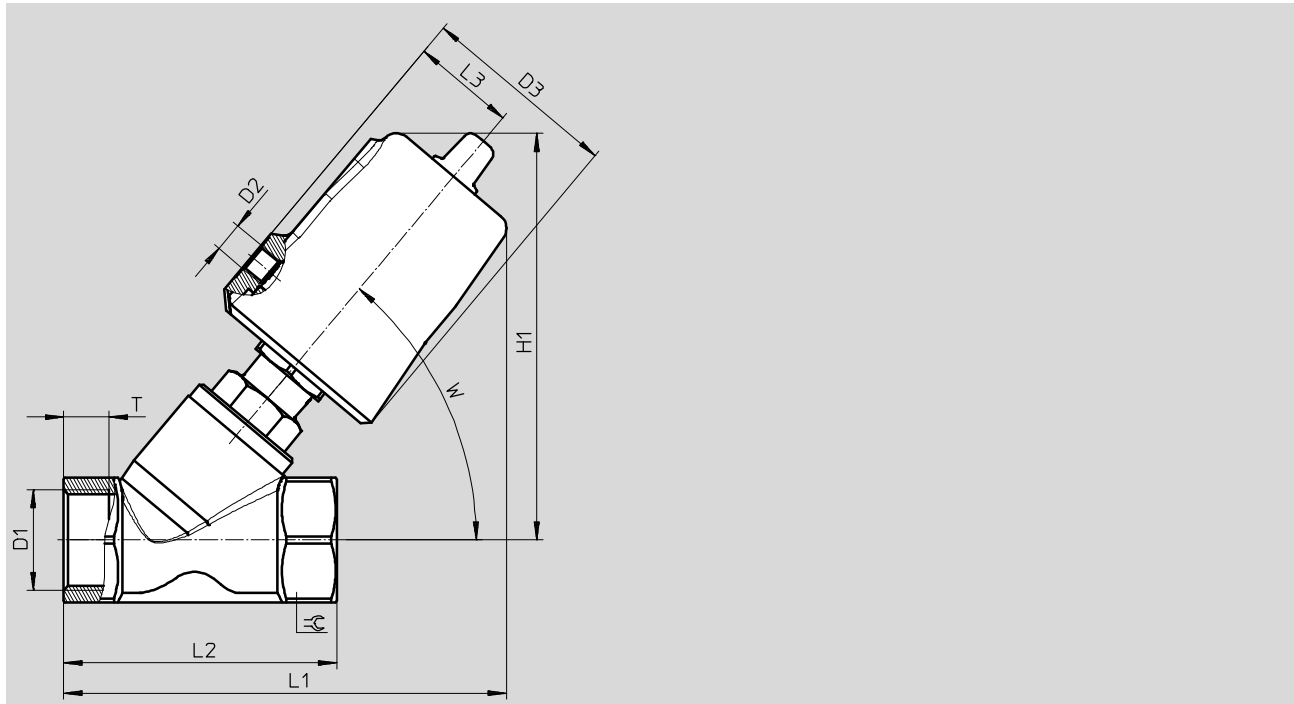
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Angle seat valves

Stainless steel casting, vacuum version

Dimensions

Download CAD data → www.festo.com



Type code	D1	D2	D3 Ø	H1	L1	L2	L3	T	W	⊕
VZXF-L-...-G12-...-V4B2V-50-...	G1/2	G1/8	62	112	119	65	34	12	50°	27
VZXF-L-...-G34-...-V4B2V-50-...	G3/4		62	118	126.5	75	34	13		32
VZXF-L-...-G1-...-V4B2V-50-...	G1		62	121.5	135	90	34	15		41
VZXF-L-...-G1-...-V4ANV-80-...			94	169	176	90	49	15		41
VZXF-L-...-G114-...-V4B2V-50-...	G1 1/4		62	142.5	156.5	110	34	17		50
VZXF-L-...-G114-...-V4ANV-80-...			94	177	188	110	49	17		50
VZXF-L-...-G112-...-V4B2V-50-...	G1 1/2		62	146	165	120	34	19		55
VZXF-L-...-G112-...-V4ANV-80-...			94	181	197	120	49	19		55
VZXF-L-...-G2-...-V4ANV-80-...	G2		94	193	216.5	150	49	21		70

Ordering data

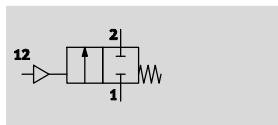
	Line connection	Flow rate Kv [m³/h]	Pressure of medium [bar]	Corrosion resistance CRC ¹⁾	Product weight [g]	Part no.	Type code
	G1/2	3.8	-0.9	2	1300	3536502	VZXF-L-M22C-M-A-G12-130-V4B2V-50-V
	G3/4	7.5		2	1400	3536650	VZXF-L-M22C-M-A-G34-180-V4B2V-50-V
	G1	12		2	1600	3536659	VZXF-L-M22C-M-A-G34-180-V4B2V-50-V
				1	3600	3536677	VZXF-L-M22C-M-A-G1-240-V4ANV-80-V
	G1 1/4	18.5		2	2200	3536686	VZXF-L-M22C-M-A-G114-310-V4B2V-50-V
				1	3800	3536711	VZXF-L-M22C-M-A-G114-310-V4ANV-80-V
	G1 1/2	25		2	2500	3536717	VZXF-L-M22C-M-A-G112-350-V4B2V-50-V
				1	4300	3536771	VZXF-L-M22C-M-A-G112-350-V4ANV-80-V
	G2	43		1	5400	3536786	VZXF-L-M22C-M-A-G2-450-V4ANV-80-V


1) Corrosion resistance class CRC 1 to Festo standard FN 940070
 Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
 Corrosion resistance class CRC 2 to Festo standard FN 940070
 Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.


Angle seat valves VZXF

Stainless steel casting with EX certification

Function



-  - Flow rate Kv
3.3 ... 34.5 m³/h

-  - G1/2 ... G2



General technical data

Line connection	G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Nominal width DN [mm]	13	18	24	31	35	45
Design	Poppet valve with piston actuator					
Type of actuation	Pneumatic					
Type of mounting	In-line installation					
Line connection	Threaded collar to DIN ISO 228-1					
Sealing principle	Soft					
Mounting position	Any					
Valve function	2/2-way, closed, monostable					
Pneumatic connection	Female thread G1/8					
Flow direction	Non-reversible					
Type of control	Externally controlled					
Reset method	Mechanical spring					
Exhaust function	Without flow control option					
Flow direction	VZXF-...-A-...	Over valve seat, for gaseous media				
	VZXF-...-B-...	Under valve seat, for gaseous and liquid media				

Stainless steel casting with EX certification

Operating and environmental conditions		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
Line connection							
Nominal pressure of process valve PN		40					
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]					
Operating pressure	[bar]	6 ... 10					
Medium		Vapour					
		Inert gases					
		Filtered compressed air, grade of filtration 200 µm					
	VZXF-...-B-... additionally	Mineral oil-based hydraulic fluid					
		Mineral oil					
		Neutral fluids					
		Water					
Max. viscosity	[mm ² /s]	600					
Ambient temperature	[°C]	-10 ... +60					
Temperature of medium	[°C]	-40 ... +200					
CE marking (see declaration of conformity) ¹⁾		-				To EU Pressure Equipment Directive	

1) Additional information www.festo.com/sp → Certificates.

ATEX	
ATEX category for gas	II 2G
Type of ignition protection for gas	c TX X
ATEX category for dust	II 2D
Type of ignition protection for dust	c TX X
Explosion-proof ambient temperature rating	[°C] -10°C ≤ Ta ≤ +60°C
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

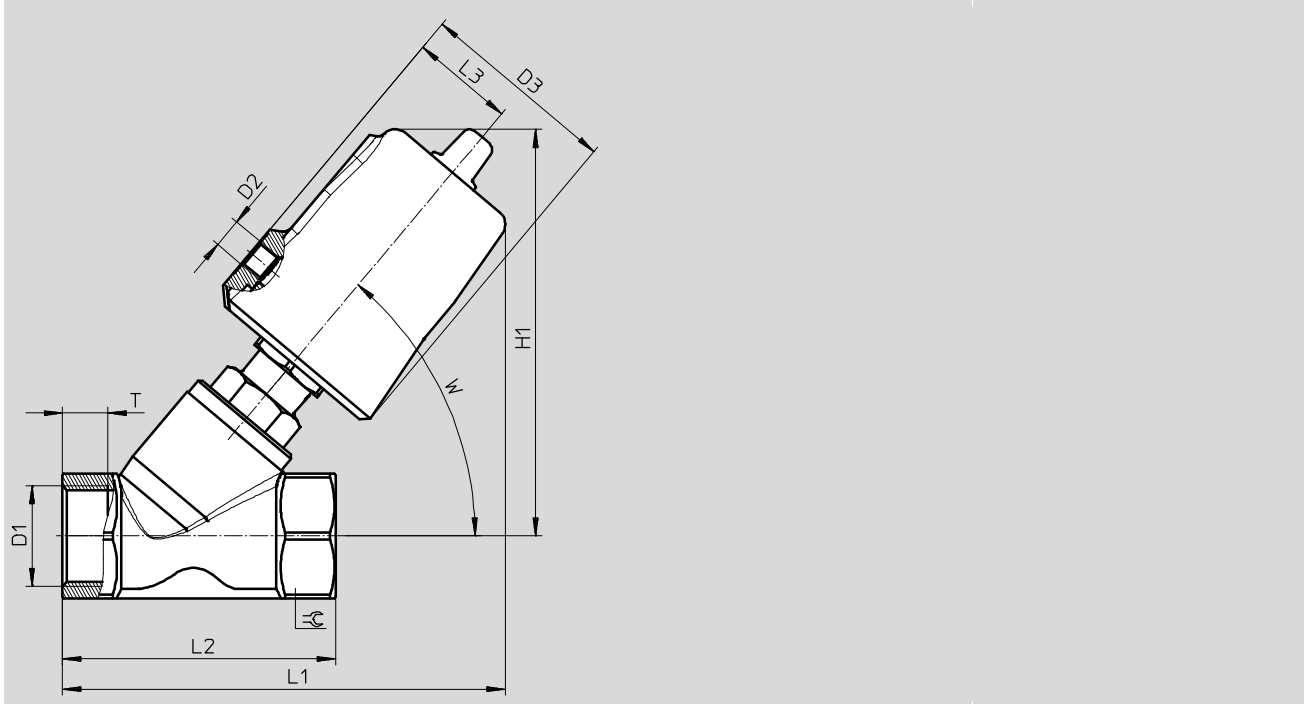
Materials	Material number
Process valve housing	Stainless steel casting 1.4408
Actuator housing	High-alloy stainless steel
Spindle washer	PTFE
Seat seal	PTFE
Note on materials	Contains paint-wetting impairment substances
	RoHS-compliant

Angle seat valves VZXF

Stainless steel casting with EX certification

Dimensions

Download CAD data → www.festo.com

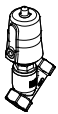


	D1	D2	D3 Ø	H1	L1	L2	L3	T	W	EX
VZXF-L-...-G12-...-V4V4T-50-...	G1/2	G1/8	62	129	135	65	34	12	50°	27
VZXF-L-...-G34-...-V4V4T-50-...	G3/4			130	138	75		13		32
VZXF-L-...-G1-...-V4V4T-50-...	G1			135	146	90		15		42
VZXF-L-...-G114-...-V4V4T-50-...	G1 1/4			151	155	110		17		50
VZXF-L-...-G112-...-V4V4T-50-...	G1 1/2			155	174	120		19		55
VZXF-L-...-G2-...-V4V4T-50-...	G2			167	193	150		21		70

07

Angle seat valves

Stainless steel casting with EX certification

Ordering data							
	Line connection	Flow rate Kv [m ³ /h]	Pressure of medium [bar]	Corrosion resistance CRC ¹⁾	Product weight [g]	Part no.	Type code
	G1/2	3.3	0 ... 40	3	1300	3539723	VZXF-L-M22C-M-B-G12-130-M1-V4V4T-50-40-EX4
	G3/4	6.5	0 ... 20		1400	3539749	VZXF-L-M22C-M-B-G34-180-M1-V4V4T-50-20-EX4
		7.5	0 ... 16			3539748	VZXF-L-M22C-M-A-G34-180-M1-V4V4T-50-16-EX4
	G1	11	0 ... 10		1600	3539787	VZXF-L-M22C-M-B-G1-240-M1-V4V4T-50-10-EX4
		12	0 ... 16			3539786	VZXF-L-M22C-M-A-G1-240-M1-V4V4T-50-16-EX4
	G1 1/4	10.7	0 ... 7		2200	3539820	VZXF-L-M22C-M-B-G114-310-M1-V4V4T-50-7-EX4
		18.5	0 ... 9			3539819	VZXF-L-M22C-M-A-G114-310-M1-V4V4T-50-9-EX4
	G1 1/2	17.5	0 ... 6		2500	3539931	VZXF-L-M22C-M-B-G112-350-M1-V4V4T-50-6-EX4
		25	0 ... 7			3539930	VZXF-L-M22C-M-A-G112-350-M1-V4V4T-50-7-EX4
	G2	19.5	0 ... 3		3500	3540148	VZXF-L-M22C-M-B-G2-450-M1-V4V4T-50-3-EX4
		34.5	0 ... 4			3540147	VZXF-L-M22C-M-A-G2-450-M1-V4V4T-50-4-EX4

- 1) Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Angle seat valves

VZXA



Overview, configuration and ordering
→ www.festo.com/catalogue/vzxa



Additional information, support and user documentation
→ www.festo.com/sp/vzxa



Selected types in accordance with the ATEX Directive
for explosive atmospheres
→ www.festo.com/ex



- + Connection DN13, 1/2"; DN20, 3/4"; DN25, 1"; DN32, 1 1/4"; DN40, 1 1/2"; DN50, 2"
- + G thread to DIN ISO 228-1 or NPT thread to ANSI/ASME B 1.20.1 or Rc thread to DIN 10226-2
- + Pressure of medium 0 ... 30 bar
- + Valve function 2/2-way, NC (normally closed), NO (normally open), DA (double acting)

- + Suitable for almost all media
- + High chemical and thermal resistance
- + ATEX certification

Angle seat valves VZXA

Key features

Function

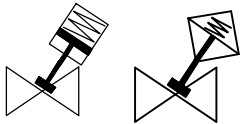
The angle seat valves VZXA are externally actuated valves which are controlled by a direct supply of compressed air and are used to shut

off gaseous or liquid media in pipe systems. In the process, a spindle with a soft-sealing valve disc is raised and lowered with the aid of a

pneumatic actuator. In all the versions mentioned below, the valve seat is slanted around 40° toward the

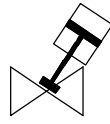
medium flow. The flow direction is determined by the design of the valve (process valve and actuator).

NC version (normally closed)



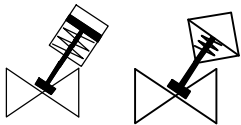
In the normal position, the valve is closed by springs. When the actuator is supplied with operating pressure, it raises the control piston and, at the same time, the valve disc too – this opens the valve.

DA version (double acting)



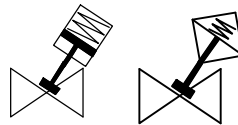
The control function is performed by reciprocal pneumatic actuation of the actuator chambers. Only available with the piston actuator.

NO version (normally open)



In the normal position, the valve is opened by a spring. When the actuator is supplied with operating pressure, it lowers the control piston and, at the same time, the valve disc, too – this closes the valve.

NC version (normally closed) with reduced spring force



In the normal position the valve is closed by a spring (reduced spring force for low operating pressures). When the actuator is supplied with operating pressure, it raises the control piston and, at the same time, the valve disc too – this opens the valve.

Economical

- Modular design
- Hygienic design, insensitive to dirt
- Long service life
- Quick and easy maintenance
- High flow rates achievable

Flexible

- Control of medium flows (gaseous and liquid) in closed and open circuits
- The angle seat valves VZXA are simple and sturdy and are thus perfectly suitable for almost all media with a viscosity of up to 600 mm²/s
- Angle seat valves VZXA made from stainless steel with PTFE seals have high chemical and thermal resistance
- Temperature of medium –10 ... +180 °C

Design

- G thread to DIN ISO 228-1 Parallel Whitworth pipe thread, non-metallic seal: must either be provided with an annular seal outside the thread or must be sealed by wrapping the thread with PTFE or hemp
- NPT thread to ANSI/ASME B 1.20.1 American tapered pipe thread with sealing material in the thread, female thread tapered, male thread tapered
- Rc thread to DIN 10226-2 Pipe thread for fittings sealing in the thread, female thread tapered, male thread tapered

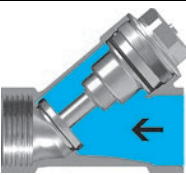
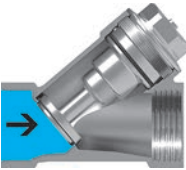
- Connection sizes DN13 ... DN50 and 1/2" ... 2"
- Medium pressure: 0 ... 30 bar
- Operating pressure: 5 ... 10 bar
- Threaded collar connection
- ATEX



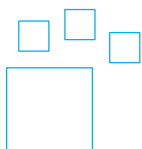
- Piston actuator with low space requirement, can close against pressures up to 10 bar, in actuator sizes 46 mm and 75 mm
- Diaphragm actuator without stick-slip effect, ideal for high force requirements and control applications, in actuator size 90 mm
- Note: The interface screws between the valve body and the piston and diaphragm actuators are identical to spanner size AF46



Product range overview

Product range overview			
	Type code	Control function	Flow direction
	VZXA-A-...	<ul style="list-style-type: none"> Closed via reduced spring force, N/C 	<ul style="list-style-type: none"> Over valve seat For gaseous media, “closing in the direction of medium flow” is used
	VZXA-B-...	<ul style="list-style-type: none"> Closed via spring force, NC Opened via spring force, NO Double-acting, DA 	<ul style="list-style-type: none"> Under valve seat For gaseous and liquid media, “closing against the direction of medium flow” is used in order to prevent or reduce water hammer effects

Ordering data – Product options



Configurable product
This product and all its product options can be ordered using the configurator.

The configurator can be found at
→ www.festo.com/catalogue/...

Part No. Type code
3539410 VZXA

Angle seat valves VZXA

Type codes

VZXA - A - - T S7 - 1/2" - M2 - V14 T

Type	
VZXA	Process valve
Direction of flow	
A	Above valve seat for gaseous media
B	Below valve seat for gaseous and liquid media
Control of the medium	
-	On/off operation
Line connection	
T	Threaded collar
Connection standard	
S6	DIN ISO 228-1
S7	ANSI/ASME B 1.20.1
S13	DIN 10226
Connection size	
1/2"	1/2"
3/4"	3/4"
1"	1"
1 1/2"	1 1/2"
1 1/4"	1 1/4"
2"	2"
13	DN13
20	DN20
25	DN25
32	DN32
40	DN40
50	DN50
Temperature of medium	
M2	-10 to +180 °C
Valve housing material	
V13	Stainless steel 1.4409
V14	Stainless steel ASTM A351-CF3M
Seat seal material	
T	PTFE

07

Angle seat valves

Angle seat valves VZXA

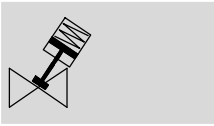
Type codes

		-	16	-	K	-	46	-	17	-	PR	-		-	V4	-	
Medium pressure																	
4	0 ... 4 bar																
4,4	0 ... 4.4 bar																
4,8	0 ... 4.8 bar																
5,6	0 ... 5.6 bar																
5,8	0 ... 5.8 bar																
6	0 ... 6 bar																
6,2	0 ... 6.2 bar																
6,8	0 ... 6.8 bar																
7,5	0 ... 7.5 bar																
8	0 ... 8 bar																
8,3	0 ... 8.3 bar																
9,3	0 ... 9.3 bar																
10	0 ... 10 bar																
11,5	0 ... 11.5 bar																
12,2	0 ... 12.2 bar																
12,8	0 ... 12.8 bar																
13,5	0 ... 13.5 bar																
14,5	0 ... 14.5 bar																
15,5	0 ... 15.5 bar																
16	0 ... 16 bar																
23	0 ... 23 bar																
25	0 ... 25 bar																
30	0 ... 30 bar																
Actuator																	
K	Piston actuator																
M	Diaphragm actuator																
Actuator size																	
46	46 mm																
75	75 mm																
90	90 mm																
Stroke																	
17	17 mm																
20	20 mm																
26	26 mm																
Control function																	
-	Closed via spring force, NC																
D	Double-acting																
S	Opened via spring force, NO																
PR	Closed via reduced spring force, NC																
Position sensing																	
-	With mechanical indicator																
Actuator housing material																	
V4	Stainless steel 1.4408																
EU certification																	
-	None																
EX4	II 2GD																

Angle seat valves VZXA with piston actuator

Technical data

Function



- Poppet valve with piston actuator
- Line connection
1/2" ... 2", DN13 ... DN50
- Stroke
17 ... 20 mm



General technical data			DN13, 1/2"	DN20, 3/4"		DN25, 1"		DN32, 1 1/4"		DN40, 1 1/2"	DN50, 2"
Line connection											
Actuator			D46	D46	D75	D46	D75	D46	D75	D75	D75
Flow rate Kv	VZXA-A-...	[m ³ /h]	6.6	-	14.5	-	21.5	-	-	-	-
	VZXA-B-...	[m ³ /h]	6	13.3	13.5	20.3	22.6	27.9	30.3	41.4	50.1
Design	Poppet valve with piston actuator										
Type of actuation	Pneumatic										
Type of mounting	In-line installation										
Mounting position	Any										
Valve function	2/2										
Pneumatic connection	Female thread G1/8										
Flow direction	Non-reversible										
Reset method	Mechanical spring										
Type of actuation	Externally actuated										
Position sensing	With mechanical indicator										
Control of the medium	On/off operation										
Control function	VZXA-A-...		Closed via reduced spring force, NC								
	VZXA-B-...		Closed via spring force, NC								
Direction of flow	VZXA-A-...		Above valve seat for gaseous media								
	VZXA-B-...		Below valve seat for gaseous and liquid media								

Angle seat valves VZXA with piston actuator

Technical data

Operating and environmental conditions		
Operating pressure	[bar]	5 ... 10
Ambient temperature	[°C]	0 ... +60
Temperature of medium	[°C]	-10 ... +180
Storage temperature	[°C]	-10 ... +60
CE mark (see declaration of conformity) ¹⁾		To EU Machinery Directive
Degree of protection		IP65 IP67 IP69K
Max. viscosity	[mm ² /s]	600
Medium		Vapour Inert gases Filtered compressed air, grade of filtration 200 µm VZXA-B-... additionally Mineral oil-based hydraulic oil Mineral oil Water Neutral fluids
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Safety Integrity Level (SIL)		SIL 2
PFH		0.00000014
PFD		0.000595
Certificate issuing authority		TÜV 968/V 1039.00/18

1) Additional information www.festo.com/sp → Certificates.

ATEX ¹⁾						
Connection size	DN13, 1/2"	DN20, 3/4"	DN25, 1"	DN32, 1 1/4"	DN40, 1 1/2"	DN50, 2"
ATEX category for gas	II 2G					
Type of ignition protection for gas	c T6 ... T3 X					
ATEX category for dust	II 2D					
Type of ignition protection for dust	c T80°C ... T200°C X					
Explosion ambient temperature	[°C] 0°C ≤ Ta ≤ +60°C					

1) Specified types → www.festo.com

Angle seat valves VZXA with piston actuator

Technical data

Materials		Material number
Piston rod	High-alloy stainless steel	
End cap	Stainless steel casting	
Seals	FPM	
Spindle washer	PTFE	
Seat seal	PTFE	
Actuator housing	Stainless steel casting	1.4408
Valve housing	Stainless steel casting	1.4409
		ASTM A351-CF3M
Note on materials	Contains paint-wetting impairment substances	
	RoHS compliant	

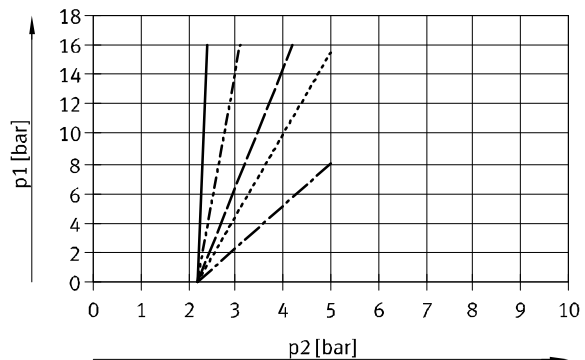
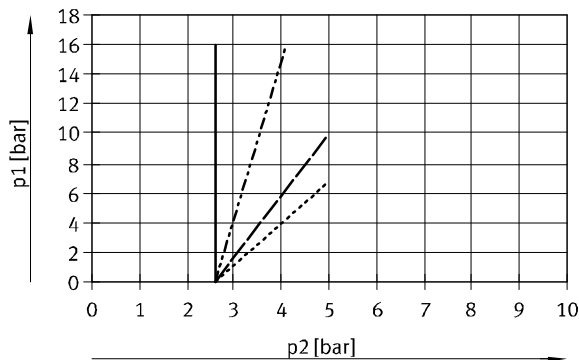
Permissible operating pressure as a function of medium pressure for control function NC, VZXA-B-...

Actuator size	Max. medium pressure [bar]		Min. operating pressure [bar]	
	46 mm	75 mm	46 mm	75 mm
DN13, 1/2"	30	-	4.8	-
DN20, 3/4"	12.8	30	4.8	4.6
DN25, 1"	8.3	23	4.8	4.6
DN32, 1 1/4"	4.4	13.5	4.8	4.6
DN40, 1 1/2"	-	9.3	-	4.6
DN50, 2"	-	5.6	-	4.6

Permissible operating pressure p2 as a function of medium pressure p1 for control function NC, VZXA-A-...

Piston actuator size 46 mm

Piston actuator size 75 mm



- DN13, 1/2"
- - - - DN20, 3/4"
- DN25, 1"
- - - - DN32, 1 1/4"

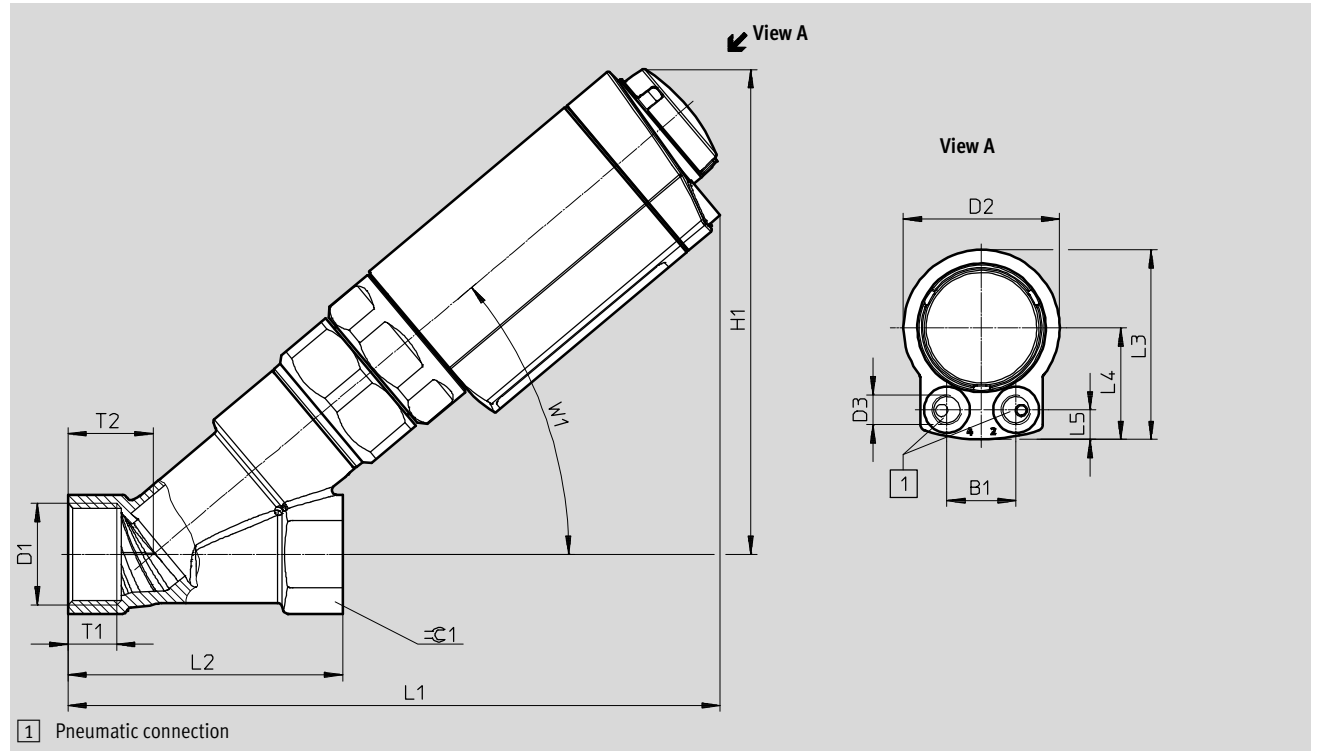
- DN20, 3/4"
- - - - DN25, 1"
- DN32, 1 1/4"
- - - - DN40, 1 1/2"
- - - - DN50, 2"

Angle seat valves VZXA with piston actuator

Technical data

Dimensions

Download CAD data → www.festo.com



Type	B1	D1			D2 Ø	D3	H1	L1	L2
		S6	S7	S13					
VZXA-A-...-13-...-16-...-46-17-...	22.6	G1/2	1/2 NPT	Rc1/2	51	G1/8	159	202	65
VZXA-A-...-20-...-16-...-75-20-...	41	G3/4	3/4 NPT	Rc3/4	82.6		187	234	75
VZXA-A-...-25-...-16-...-75-20-...	41	G1	1" NPT	Rc1	82.6		192	244	90
VZXA-B-...-13-...-30-...-46-17-...	22.6	G1/2	1/2 NPT	Rc1/2	51		159	202	65
VZXA-B-...-20-...-12.8-...-46-17-...	22.6	G3/4	3/4 NPT	Rc3/4	51		158	203	75
VZXA-B-...-20-...-30-...-75-20-...	41	G3/4	3/4 NPT	Rc3/4	82.6		187	234	75
VZXA-B-...-25-...-8.3-...-46-17-...	22.6	G1	1" NPT	Rc1	51		164	214	90
VZXA-B-...-25-...-23-...-75-20-...	41	G1	1" NPT	Rc1	82.6		192	244	90
VZXA-B-...-32-...-4.4-...-46-17-...	22.6	G11/4	11/4 NPT	Rc11/4	51		168	218	110
VZXA-B-...-32-...-13.5-...-75-20-...	41	G11/4	11/4 NPT	Rc11/4	82.6		198	248	110
VZXA-B-...-40-...-9.3-...-75-20-...	41	G11/2	11/2 NPT	Rc11/2	82.6		216	270	120
VZXA-B-...-50-...-5.6-...-75-20-...	41	G2	2" NPT	Rc2	82.6		215	286	150

Type	L3	L4	L5	T1			T2	W1	Ø1
				S6	S7	S13			
VZXA-A-...-13-...-16-...-46-17-...	62	36.5	26.8	14	13.7	13.2	21.5	40	25
VZXA-A-...-20-...-16-...-75-20-...	94.4	53.1	41	16	14	14.5	24	40	32
VZXA-A-...-25-...-16-...-75-20-...	94.4	53.1	41	16	16.8	16.8	28	40	41
VZXA-B-...-13-...-30-...-46-17-...	62	36.5	26.8	14	13.7	13.2	21.5	40	25
VZXA-B-...-20-...-12.8-...-46-17-...	62	36.5	26.8	16	14	14.5	24	40	32
VZXA-B-...-20-...-30-...-75-20-...	94.4	53.1	41	16	14	14.5	24	40	32
VZXA-B-...-25-...-8.3-...-46-17-...	62	36.5	26.8	16	16.8	16.8	28	40	41
VZXA-B-...-25-...-23-...-75-20-...	94.4	53.1	41	16	16.8	16.8	28	40	41
VZXA-B-...-32-...-4.4-...-46-17-...	62	36.5	26.8	20	17.3	19.1	36	42	50
VZXA-B-...-32-...-13.5-...-75-20-...	94.4	53.1	41	20	17.3	19.1	36	42	50
VZXA-B-...-40-...-9.3-...-75-20-...	94.4	53.1	41	22	17.3	19.1	38	42	55
VZXA-B-...-50-...-5.6-...-75-20-...	94.4	53.1	41	24	17.6	23.4	43	40	65

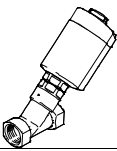
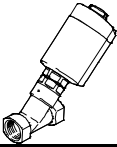
Angle seat valves VZXA with piston actuator

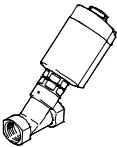
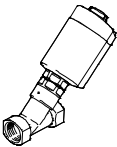
Technical data

Ordering data

Key features:

- Control function closed via spring force, NC
- Without ATEX certification

VZXA-A-..., flow direction above valve seat		Flow rate Kv [m ³ /h]	Medium pressure [bar]	Weight [g]	Part No.	Type
G thread to DIN ISO 228-1						
	DN13, 46 mm actuator	6.6	0 ... 16	1775	8060513	VZXA-A-TS6-13-M2-V13T-16-K-46-17-PR-V4
	DN20, 75 mm actuator	14.5		3155	8060514	VZXA-A-TS6-20-M2-V13T-16-K-75-20-PR-V4
	DN25, 75 mm actuator	21.5		3395	8060515	VZXA-A-TS6-25-M2-V13T-16-K-75-20-PR-V4
NPT thread to ANSI/ASME B 1.20.1						
	1/2", 46 mm actuator	6.6	0 ... 16	1775	8060520	VZXA-A-TS7-1/2"-M2-V14T-16-K-46-17-PR-V4
	3/4", 75 mm actuator	14.5		3155	8060521	VZXA-A-TS7-3/4"-M2-V14T-16-K-75-20-PR-V4
	1", 75 mm actuator	21.5		3395	8060522	VZXA-A-TS7-1"-M2-V14T-16-K-75-20-PR-V4

VZXA-B-..., flow direction below valve seat		Flow rate Kv [m ³ /h]	Medium pressure [bar]	Weight [g]	Part No.	Type
G thread to DIN ISO 228-1						
	DN13, 46 mm actuator	6	0 ... 30	1830	8060527	VZXA-B-TS6-13-M2-V13T-30-K-46-17-V4
	DN20, 46 mm actuator	13.3	0 ... 12.8	1910	8060528	VZXA-B-TS6-20-M2-V13T-12.8-K-46-17-V4
	DN20, 75 mm actuator	13.5	0 ... 30	3360	8060529	VZXA-B-TS6-20-M2-V13T-30-K-75-20-V4
	DN25, 46 mm actuator	20.3	0 ... 8.3	2150	8060530	VZXA-B-TS6-25-M2-V13T-8.3-K-46-17-V4
	DN25, 75 mm actuator	22.6	0 ... 23	3600	8060531	VZXA-B-TS6-25-M2-V13T-23-K-75-20-V4
	DN32, 46 mm actuator	27.9	0 ... 4.4	2480	8060533	VZXA-B-TS6-32-M2-V13T-4.4-K-46-17-V4
	DN32, 75 mm actuator	30.3	0 ... 13.5	3930	8060534	VZXA-B-TS6-32-M2-V13T-13.5-K-75-20-V4
	DN40, 75 mm actuator	41.4	0 ... 9.3	4610	8060536	VZXA-B-TS6-40-M2-V13T-9.3-K-75-20-V4
	DN50, 75 mm actuator	50.1	0 ... 5.6	5430	8060538	VZXA-B-TS6-50-M2-V13T-5.6-K-75-20-V4
NPT thread to ANSI/ASME B 1.20.1						
	1/2", 46 mm actuator	6	0 ... 30	1830	8060541	VZXA-B-TS7-1/2"-M2-V14T-30-K-46-17-V4
	3/4", 46 mm actuator	13.3	0 ... 12.8	1910	8060542	VZXA-B-TS7-3/4"-M2-V14T-12.8-K-46-17-V4
	3/4", 75 mm actuator	13.5	0 ... 30	3360	8060543	VZXA-B-TS7-3/4"-M2-V14T-30-K-75-20-V4
	1", 46 mm actuator	20.3	0 ... 8.3	2150	8060544	VZXA-B-TS7-1"-M2-V14T-8.3-K-46-17-V4
	1", 75 mm actuator	22.6	0 ... 23	3600	8060545	VZXA-B-TS7-1"-M2-V14T-23-K-75-20-V4
	1 1/4", 46 mm actuator	27.9	0 ... 4.4	2480	8060547	VZXA-B-TS7-1 1/4"-M2-V14T-4.4-K-46-17-V4
	1 1/4", 75 mm actuator	30.3	0 ... 13.5	3930	8060548	VZXA-B-TS7-1 1/4"-M2-V14T-13.5-K-75-20-V4
	1 1/2", 75 mm actuator	41.4	0 ... 9.3	4610	8060550	VZXA-B-TS7-1 1/2"-M2-V14T-9.3-K-75-20-V4
	2", 75 mm actuator	50.1	0 ... 5.6	5430	8060552	VZXA-B-TS7-2"-M2-V14T-5.6-K-75-20-V4

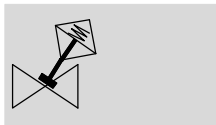
07

Angle seat valves

Angle seat valves VZXA, with diaphragm actuator

Technical data

Function



- Poppet valve with diaphragm actuator
- In-line installation
1/2" ... 2", DN13 ... DN50
- Stroke
26 mm



General technical data		DN25, 1"	DN32, 1 1/4"	DN40, 1 1/2"	DN50, 2"
In-line installation					
Actuator size	[mm]	90			
Flow rate Kv	VZXA-A-... [m³/h]	–	35.4	47.4	68.5
	VZXA-B-... [m³/h]	23.6	33.1	49	60.4
Design	Poppet valve with diaphragm actuator				
Actuation type	Pneumatic				
Type of mounting	In-line installation				
Mounting position	Any				
Valve function	2/2				
Pneumatic connection	Female thread G1/8				
Flow direction	Non-reversible				
Reset method	Mechanical spring				
Type of control	Externally controlled				
Position sensing	Via mechanical indicator				
Control of the medium	On/off operation				
Control function	VZXA-A-...	–	Closed via reduced spring force, NC		
	VZXA-B-...	Closed via spring force, NC			
Flow direction	VZXA-A-...	–	Over valve seat, for gaseous media		
	VZXA-B-...	Under valve seat, for gaseous and liquid media			

Angle seat valves VZXA, with diaphragm actuator

Technical data

Operating and environmental conditions		
Operating pressure	[bar]	5 ... 7
Ambient temperature	[°C]	0 ... +60
Temperature of medium	[°C]	-10 ... +180
Storage temperature	[°C]	-10 ... +60
CE marking (see declaration of conformity) ¹⁾		To the EU Machinery Directive
Degree of protection		IP65
		IP67
		IP69K
Max. viscosity	[mm ² /s]	600
Medium		Vapour
		Inert gases
		Filtered compressed air, grade of filtration 200 µm
	VZXA-B-... additionally	Mineral oil-based hydraulic oil
		Mineral oil
		Water
		Neutral fluids
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Safety integrity level (SIL)		SIL 2
PFH		0.00000014
PFD		0.000595
Certificate issuing authority		TÜV 968/V 1039.00/18

1) Additional information www.festo.com/sp → Certificates.

ATEX ¹⁾		
ATEX category for gas		II 2G
Type of ignition protection for gas		c T6 ... T3 X
ATEX category for dust		II 2D
Type of ignition protection for dust		c T80°C ... T200 °C X
Explosion ambient temperature	[°C]	0°C ≤ Ta ≤ +60 °C

1) Selected types → www.festo.com

Angle seat valves VZXA, with diaphragm actuator

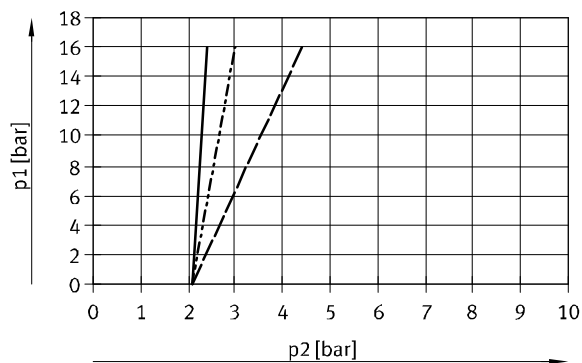
Technical data

Materials		Material number
Piston rod	High-alloy stainless steel	
Cover	Stainless steel casting	
Seals	NBR	
Stem seal	PTFE	
Seat seal	PTFE	
Actuator housing	Stainless steel casting	1.4408
Valve housing	Stainless steel casting	1.4409
		ASTM A351-CF3M
Note on materials	Contains paint-wetting impairment substances	
	RoHS-compliant	

Permissible operating pressure as a function of medium pressure for control function NC, VZXA-B-...		
	Min. operating pressure [bar]	Max. medium pressure [bar]
Actuator size	90 mm	
DN25, 1"	5	30
DN32, 1 1/4"	5	25
DN40, 1 1/2"	5	16
DN50, 2"	5	10

Permissible operating pressure p₂ as a function of medium pressure p₁ for control function NC, VZXA-A-...

Diaphragm actuator size 90 mm



- DN32, 1 1/4"
- - - - - DN40, 1 1/2"
- · — · — DN50, 2"

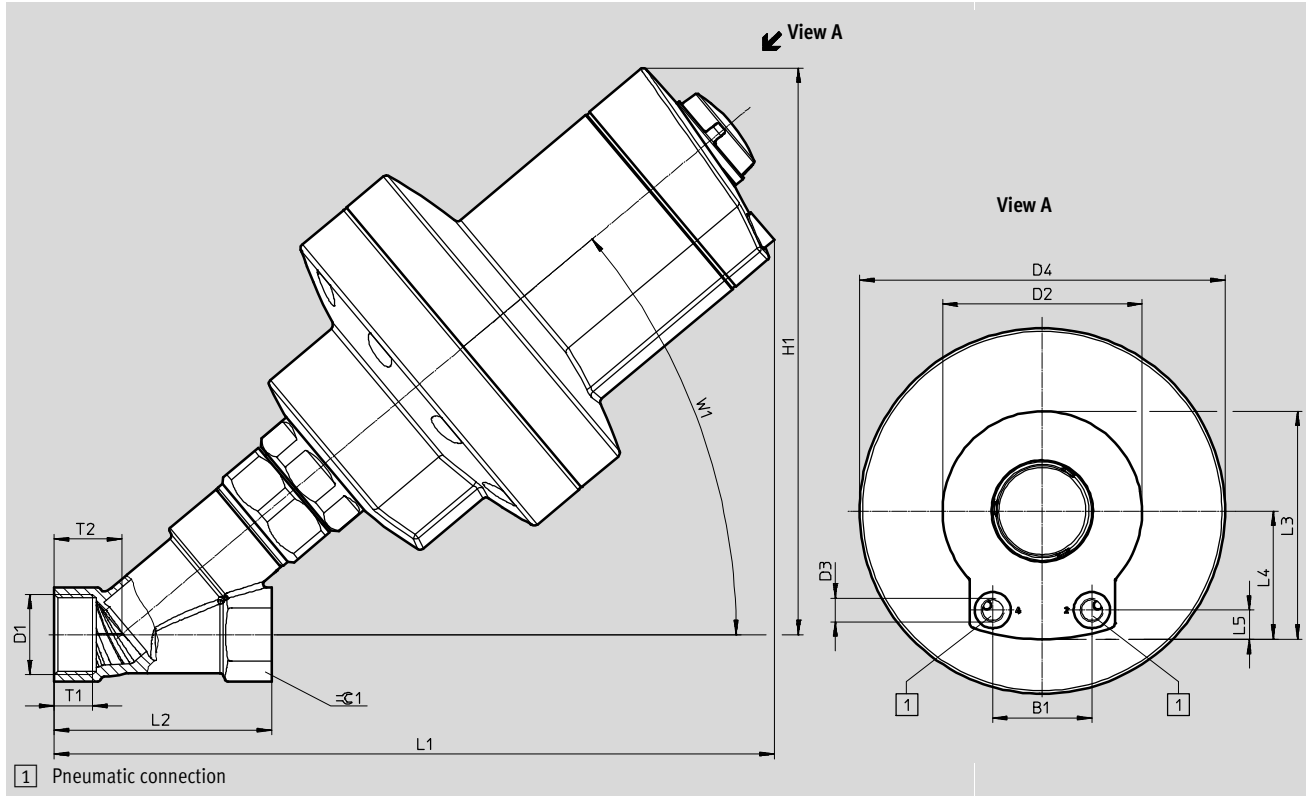
Angle seat valves VZXA, with diaphragm actuator

Technical data

Dimensions

Size 90 mm

Download CAD data → www.festo.com



Type	B1	D1			D2 ∅	D3	D4 ∅	H1	L1	L2
		S6	S7	S13						
VZXA-A-...-32-...-16-...-PR-...	41	G1 1/4	1 1/4 NPT	Rc1 1/4	82.6	G1/8	151.3	245	300	110
VZXA-A-...-40-...-16-...-PR-...	41	G1 1/2	1 1/2 NPT	Rc1 1/2	82.6	G1/8	151.3	263	322	120
VZXA-A-...-50-...-16-...-PR-...	41	G2	2 NPT	Rc2	82.6	G1/8	151.3	260	340	150
VZXA-A-...-65-...-8-...-PR-...	41	G2 1/2	2 1/2 NPT	Rc2 1/2	82.6	G1/8	151.3	273	366	190
VZXA-B-...-25-...-30-...	41	G1	1 NPT	Rc1	82.6	G1/8	151.3	238	298	90
VZXA-B-...-32-...-25-...	41	G1 1/4	1 1/4 NPT	Rc1 1/4	82.6	G1/8	151.3	245	300	110
VZXA-B-...-40-...-16-...	41	G1 1/2	1 1/2 NPT	Rc1 1/2	82.6	G1/8	151.3	263	322	120
VZXA-B-...-50-...-10-...	41	G2	2 NPT	Rc2	82.6	G1/8	151.3	260	340	150

Type	L3	L4	L5	T1			T2	W1	⊕1
				S6	S7	S13			
VZXA-A-...-32-...-16-...-PR-...	94.4	53.1	12.1	20	17.3	19.1	36	42	50
VZXA-A-...-40-...-16-...-PR-...	94.4	53.1	12.1	22	17.3	19.1	38	42	55
VZXA-A-...-50-...-16-...-PR-...	94.4	53.1	12.1	24	17.6	23.4	43	40	65
VZXA-A-...-65-...-8-...-PR-...	94.4	53.1	12.1	27	24	27	53	40	85
VZXA-B-...-25-...-30-...	94.4	53.1	12.1	16	16.8	16.8	28	40	41
VZXA-B-...-32-...-25-...	94.4	53.1	12.1	20	17.3	19.1	36	42	50
VZXA-B-...-40-...-16-...	94.4	53.1	12.1	22	17.3	19.1	38	42	55
VZXA-B-...-50-...-10-...	94.4	53.1	12.1	24	17.6	23.4	43	40	65

07

Angle seat valves

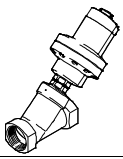
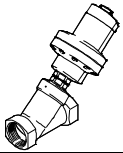
Angle seat valves VZXA, with diaphragm actuator

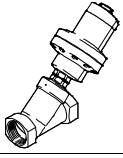
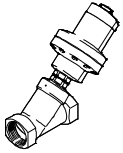
Technical data

Ordering data

Key features:

- Control function closed via spring force, NC
- Without ATEX certification

VZXA-A-..., flow direction above the valve seat		Flow rate Kv [m ³ /h]	Medium pressure [bar]	Weight [g]	Part No.	Type
G thread to DIN ISO 228-1						
	DN32, 90 mm actuator	35.4	0 ... 16	6595	8060516	VZXA-A-TS6-32-M2-V13T-16-M-90-26-PR-V4
	DN40, 90 mm actuator	47.4	0 ... 16	7275	8060517	VZXA-A-TS6-40-M2-V13T-16-M-90-26-PR-V4
	DN50, 90 mm actuator	68.5	0 ... 16	8095	8060518	VZXA-A-TS6-50-M2-V13T-16-M-90-26-PR-V4
NPT thread to ANSI/ASME B 1.20.1						
	1 1/4", 90 mm actuator	35.4	0 ... 16	6595	8060523	VZXA-A-TS7-1 1/4"-M2-V14T-16-M-90-26-PR-V4
	1 1/2", 90 mm actuator	47.4	0 ... 16	7275	8060524	VZXA-A-TS7-1 1/2"-M2-V14T-16-M-90-26-PR-V4
	2", 90 mm actuator	68.5	0 ... 16	8095	8060525	VZXA-A-TS7-2"-M2-V14T-16-M-90-26-PR-V4

VZXA-B-..., flow direction below the valve seat		Flow rate Kv [m ³ /h]	Medium pressure [bar]	Weight [g]	Part No.	Type
G thread to DIN ISO 228-1						
	DN25, 90 mm actuator	23.6	0 ... 30	6780	8060532	VZXA-B-TS6-25-M2-V13T-30-M-90-26-V4
	DN32, 90 mm actuator	33.1	0 ... 25	7110	8060535	VZXA-B-TS6-32-M2-V13T-25-M-90-26-V4
	DN40, 90 mm actuator	49	0 ... 16	7790	8060537	VZXA-B-TS6-40-M2-V13T-16-M-90-26-V4
	DN50, 90 mm actuator	60.4	0 ... 10	8610	8060539	VZXA-B-TS6-50-M2-V13T-10-M-90-26-V4
NPT thread to ANSI/ASME B 1.20.1						
	1", 90 mm actuator	23.6	0 ... 30	6780	8060546	VZXA-B-TS7-1"-M2-V14T-30-M-90-26-V4
	1 1/4", 90 mm actuator	33.1	0 ... 25	7110	8060549	VZXA-B-TS7-1 1/4"-M2-V14T-25-M-90-26-V4
	1 1/2", 90 mm actuator	49	0 ... 16	7790	8060551	VZXA-B-TS7-1 1/2"-M2-V14T-16-M-90-26-V4
	2", 90 mm actuator	60.4	0 ... 10	8610	8060553	VZXA-B-TS7-2"-M2-V14T-10-M-90-26-V4

Angle seat valves VZXA

Ordering data – Modular product system

Ordering table			Condi- tions	Code	Entry code
VZXA...					
M	Module no.	3539410			
	Product type	VZXA		VZXA	VZXA
	Flow direction	Over valve seat, for gaseous media		-A	
		Under valve seat, for gaseous and liquid media		-B	
O	Control of the medium	On/off operation			
M	Line connection	Threaded collar		-T	-T
	Connection standard	DIN ISO 228-1		S6	
		ANSI/ASME B 1.201		S7	
		DIN 10226-2		S13	
	Connection size	DN13	4	-13	
		DN20	4	-20	
		DN25	4	-25	
		DN32	4	-32	
		DN40	4	-40	
		DN50	4	-50	
		1/2"	1	-1/2"	
		3/4"	1	-3/4"	
		1"	1	-1"	
		1 1/4"	1	-1 1/4"	
	1 1/2"	1	-1 1/2"		
	2"	1	-2"		
	Temperature of medium [°C]	-10 ... +180		-M2	
	Valve housing material	Stainless steel 1.4409	2	-V13	
		Stainless steel ASTM A351-CF3M	3	-V14	
↓	Seat seal material	PTFE		T	

- 1** 1/2", 3/4", 1", 1 1/4", 1 1/2", 2" Not with connection standard S6, S13
- 2** V13 Not with imperial connection size
- 3** V14 Not with metric connection size
- 4** DN13, 20, 25, 32, 40, 50 Not with connection standard S7

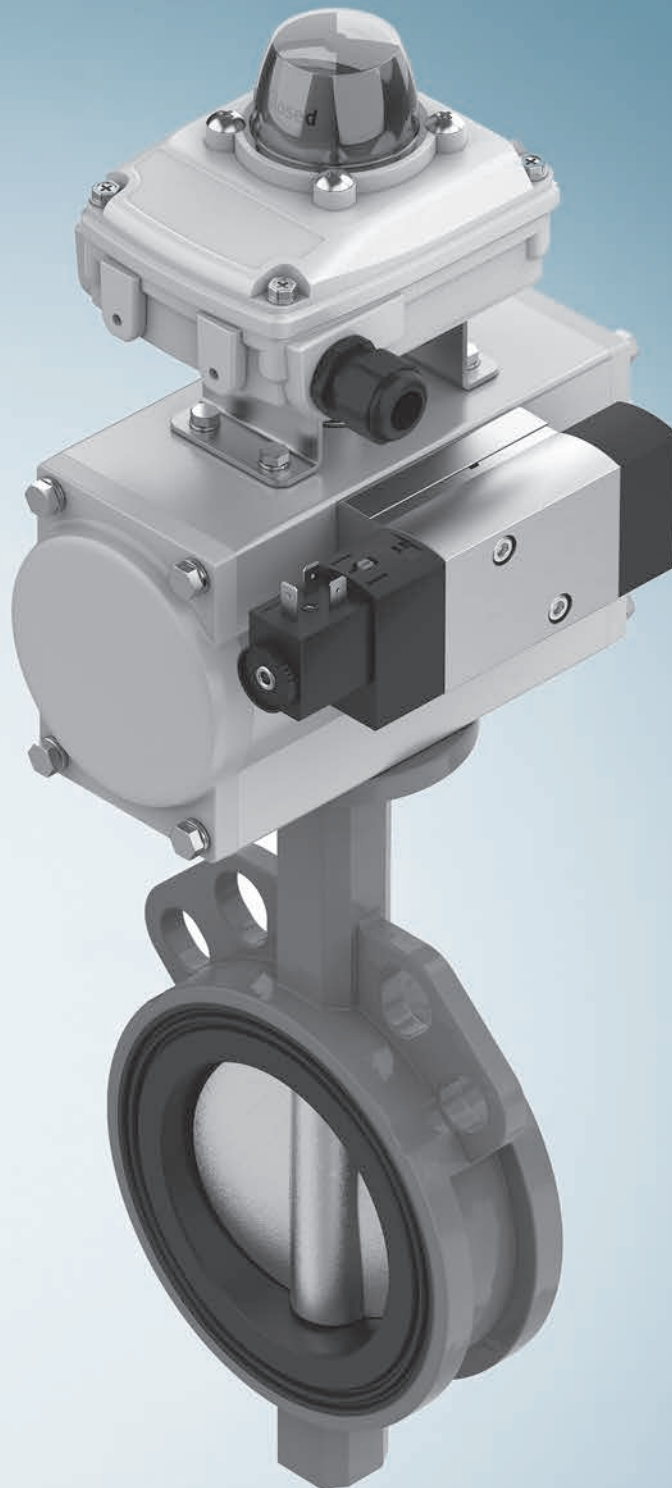
- M** Mandatory data
- O** Options

Transfer order code

VZXA - [] - [] - T [] - [] - [] - [] []

08 Butterfly valves

Butterfly valves for versatile use in various industry sectors



Contents

Butterfly valves KVZA 675



KVZA

Butterfly valves,
manually actuated

- + With hand lever
- + Butterfly valve type wafer or lug

→ page 675



KVZA

Butterfly valve units,
automatically actuated

- + With quarter turn actuator
- + Butterfly valve type wafer or lug

→ page 675



KVZA

Butterfly valve units with
controlled operation

- + With quarter turn actuator and positioner
- + Butterfly valve type wafer or lug

→ page 675

Butterfly valves

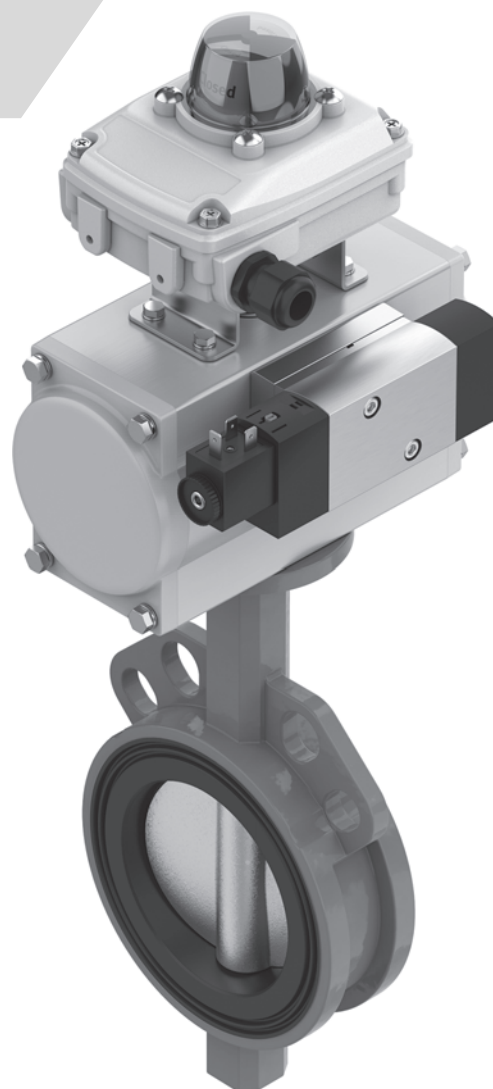
KVZA



Overview, configuration and ordering
→ www.festo.com/catalogue/kvza



Additional information, support and user documentation
→ www.festo.com/sp/kvza



- + Butterfly valve with hand lever
- + Butterfly valve with quarter turn actuator
- + Butterfly valve with quarter turn actuator and positioner
- + Configure complete units easily online at
→ www.festo.com/kvza

- + Butterfly valve type wafer or lug
- + Nominal width DN25 ... DN300
- + Connection standard DIN EN 1092-1 or ANSI CLASS 150

Butterfly valve units KVZA

Key features

At a glance

The new configurator supports you with requests for customised process valve units, and supports the engineering department with

processing these requests. It is now possible to find, select, size and order process valve units without waiting times. Access to

prices and delivery times is provided immediately after configuration. Configuration-compatible data sheets are also available, as

well as 2D -CAD data and 3D -CAD models in many native and neutral formats. The complete units of course also come with certificates.

Innovative

- The new configurator provides support throughout the entire process, from searching for products to ordering
- Configuration, sizing, documentation, RFQ, ordering and delivery of the process valve unit are combined in a single tool

Function

- Direct link to the Festo Online Shop
- User-friendly user interface
- Advice on solutions
- Specific 2D/3D CAD files available for download after configuration
- Configuration-compatible bill of materials available for download
- Delivery date query possible

Possible variants

Butterfly valve type, wafer



Hand lever



Butterfly valve type, lug



Quarter turn actuator



Key features

Possible variants

Quarter turn actuator, pilot valve



Quarter turn actuator, sensor box



Quarter turn actuator, opto-electronic sensor box



Quarter turn actuator, optical position indicator



Quarter turn actuator, pilot valve, sensor box



Quarter turn actuator, pilot valve, opto-electronic sensor box



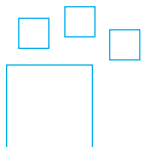
Quarter turn actuator, pilot valve, optical position indicator



Quarter turn actuator, positioner



Ordering data – Product options



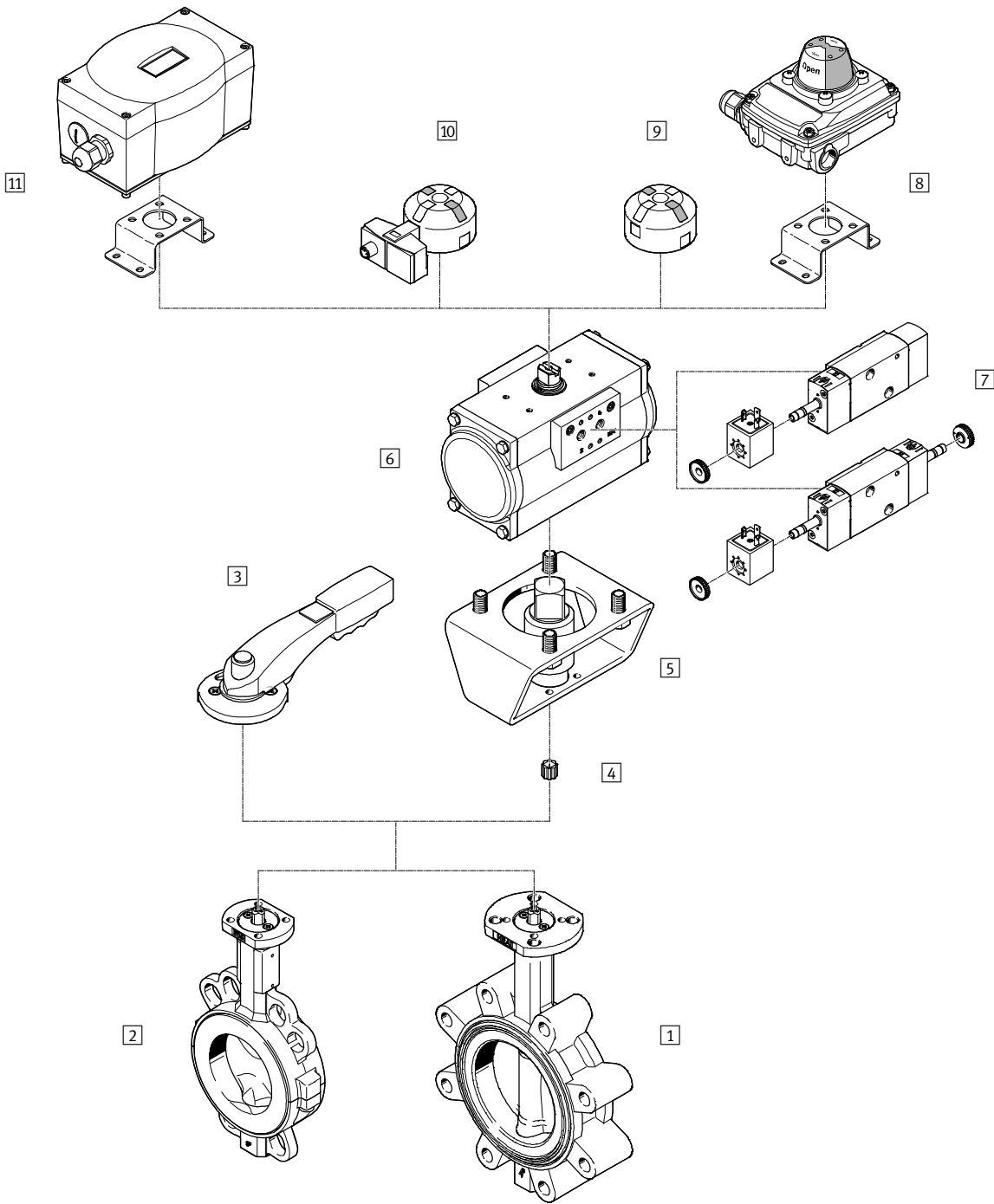
Configurable product
This product and all its product options can be ordered using the configurator.

The configurator can be found at
→ www.festo.com/catalogue/...

Part No. Type code
8073655 **KVZA**

Butterfly valve units KVZA

Peripherals overview using a sample configuration



Peripherals overview using a sample configuration

System components	Brief description	→ Page/ Internet
1 Butterfly valves VZAV	In wafer or lug versions, in nominal widths DN25 ... DN300, with connection standards DIN EN 1092-1 or ASME B 16.5 Class 150	vzav
2 Butterfly valves VZAF	In wafer or lug versions, in nominal widths DN25 ... DN300, with connection standards DIN EN 1092-1 or ASME B 16.5 Class 150	vzaf
3 Hand lever VAOH	For manual actuation of butterfly valves, with lock, detenting in 10 positions	vaoh
4 Reducing sleeve squares DARQ-R	For adjustment of butterfly valves	411
5 Mounting kits DARQ-K	For connecting quarter turn actuators and butterfly valves	267
6 Quarter turn actuators DFPD	In single-acting or double-acting version, features a rack and pinion combination with a constant torque characteristic across the entire swivel range, connection pattern to VDI/VDE 3845	373
7 Solenoid valves VSNC	Pilot valves with solenoid coils VACF for single-acting and double-acting quarter turn actuators with a connection pattern to VDI/VDE 3845, conversion from 3/2-way to 5/2-way valve simply by turning the seal	23
8 Sensor boxes SRBC	For electrical position feedback and monitoring the position of process valves, with mounting adapter, sturdy, corrosion-resistant design, clearly visible 3D position indicator allows rapid detection of the current position of the quarter turn actuator	217
9 Position indicators SASF	The compact solution, direct mounting means that they require minimal space, with four fixed actuating lugs at intervals of 90°	sasf
10 Sensor boxes SRBG	For electrical position feedback and monitoring the position of process valves, mounted directly without other accessories on quarter turn actuators with connection pattern to VDI/VDE 3845, with M12 plug or terminal rail connection	235
11 Positioners CMSX	Based on the PID control algorithm, for controlling the position of single-acting and double-acting pneumatic quarter turn actuators, with mechanical interface to VDI/VDE 3845	289

Butterfly valve units KVZA

System components

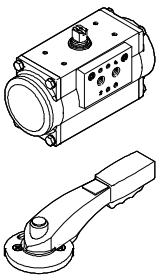
Ordering using the configurator

The configurator for butterfly valve units comprises a number of tried and tested components from Festo. The scope and specifications can be selected on the "System", "Valve & medium", "Application" and "Additional electrical specifications" pages.



System components

Actuation



Description

- Automatic actuation via a pneumatic quarter turn actuator
- Manual actuation possible using a hand lever

Application

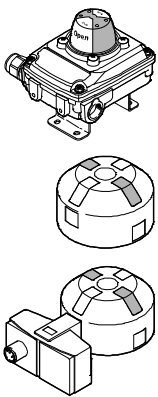
Controlled

- The desired position of the process valve is specified via an analogue positioning signal, e.g. 4 ... 20 mA

Open/Closed

- The process valve is moved into both end positions

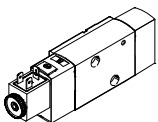
Position indicator



Shows the current end position of the process valve unit

- Optically via a mechanical, inductive or magnetic sensor box, mounted using a mounting adapter
- Optically via a position indicator, directly mounted on the quarter turn actuator
- Optically/electrically via an inductive dual sensor with M12 connection or terminal rail connection, directly mounted on the quarter turn actuator

Pilot valve

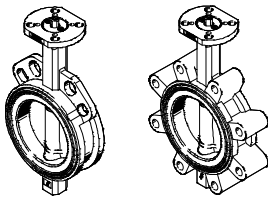


The pneumatic pilot valve is mounted using the NAMUR interface, either on a valve terminal, which can be housed in a control cabinet, for example, or directly on the actuator.

System components

System components

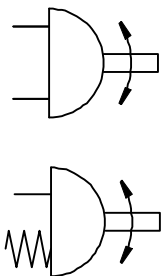
Butterfly valve type



Shut-off element material

Sealing element material

Mode of operation



Description

Wafer

- With centring holes for installation between two pipe flanges, extremely lightweight housing

Lug

- With threaded flange holes for installation between two pipe flanges or at the end of a pipeline, one-sided disconnection possible

Ductile cast iron, PA coated

- Ductile cast iron with polyamide coating is used to refine and protect metallic surfaces, is highly resistant to wear and exhibits excellent insulation properties

Stainless steel, PFA coated

- The perfluoroalkoxy alkane coating is resistant to aggressive organic and inorganic chemicals as well as solvents across a wide temperature range

Stainless steel

- Suitable for extracting almost all organic fluids, 50% caustic soda up to 90 °C, cathodic dip coating, pure phosphoric acid, dry chlorine, liquid sulphur, PSA and many other media

EPDM

- Resistant to acids and alkalis, water, hot water and vapour, not resistant to oil and grease

NBR

- Can be used for oils, greases, fuel, oil gas, CO₂, CO and H₂

PTFE/silicone

- Excellent chemical resistance, electrical properties, great resistance to high and low temperatures, and exceptional adhesion and flame resistance, with silicone base layer for standard applications

Double-acting

- The double-acting quarter turn actuator requires compressed air for every direction of movement. In this operating mode, the torque for opening or closing the process valve is generated purely via the compressed air

Single-acting

- In the single-acting quarter turn actuator, the incoming compressed air moves the piston in one direction. This generates the torque of the actuator. At the same time, the springs installed in the actuator are pretensioned. This spring force generates torque in the opposite direction of rotation when the pressure chambers of the actuator are exhausted. This causes the process valve to move to the required initial position

Technical data

- Nominal diameter DN25 ... DN300
- Nominal diameter 1" ... 12"

- Ductile cast iron EN-GJS-400-15, PA coated 250 μ
- Stainless steel 1.4408, PFA coated
- Stainless steel 1.4408

Butterfly valve units KVZA

System components

System components

Safety function

Description

Closing

- In the event of a system crash (failure of the operating voltage supply or compressed air), the process valve is closed.

Opening

- In the event of a system crash (failure of the operating voltage supply or compressed air), the process valve is opened.

Maintain position

- In the event of a system crash (failure of the operating voltage supply or compressed air), the process valve is held in the current position. This means the quarter turn actuator must be pressurised on both sides.

Technical data

–

Operating pressure

The operating pressure available for actuating the quarter turn actuator.

- 2 ... 8 bar

Safety factor

The specification of a safety factor is recommended when configuring a quarter turn actuator because this increases the torque reserve available.

–

Pipeline medium	Safety factor	
	Ball valves	Butterfly valves
Liquid	1.2	1.35
Sticky/viscous	1.6	1.75
Gaseous	1.5	1.5

Closing torque factor

Specification is optional

- The torque required for actuating the process valve is at its greatest at the start of the movement (breakaway torque). The closing torque of the process valve may be smaller than the breakaway torque under certain conditions. If this difference is known, it can be taken into account by specifying a closing torque factor.

–

High corrosion resistance

Higher corrosion resistance through epoxy coating of the pneumatic quarter turn actuator, the drive shaft is stainless steel.

–

Nominal operating voltage

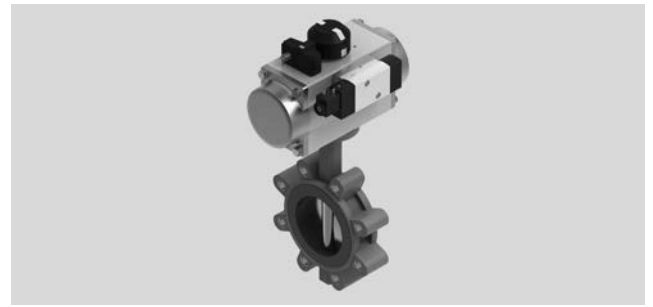
Configuration-dependent specification required, e.g. when selecting a position indicator or a pilot valve.

- 24 V DC
- 250 V AC
- 110 V AC/50 ... 60 Hz

Butterfly valve units KVZA

Technical data

- Butterfly valves nominal diameter DN25 ... DN300 or 1" ... 12"
- Swivel angle 0 ... 90°
- Medium pressure 10 ... 16 bar
- Operating pressure 2 ... 8 bar
- Safety factor 0 ... 2



General technical data

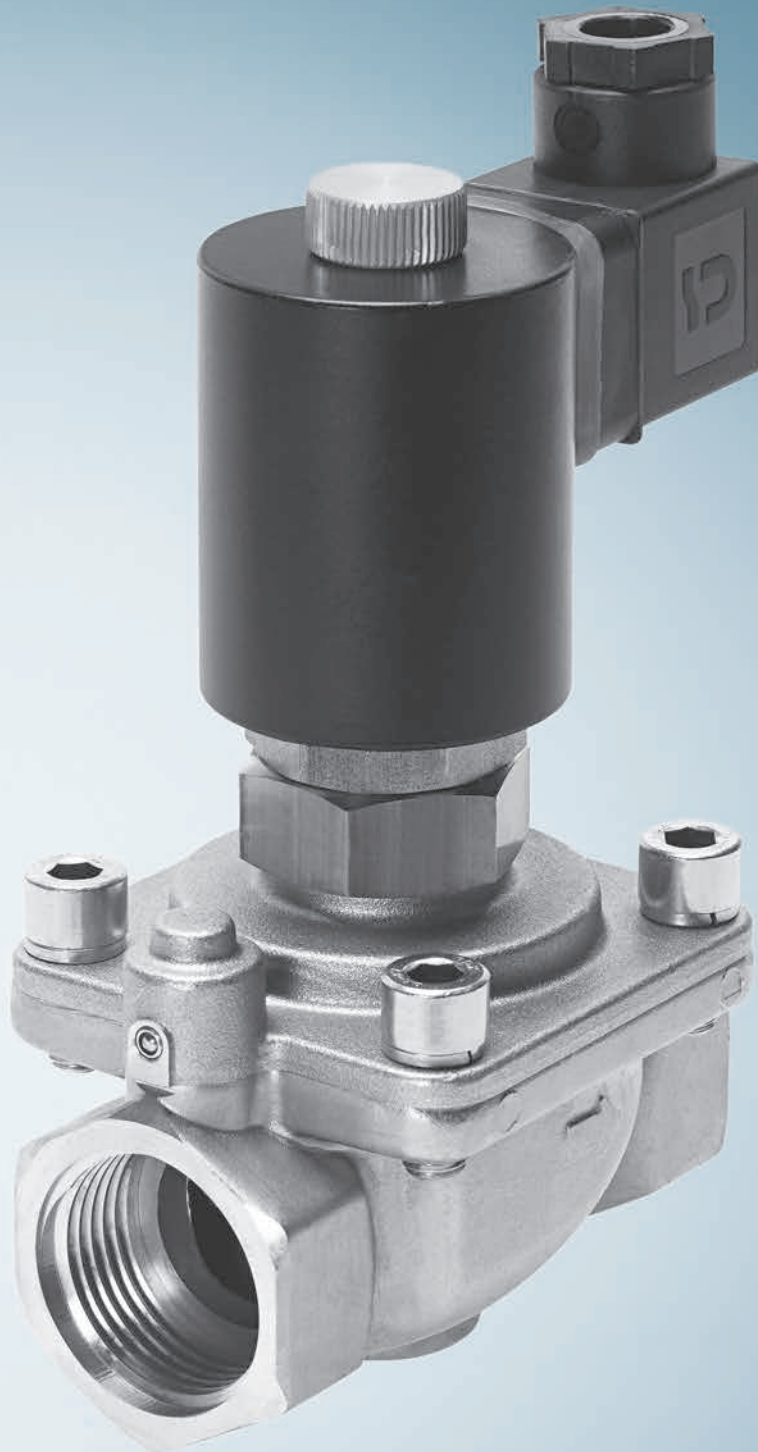
Product weight	[kg]	1 ... 140
----------------	------	-----------

Operating and environmental conditions

Note on materials	Contains paint-wetting impairment substances
	RoHS-compliant

09 Solenoid-actuated media valves

Directly operated, pilot operated and force pilot operated media valves in brass and stainless steel for controlling various liquid and gaseous media





VZWD ★

Solenoid valves

- + Extensive pressure range
- + Directly actuated poppet valve
- + Suitable for vacuum

→ page 687



VZWF ★

Solenoid valves

- + High flow rates
- + Suitable for vacuum
- + Force pilot operated solenoid valve

→ page 705



VZWM-L ★

Solenoid valves

- + Brass or stainless steel casting version
- + Electrical connection via separate magnets
- + Servo-controlled solenoid valve

→ page 717

Contents

Solenoid valves VZWD	687
Solenoid valves VZWF	705
Solenoid valves VZWM-L	717
Solenoid valves MN1H-MS	731
Solenoid valves VZWP	739
Reverse jet pulse valves VZWE	747

Solenoid valves, directly actuated

VZWD



Overview, configuration and ordering
→ www.festo.com/catalogue/vzwd



Additional information, support and user documentation
→ www.festo.com/sp/vzwd



Quick ordering of basic designs
→ page 694, 698



- + Connection 1/8", 1/4"
- + G thread or NPT thread
- + Operating pressure 0 ... 90 bar
- + Nominal pressure 40 bar
- + Electrical actuation
- + Voltage 24 V DC, 110 V AC, 230 V AC
- + 2/2-way poppet valve (NC), directly actuated

- + Suitable for applications with high pressure and low flow rates
- + Suitable for vacuum
- + Sealing material FKM

Solenoid valves VZWD, directly actuated

Key features and overview

General



Directly actuated solenoid valves VZWD are mainly intended for applications with high pressure ranges and low flow rates. This type of valve switches the sealing

element directly via the solenoid system. The seal generally has to lift away from the seat against the effective operating pressure using just the drive. A closing spring

keeps the valve closed assisted by the pressure of the medium. The function is dependent on the seat size, the effective operating

pressure and the magnetic force. The differentiation from force pilot operated solenoid valves (VZWF) lies in the flow rate.

General

-  - Connecting thread
G 1/4, G 1/8
-  - Flow rate Kv
0.06 ... 0.4 m³/h

Areas of application

- Use in vacuum technology
- Venting gas and tank systems
- Safety shut-offs for burner controllers

Design

- Design insensitive to slight contamination of the media

Advantages

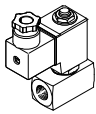
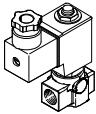
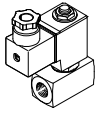
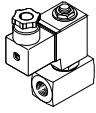
- Valves respond from 0 bar up to the max. operating pressure
- Excellent tightness

-  - Note

The valves are suitable for vacuum with Pabs > 100 mbar. Please ensure the direction of flow corresponds to the direction of the arrow.

Solenoid valves VZWD, directly actuated

Key features and overview

Version	Type	Process valve connection	Nominal size (DN)	Medium pressure ¹⁾ [bar]	→ Page/Internet
Brass housing					
	VZWD-L-...	G 1/4	1	0 ... 50	691
			1.5	0 ... 30	
			2	0 ... 15	
			2.5	0 ... 8	
		G 1/8	1	0 ... 50	691
			1.5	0 ... 30	
			2	0 ... 15	
Brass housing					
	VZWD-L-...	G 1/4	1	0 ... 90	695
			1.5	0 ... 85	
			2	0 ... 40	
			2.5	0 ... 22	
			3	0 ... 15	
			4	0 ... 8	
			5	0 ... 5	
			6	0 ... 4	
		G 1/8	1	0 ... 90	695
			1.5	0 ... 85	
			2	0 ... 40	
			2.5	0 ... 22	
			3	0 ... 15	
			4	0 ... 8	
Stainless steel housing					
	VZWD-L-...-R1	G 1/4	1	0 ... 90	700
			1.5	0 ... 85	
			2	0 ... 40	
			2.5	0 ... 22	
			3	0 ... 15	
			4	0 ... 8	
			5	0 ... 5	
			6	0 ... 4	
	VZWD-L-...-R1	G 1/8	1	0 ... 90	700
			1.5	0 ... 85	
			2	0 ... 40	
			2.5	0 ... 22	
			3	0 ... 15	
			4	0 ... 8	
			5	0 ... 5	
			6	0 ... 4	

1) The valves are suitable for vacuum with Pabs > 100 mbar. Please ensure the direction of flow corresponds to the direction of the arrow.

Solenoid valves VZWD, directly actuated

Type codes

VZWD - L - M22C - M - G18 - 15 - V - 2AP4 - 40 - R1

Type

VZWD	Solenoid valve, directly actuated
------	-----------------------------------

Type of directional control valve

L	In-line valve
---	---------------

Valve function

M22C	2/2-way valve, normally closed, mechanical reset
------	--------------------------------------------------

Reset method

M	Mechanical spring
---	-------------------

Process valve connection

G18	Thread G 1/8
G14	Thread G 1/4

Nominal size

10	1.0 mm
15	1.5 mm
20	2.0 mm
25	2.5 mm
30	3.0 mm
40	4.0 mm
50	5.0 mm
60	6.0 mm

Sealing material

V	FPM
---	-----

Nominal operating voltage

1	24 V DC
2A	110 V AC/50-60 Hz
3A	230 V AC/50-60 Hz

Electrical connection

P4	Plug socket, 3-pin
----	--------------------

Medium pressure

4	Max. 4 bar
5	Max. 5 bar
8	Max. 8 bar
15	Max. 15 bar
22	Max. 22 bar
30	Max. 30 bar
40	Max. 40 bar
50	Max. 50 bar
85	Max. 85 bar
90	Max. 90 bar

Corrosion protection

-	Brass
R1	Stainless steel

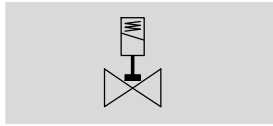
Solenoid-actuated media valves


09


Solenoid valves VZWD, directly actuated

Technical data – Brass housing, nominal pressure PN 50

Function



-  - Flow rate Kv
0.06 ... 0.16 m³/h

-  - Connecting thread
G 1/4, G 1/8



General technical data		1.0	1.5	2.0	2.5
Nominal size (DN)		1.0	1.5	2.0	2.5
Valve function		2/2-way, single solenoid, closed			
Design		Directly actuated poppet valve			
Type of mounting		In-line installation			
Actuation type		Electric			
Reset method		Mechanical spring			
Direction of flow		Non-reversible			
Type of control		Direct			
Manual override		None			
Mounting position		Any			
Sealing principle		Soft			
Max. viscosity	[mm ² /s]	22			
Protection class		IP65			

Operating and environmental conditions		1.0	1.5	2.0	2.5
Nominal size (DN)		1.0	1.5	2.0	2.5
Standard nominal flow rate	[l/min]	60	95	140	170
Flow rate Kv	[m ³ /h]	0.06	0.09	0.13	0.16
Process valve nominal pressure (PN)		50			
Medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]			
		Inert gases			
		Mineral oil			
		Neutral liquids			
		Water			
		Further media upon request			
Pressure differential	[bar]	0			
Ambient temperature	[°C]	-10 ... +35 °C			
Temperature of medium	[°C]	-10 ... +80 °C			
Leak rate to EN 12266-1		A			
Corrosion resistance class CRC ¹⁾		1			

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

Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Solenoid valves VZWD, directly actuated

Technical data – Brass housing, nominal pressure PN 50

Electrical data				
Operating voltage		24 V DC	110 V AC	230 V AC
Electrical connection	Plug to EN 175301-803 type A, square design			
CE marking		–	73/23/EEC	73/23/EEC
Insulation class		H	F	F
Duty cycle	[%]	100		
Permissible voltage fluctuations	[%]	±10		
Switching time on	[ms]	25		
Switching time off	[ms]	10		
Coil characteristics				
Direct current DC	[V]	24	–	–
Alternating current AC	[V]	–	110	230
Power consumption	[W]	6.8	–	–
Switching power	[VA]	–	10.5	10.5
Holding power	[VA]	–	8	7.6
	[Hz]	–	50, 60	50, 60

Materials		
Solenoid valves		Material number
Housing	High-alloy stainless steel	1.4305
	Brass	CW614N
Seals	FPM	
Note on materials	Contains PWIS (paint-wetting impairment substances)	
	RoHS-compliant	

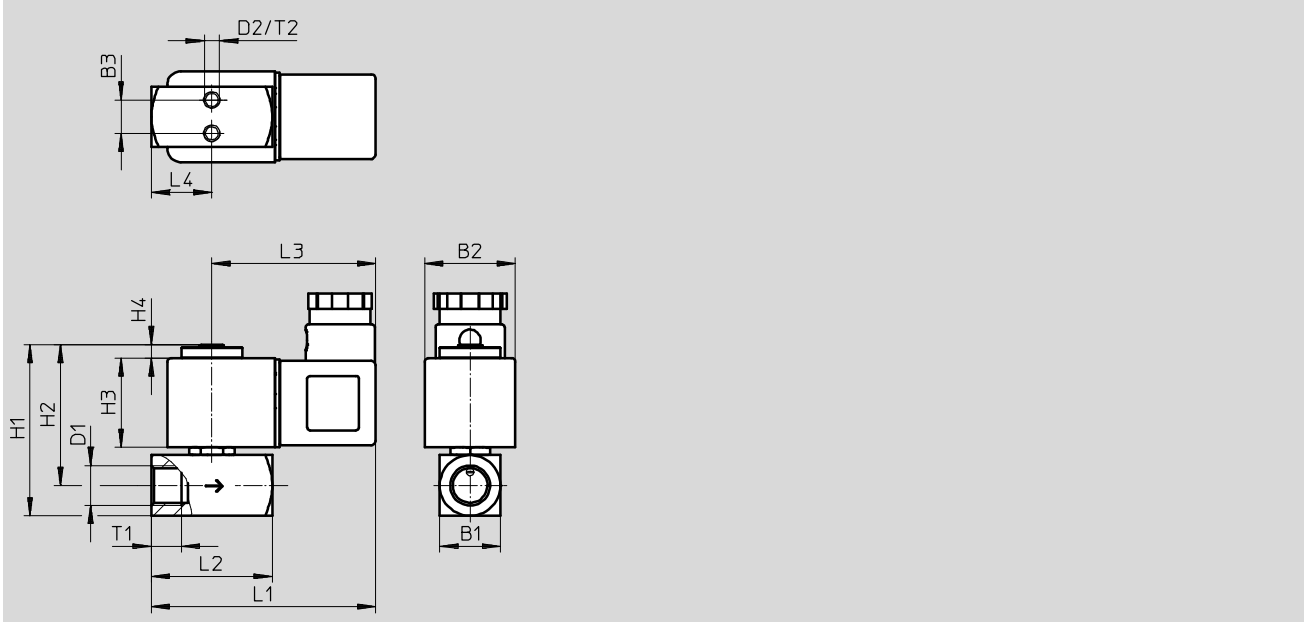
Solenoid valves VZWD, directly actuated

Technical data – Brass housing, nominal pressure PN 50

Dimensions

Download CAD data → www.festo.com

Milled brass housing

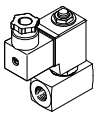


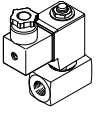
Type	B1	B2	B3	D1	D2	H1	H2	H3	H4	L1	L2	L3	L4	L5	T1	T2
VZWD-...-G1/8-10-...-50	15	30	8	G 1/8	M3	52	44	30	5	70	32	54	16	-	8	4.5
VZWD-...-G1/8-15-...-30																
VZWD-...-G1/8-20-...-15																
VZWD-...-G1/4-10-...-50	20	30	11	G 1/4	M5	57	47	30	5	74	40	54	20	-	10	5.5
VZWD-...-G1/4-15-...-30																
VZWD-...-G1/4-20-...-15																
VZWD-...-G1/4-25-...-8																

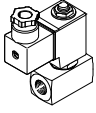
Solenoid valves VZWD, directly actuated

Technical data – Brass housing, nominal pressure PN 50

★ Core product range

Ordering data							
	Process valve connection	Nominal size DN	Medium pressure ¹⁾ [bar]	Product weight [g]	Operating voltage	Brass housing	
						Part No.	Type
	G 1/8	1	0 ... 50	300	24 V DC	★ 1491825	VZWD-L-M22C-M-G18-10-V-1P4-50
		2	0 ... 15	300	24 V DC	★ 1491827	VZWD-L-M22C-M-G18-20-V-1P4-15

Ordering data							
	Process valve connection	Nominal size DN	Medium pressure ¹⁾ [bar]	Product weight [g]	Operating voltage	Brass housing	
						Part No.	Type
	G 1/4	1	0 ... 50	350	24 V DC	1491828	VZWD-L-M22C-M-G14-10-V-1P4-50
					110 V AC	1491906	VZWD-L-M22C-M-G14-10-V-2AP4-50
					230 V AC	1491984	VZWD-L-M22C-M-G14-10-V-3AP4-50
		1.5	0 ... 30	350	24 V DC	1491829	VZWD-L-M22C-M-G14-15-V-1P4-30
					110 V AC	1491907	VZWD-L-M22C-M-G14-15-V-2AP4-30
					230 V AC	1491985	VZWD-L-M22C-M-G14-15-V-3AP4-30
		2	0 ... 15	350	24 V DC	1491830	VZWD-L-M22C-M-G14-20-V-1P4-15
					110 V AC	1491908	VZWD-L-M22C-M-G14-20-V-2AP4-15
					230 V AC	1491986	VZWD-L-M22C-M-G14-20-V-3AP4-15
		2.5	0 ... 8	350	24 V DC	1491831	VZWD-L-M22C-M-G14-25-V-1P4-8
					110 V AC	1491909	VZWD-L-M22C-M-G14-25-V-2AP4-8
					230 V AC	1491987	VZWD-L-M22C-M-G14-25-V-3AP4-8

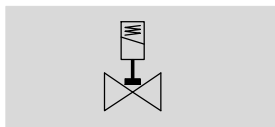
Ordering data							
	Process valve connection	Nominal size DN	Medium pressure ¹⁾ [bar]	Product weight [g]	Operating voltage	Brass housing	
						Part No.	Type
	G 1/8	1	0 ... 50	300	110 V AC	1491903	VZWD-L-M22C-M-G18-10-V-2AP4-50
					230 V AC	1491981	VZWD-L-M22C-M-G18-10-V-3AP4-50
		1.5	0 ... 30	300	24 V DC	1491826	VZWD-L-M22C-M-G18-15-V-1P4-30
					110 V AC	1491904	VZWD-L-M22C-M-G18-15-V-2AP4-30
					230 V AC	1491982	VZWD-L-M22C-M-G18-15-V-3AP4-30
		2	0 ... 15	300	110 V AC	1491905	VZWD-L-M22C-M-G18-20-V-2AP4-15
					230 V AC	1491983	VZWD-L-M22C-M-G18-20-V-3AP4-15


1) The valves are suitable for vacuum with Pabs > 100 mbar. Please ensure the direction of flow corresponds to the direction of the arrow.

Solenoid valves VZWD, directly actuated


Technical data – Brass housing, nominal pressure PN 100

Function



-  - Flow rate Kv
0.06 ... 0.4 m³/h

Nominal size (DN)
1.0 ... 6.0 mm

-  - Connecting thread
G 1/4, G 1/8



General technical data		1.0	1.5	2.0	2.5	3.0	4.0	5.0	6.0
Nominal size (DN)		1.0	1.5	2.0	2.5	3.0	4.0	5.0	6.0
Valve function		2/2-way, single solenoid, closed							
Design		Directly actuated poppet valve							
Type of mounting		In-line installation							
Actuation type		Electric							
Reset method		Mechanical spring							
Direction of flow		Non-reversible							
Type of control		Direct							
Manual override		None							
Mounting position		Any							
Sealing principle		Soft							
Max. viscosity	[mm ² /s]	22							
Protection class		IP65							

Operating and environmental conditions		1.0	1.5	2.0	2.5	3.0	4.0	5.0	6.0
Nominal size (DN)		1.0	1.5	2.0	2.5	3.0	4.0	5.0	6.0
Standard nominal flow rate	[l/min]	60	95	140	170	210	310	375	430
Flow rate Kv	[m ³ /h]	0.06	0.09	0.13	0.16	0.2	0.3	0.35	0.4
Process valve nominal pressure (PN)		100							
Pressure differential	[bar]	0							
Medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]							
		Inert gases							
		Mineral oil							
		Neutral liquids							
		Water							
		Further media upon request							
Ambient temperature	[°C]	-10 ... +35 °C							
Temperature of medium	[°C]	-10 ... +80 °C							
Leak rate to EN 12266-1		A							
Corrosion resistance class CRC ¹⁾		1							

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

Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Solenoid valves VZWD, directly actuated

Technical data – Brass housing, nominal pressure PN 100

Electrical data				
Operating voltage		24 V DC	110 V AC	230 V AC
Electrical connection	Plug to EN 175301-803 type A, square design			
CE marking		–	73/23/EEC	73/23/EEC
Insulation class		H	F	F
Duty cycle	[%]	100		
Permissible voltage fluctuations	[%]	±10		
Switching time on	[ms]	20		
Switching time off	[ms]	18		
Coil characteristics				
Direct current DC	[V]	24	–	–
Alternating current AC	[V]	–	110	230
Power consumption	[W]	11	–	–
Switching power	[VA]	–	19	18
Holding power	[VA]	–	16	15
	[Hz]	–	50, 60	50, 60

Materials		
Solenoid valves		Material number
Housing	High-alloy stainless steel	1.4305
	Brass	CW614N
Seals	FPM	
Note on materials	Contains PWIS (paint-wetting impairment substances)	
	RoHS-compliant	

Solenoid valves VZWD, directly actuated

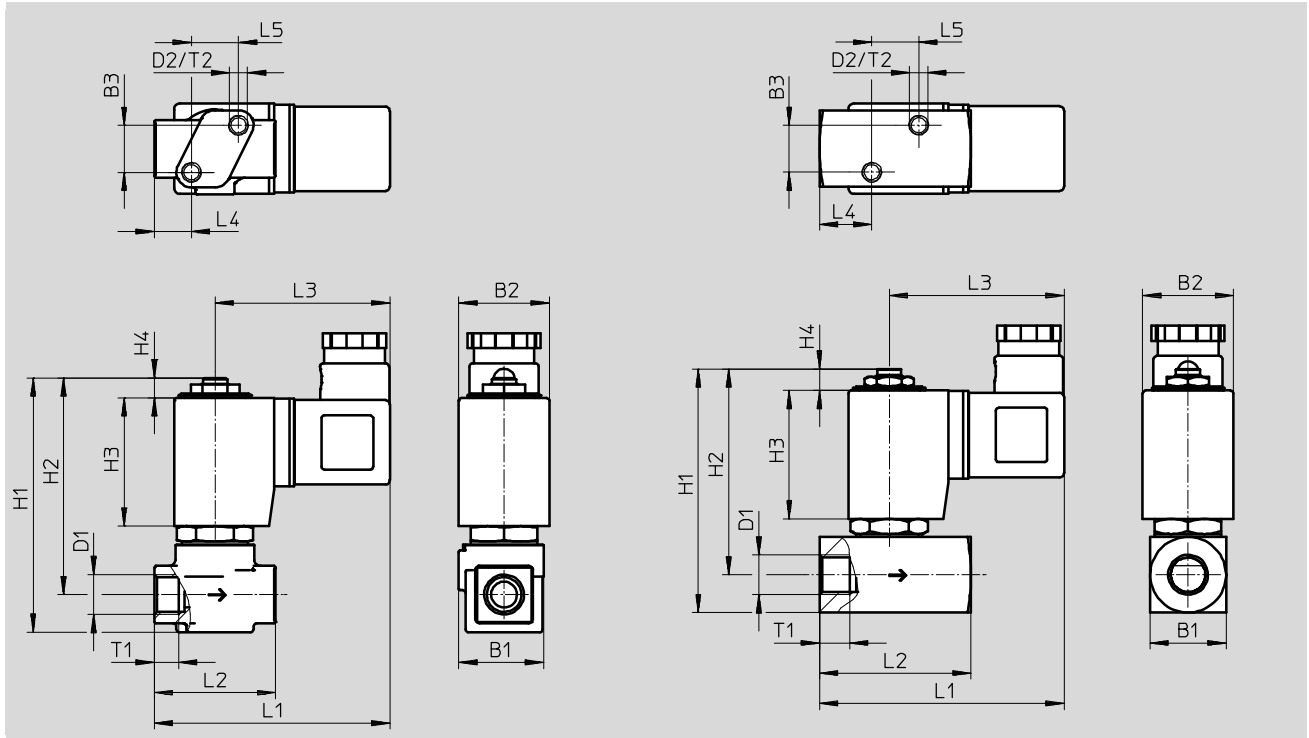
Technical data – Brass housing, nominal pressure PN 100

Dimensions

Download CAD data → www.festo.com

Die-cast brass housing

Milled brass housing

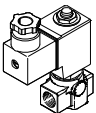


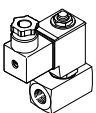
Type	B1	B2	B3	D1	D2	H1	H2	H3	H4	L1	L2	L3	L4	L5	T1	T2
VZWD-...-G1/8-10-...-90	28	30	15.5	G 1/8	M6	84	72	42.5	6.5	78	40	58	12	15.5	8	6
VZWD-...-G1/8-15-...-85																
VZWD-...-G1/8-20-...-40																
VZWD-...-G1/8-25-...-22																
VZWD-...-G1/8-30-...-15																
VZWD-...-G1/8-40-...-8																
VZWD-...-G1/4-10-...-90	28	30	15.5	G 1/4	M6	84	72	42.5	6.5	78	40	58	12	15.5	10	6
VZWD-...-G1/4-15-...-85																
VZWD-...-G1/4-20-...-40																
VZWD-...-G1/4-25-...-22																
VZWD-...-G1/4-30-...-15																
VZWD-...-G1/4-40-...-8																
VZWD-...-G1/8-50-...-5	25	30	15.5	G 1/8	M6	81	68	42.5	7	78	40	58	12	15.5	8	6
VZWD-...-G1/8-60-...-4																
VZWD-...-G1/4-50-...-5																
VZWD-...-G1/4-60-...-4																

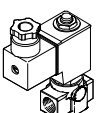
Solenoid valves VZWD, directly actuated

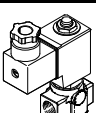
Technical data – Brass housing, nominal pressure PN 100

★ Core product range

Ordering data						
	Process valve connection	Nominal size DN	Medium pressure ¹⁾ [bar]	Product weight [g]	Operating voltage	Brass housing
						Part No. Type
	G 1/4	3	0 ... 15	550	24 V DC	★ 1491844 VZWD-L-M22C-M-G14-30-V-1P4-15
		4	0 ... 8	550	24 V DC	★ 1491845 VZWD-L-M22C-M-G14-40-V-1P4-8

Ordering data						
	Process valve connection	Nominal size DN	Medium pressure ¹⁾ [bar]	Product weight [g]	Operating voltage	Brass housing
						Part No. Type
	G 1/4	6	0 ... 4	600	24 V DC	★ 1491847 VZWD-L-M22C-M-G14-60-V-1P4-4

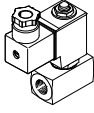
Ordering data						
	Process valve connection	Nominal size DN	Medium pressure ¹⁾ [bar]	Product weight [g]	Operating voltage	Brass housing
						Part No. Type
	G 1/8	3	0 ... 15	550	24 V DC	★ 1491836 VZWD-L-M22C-M-G18-30-V-1P4-15
		4	0 ... 8	550	24 V DC	★ 1491837 VZWD-L-M22C-M-G18-40-V-1P4-8

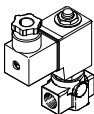
Ordering data						
	Process valve connection	Nominal size DN	Medium pressure ¹⁾ [bar]	Product weight [g]	Operating voltage	Brass housing
						Part No. Type
	G 1/4	1	0 ... 90	550	24 V DC	1491840 VZWD-L-M22C-M-G14-10-V-1P4-90
					110 V AC	1491918 VZWD-L-M22C-M-G14-10-V-2AP4-90
					230 V AC	1491996 VZWD-L-M22C-M-G14-10-V-3AP4-90
		1.5	0 ... 85	550	24 V DC	1491841 VZWD-L-M22C-M-G14-15-V-1P4-85
					110 V AC	1491919 VZWD-L-M22C-M-G14-15-V-2AP4-85
					230 V AC	1491997 VZWD-L-M22C-M-G14-15-V-3AP4-85
		2	0 ... 40	550	24 V DC	1491842 VZWD-L-M22C-M-G14-20-V-1P4-40
					110 V AC	1491920 VZWD-L-M22C-M-G14-20-V-2AP4-40
					230 V AC	1491998 VZWD-L-M22C-M-G14-20-V-3AP4-40
		2.5	0 ... 22	550	24 V DC	1491843 VZWD-L-M22C-M-G14-25-V-1P4-22
					110 V AC	1491921 VZWD-L-M22C-M-G14-25-V-2AP4-22
					230 V AC	1491999 VZWD-L-M22C-M-G14-25-V-3AP4-22
		3	0 ... 15	550	110 V AC	1491922 VZWD-L-M22C-M-G14-30-V-2AP4-15
					230 V AC	1492000 VZWD-L-M22C-M-G14-30-V-3AP4-15
		4	0 ... 8	550	110 V AC	1491923 VZWD-L-M22C-M-G14-40-V-2AP4-8
230 V AC	1492001 VZWD-L-M22C-M-G14-40-V-3AP4-8					

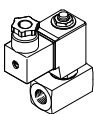
1) The valves are suitable for vacuum with Pabs > 100 mbar. Please ensure the direction of flow corresponds to the direction of the arrow.

Solenoid valves VZWD, directly actuated

Technical data – Brass housing, nominal pressure PN 100

Ordering data							
	Process valve connection	Nominal size DN	Medium pressure ¹⁾ [bar]	Product weight [g]	Operating voltage	Brass housing	
						Part No.	Type
	G 1/4	5	0 ... 5	600	24 V DC	1491846	VZWD-L-M22C-M-G14-50-V-1P4-5
					110 V AC	1491924	VZWD-L-M22C-M-G14-50-V-2AP4-5
					230 V AC	1492002	VZWD-L-M22C-M-G14-50-V-3AP4-5
		6	0 ... 4	600	110 V AC	1491925	VZWD-L-M22C-M-G14-60-V-2AP4-4
					230 V AC	1492003	VZWD-L-M22C-M-G14-60-V-3AP4-4

Ordering data							
	Process valve connection	Nominal size DN	Medium pressure ¹⁾ [bar]	Product weight [g]	Operating voltage	Brass housing	
						Part No.	Type
	G 1/8	1	0 ... 90	550	24 V DC	1491832	VZWD-L-M22C-M-G18-10-V-1P4-90
					110 V AC	1491910	VZWD-L-M22C-M-G18-10-V-2AP4-90
					230 V AC	1491988	VZWD-L-M22C-M-G18-10-V-3AP4-90
		1.5	0 ... 85	550	24 V DC	1491833	VZWD-L-M22C-M-G18-15-V-1P4-85
					110 V AC	1491911	VZWD-L-M22C-M-G18-15-V-2AP4-85
					230 V AC	1491989	VZWD-L-M22C-M-G18-15-V-3AP4-85
		2	0 ... 40	550	24 V DC	1491834	VZWD-L-M22C-M-G18-20-V-1P4-40
					110 V AC	1491912	VZWD-L-M22C-M-G18-20-V-2AP4-40
					230 V AC	1491990	VZWD-L-M22C-M-G18-20-V-3AP4-40
		2.5	0 ... 22	550	24 V DC	1491835	VZWD-L-M22C-M-G18-25-V-1P4-22
					110 V AC	1491913	VZWD-L-M22C-M-G18-25-V-2AP4-22
					230 V AC	1491991	VZWD-L-M22C-M-G18-25-V-3AP4-22
		3	0 ... 15	550	110 V AC	1491914	VZWD-L-M22C-M-G18-30-V-2AP4-15
					230 V AC	1491992	VZWD-L-M22C-M-G18-30-V-3AP4-15
		4	0 ... 8	550	110 V AC	1491915	VZWD-L-M22C-M-G18-40-V-2AP4-8
					230 V AC	1491993	VZWD-L-M22C-M-G18-40-V-3AP4-8

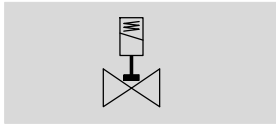
Ordering data							
	Process valve connection	Nominal size DN	Medium pressure ¹⁾ [bar]	Product weight [g]	Operating voltage	Brass housing	
						Part No.	Type
	G 1/8	5	0 ... 5	600	24 V DC	1491838	VZWD-L-M22C-M-G18-50-V-1P4-5
					110 V AC	1491916	VZWD-L-M22C-M-G18-50-V-2AP4-5
					230 V AC	1491994	VZWD-L-M22C-M-G18-50-V-3AP4-5
		6	0 ... 4	600	24 V DC	1491839	VZWD-L-M22C-M-G18-60-V-1P4-4
					110 V AC	1491917	VZWD-L-M22C-M-G18-60-V-2AP4-4
					230 V AC	1491995	VZWD-L-M22C-M-G18-60-V-3AP4-4

1) The valves are suitable for vacuum with Pabs > 100 mbar. Please ensure the direction of flow corresponds to the direction of the arrow.

Solenoid valves VZWD, directly actuated

Technical data – Stainless steel housing, nominal pressure PN 100

Function



- - Flow rate Kv
0.06 ... 0.4 m³/h



- - Connecting thread
G 1/4, G 1/8

General technical data

Nominal size (DN)	1.0	1.5	2.0	2.5	3.0	4.0	5.0	6.0
Valve function	2/2-way, single solenoid, closed							
Design	Directly actuated poppet valve							
Type of mounting	In-line installation							
Actuation type	Electric							
Reset method	Mechanical spring							
Type of control	Direct							
Manual override	None							
Mounting position	Any							
Sealing principle	Soft							
Direction of flow	Non-reversible							
Max. viscosity [mm ² /s]	22							
Protection class	IP65							

Operating and environmental conditions

Nominal size (DN)	1.0	1.5	2.0	2.5	3.0	4.0	5.0	6.0
Standard nominal flow rate [l/min]	60	95	140	170	210	310	375	430
Flow rate Kv [m ³ /h]	0.06	0.09	0.13	0.16	0.2	0.3	0.35	0.4
Process valve nominal pressure (PN)	100							
Medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]							
	Inert gases							
	Mineral oil							
	Neutral liquids							
	Water							
	Further media upon request							
Pressure differential [bar]	0							
Ambient temperature [°C]	-10 ... +35 °C							
Temperature of medium [°C]	-10 ... +80 °C							
Leak rate to EN 12266-1	A							
Corrosion resistance class CRC ¹⁾	3							

1) Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Solenoid valves VZWD, directly actuated

Technical data – Stainless steel housing, nominal pressure PN 100

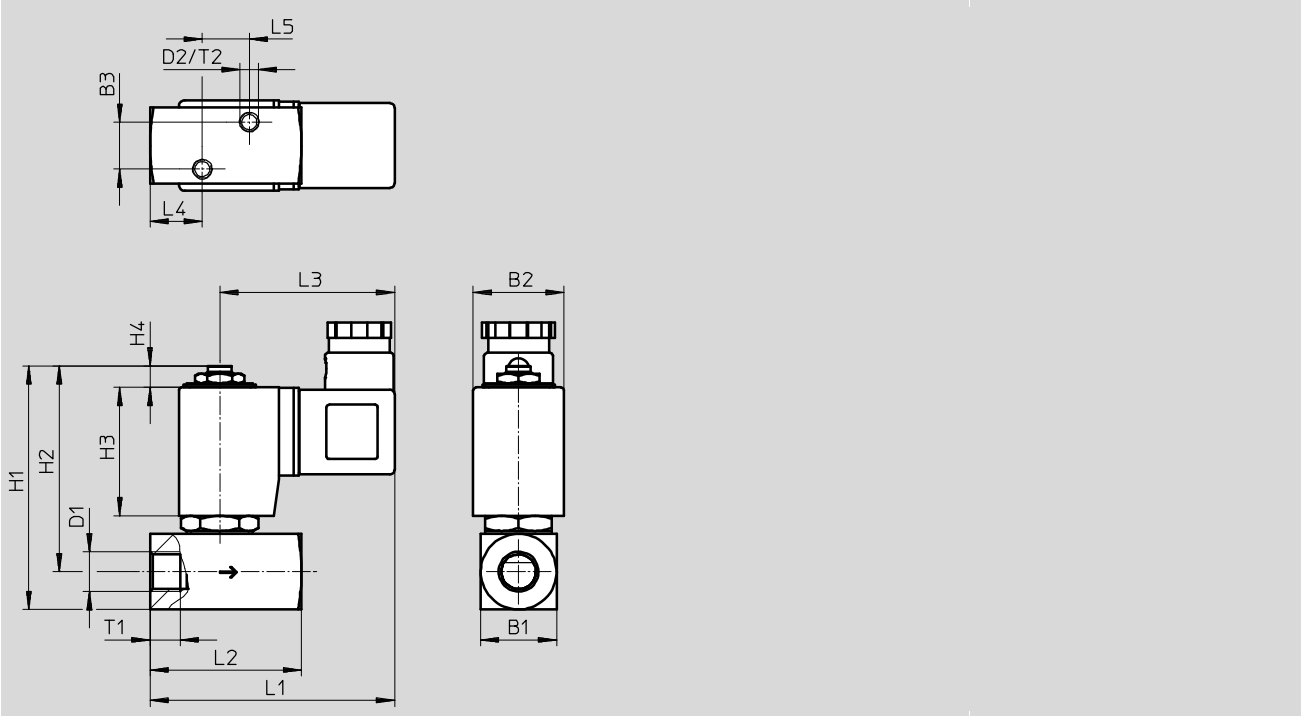
Electrical data			
Operating voltage		24 V DC	110 V AC 230 V AC
Electrical connection	Plug to EN 175301-803 type A, square design		
CE marking		–	73/23/EEC 73/23/EEC
Insulation class		H	F F
Duty cycle	[%]	100	
Permissible voltage fluctuations	[%]	±10	
Switching time on	[ms]	20	
Switching time off	[ms]	18	
Coil characteristics			
Direct current DC	[V]	24	– –
Alternating current AC	[V]	–	110 230
Power consumption	VACS-HOP [W]	6.8	– –
solenoid coil type	VACS-H1P [W]	11	– –
Switching power	VACS-HOP [VA]	–	10.5 10.5
solenoid coil type	VACS-H1P [VA]	–	19 18
Holding power	VACS-HOP [VA]	–	8 7.6
solenoid coil type	VACS-H1P [VA]	–	16 15
	[Hz]	–	50, 60 50, 60
Materials			
Solenoid valves			Material number
Housing	High-alloy stainless steel		1.4305
Seals	FPM		
Note on materials	Contains PWIS (paint-wetting impairment substances)		
	RoHS-compliant		

Solenoid valves VZWD, directly actuated

Technical data – Stainless steel housing, nominal pressure PN 100

Dimensions

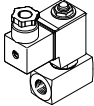
Download CAD data → www.festo.com



Type	B1	B2	B3	D1	D2	H1	H2	H3	H4	L1	L2	L3	L4	L5	T1	T2
VZWD-...-G1/8-50-...-5	25	30	15.5	G 1/8	M6	81	68	42.5	7	78	40	58	12	15.5	8	6
VZWD-...-G1/8-60-...-4	25	30	15.5	G 1/4	M6	81	68	42.5	7	85	50	58	17	15.5	10	6
VZWD-...-G1/4-50-...-5	25	30	15.5	G 1/4	M6	81	68	42.5	7	85	50	58	17	15.5	10	6
VZWD-...-G1/4-60-...-4	25	30	15.5	G 1/4	M6	81	68	42.5	7	85	50	58	17	15.5	10	6

Solenoid valves VZWD, directly actuated

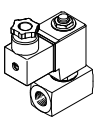
Technical data – Stainless steel housing, nominal pressure PN 100

Ordering data – Solenoid valve VZWD							
	Process valve connection	Nominal size DN	Medium pressure ¹⁾ [bar]	Product weight [g]	Operating voltage	Stainless steel casting housing	
						Part No.	Type
	G 1/4	1	0 ... 90	650	24 V DC	1491856	VZWD-L-M22C-M-G14-10-V-1P4-90-R1
					110 V AC	1491934	VZWD-L-M22C-M-G14-10-V-2AP4-90-R1
					230 V AC	1492012	VZWD-L-M22C-M-G14-10-V-3AP4-90-R1
		1.5	0 ... 85	650	24 V DC	1491857	VZWD-L-M22C-M-G14-10-V-1P4-90-R1
					110 V AC	1491935	VZWD-L-M22C-M-G14-15-V-2AP4-85-R1
					230 V AC	1492013	VZWD-L-M22C-M-G14-15-V-3AP4-85-R1
		2	0 ... 40	650	24 V DC	1491858	VZWD-L-M22C-M-G14-20-V-1P4-40-R1
					110 V AC	1491936	VZWD-L-M22C-M-G14-20-V-2AP4-40-R1
					230 V AC	1492014	VZWD-L-M22C-M-G14-20-V-3AP4-40-R1
		2.5	0 ... 22	650	24 V DC	1491859	VZWD-L-M22C-M-G14-25-V-1P4-22-R1
					110 V AC	1491937	VZWD-L-M22C-M-G14-25-V-2AP4-22-R1
					230 V AC	1492015	VZWD-L-M22C-M-G14-25-V-3AP4-22-R1
		3	0 ... 15	650	24 V DC	1491860	VZWD-L-M22C-M-G14-30-V-1P4-15-R1
					110 V AC	1491938	VZWD-L-M22C-M-G14-30-V-2AP4-15-R1
					230 V AC	1492016	VZWD-L-M22C-M-G14-30-V-3AP4-15-R1
		4	0 ... 8	650	24 V DC	1491861	VZWD-L-M22C-M-G14-40-V-1P4-8-R1
					110 V AC	1491939	VZWD-L-M22C-M-G14-40-V-2AP4-8-R1
					230 V AC	1492017	VZWD-L-M22C-M-G14-40-V-3AP4-8-R1
5	0 ... 5	650	24 V DC	1491862	VZWD-L-M22C-M-G14-50-V-1P4-5-R1		
			110 V AC	1491940	VZWD-L-M22C-M-G14-50-V-2AP4-5-R1		
			230 V AC	1492018	VZWD-L-M22C-M-G14-50-V-3AP4-5-R1		
6	0 ... 4	650	24 V DC	1491863	VZWD-L-M22C-M-G14-60-V-1P4-4-R1		
			110 V AC	1491941	VZWD-L-M22C-M-G14-60-V-2AP4-4-R1		
			230 V AC	1492019	VZWD-L-M22C-M-G14-60-V-3AP4-4-R1		

1) The valves are suitable for vacuum with Pabs > 100 mbar. Please ensure the direction of flow corresponds to the direction of the arrow.

Solenoid valves VZWD, directly actuated

Technical data – Stainless steel housing, nominal pressure PN 100

Ordering data – Solenoid valve VZWD							
Process valve connection	Nominal size DN	Medium pressure ¹⁾ [bar]	Product weight [g]	Operating voltage	Stainless steel casting housing		
					Part No.	Type	
	G 1/8	1	0 ... 90	500	24 V DC	1491848	VZWD-L-M22C-M-G18-10-V-1P4-90-R1
					110 V AC	1491926	VZWD-L-M22C-M-G18-10-V-2AP4-90-R1
					230 V AC	1492004	VZWD-L-M22C-M-G18-10-V-3AP4-90-R1
		1.5	0 ... 85	500	24 V DC	1491849	VZWD-L-M22C-M-G18-15-V-1P4-85-R1
					110 V AC	1491927	VZWD-L-M22C-M-G18-15-V-2AP4-85-R1
					230 V AC	1492005	VZWD-L-M22C-M-G18-15-V-3AP4-85-R1
		2	0 ... 40	500	24 V DC	1491850	VZWD-L-M22C-M-G18-20-V-1P4-40-R1
					110 V AC	1491928	VZWD-L-M22C-M-G18-20-V-2AP4-40-R1
					230 V AC	1492006	VZWD-L-M22C-M-G18-20-V-3AP4-40-R1
	2.5	0 ... 22	500	24 V DC	1491851	VZWD-L-M22C-M-G18-25-V-1P4-22-R1	
				110 V AC	1491929	VZWD-L-M22C-M-G18-25-V-2AP4-22-R1	
				230 V AC	1492007	VZWD-L-M22C-M-G18-25-V-3AP4-22-R1	
	3	0 ... 15	500	24 V DC	1491852	VZWD-L-M22C-M-G18-30-V-1P4-15-R1	
				110 V AC	1491930	VZWD-L-M22C-M-G18-30-V-2AP4-15-R1	
				230 V AC	1492008	VZWD-L-M22C-M-G18-30-V-3AP4-15-R1	
	4	0 ... 8	500	24 V DC	1491853	VZWD-L-M22C-M-G18-40-V-1P4-8-R1	
				110 V AC	1491931	VZWD-L-M22C-M-G18-40-V-2AP4-8-R1	
				230 V AC	1492009	VZWD-L-M22C-M-G18-40-V-3AP4-8-R1	
	5	0 ... 5	500	24 V DC	1491854	VZWD-L-M22C-M-G18-50-V-1P4-5-R1	
				110 V AC	1491932	VZWD-L-M22C-M-G18-50-V-2AP4-5-R1	
				230 V AC	1492010	VZWD-L-M22C-M-G18-50-V-3AP4-5-R1	
	6	0 ... 4	500	24 V DC	1491855	VZWD-L-M22C-M-G18-60-V-1P4-4-R1	
				110 V AC	1491933	VZWD-L-M22C-M-G18-60-V-2AP4-4-R1	
				230 V AC	1492011	VZWD-L-M22C-M-G18-60-V-3AP4-4-R1	

1) The valves are suitable for vacuum with Pabs > 100 mbar. Please ensure the direction of flow corresponds to the direction of the arrow.

Solenoid valves, force pilot operated

VZWF



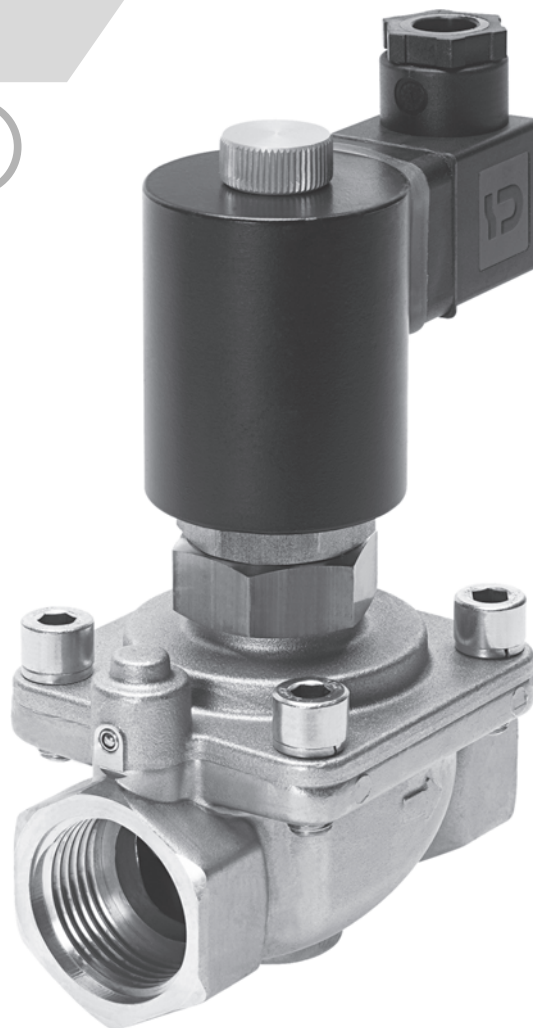
Overview, configuration and ordering
→ www.festo.com/catalogue/vzwf



Additional information, support and user documentation
→ www.festo.com/sp/vzwf



Quick ordering of basic designs
→ page 710



- + Connection 1/4", 3/8", 1/2", 3/4", 1", 1 1/4", 1 1/2", 2"
- + G thread
- + Operating pressure 0 ... 10 bar
- + Electrical actuation
- + Voltage 24 V DC, 110 V AC, 230 V AC
- + 2/2-way diaphragm valve (NC), force pilot operated

- + Suitable for closed applications such as cooling or filling systems
- + Suitable for vacuum
- + Sealing material NBR, EPDM, FKM

Solenoid valves VZWF, force pilot operated



Key features and overview

Function

Normally closed solenoid valve with diaphragm and forced lifting. When the solenoid is energised, the differential pressure from the secondary side of the diaphragm is reduced via the servo hole. The effective differential pressure lifts

the diaphragm away from the valve seat. If there is no differential pressure, the diaphragm is lifted directly by the solenoid. The valve opens and closes without a differential pressure between the inlet and outlet.

General

-  - Connecting thread G1/4 ... G2
-  - Flow rate Kv 1.8 ... 28 m³/h

Application

- Suitable for closed applications such as cooling or filling systems
- Vacuum
- Liquid gas
- Bottling systems

Design

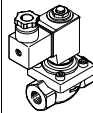
- Diaphragm valves
- Forced lifting of the valve diaphragm
- 2/2-way valve, normally closed

Advantages

- Choice of sealing materials for different fields of applications
- Medium pressure 0 bar or higher

-  - Note

The valves are suitable for vacuum with Pabs > 100 mbar. Please ensure the direction of flow corresponds to the direction of the arrow.

Version	Type	Process valve connection	Nominal size (DN)	Process valve nominal pressure (PN)	→ Page/Internet
	VZWF-...	G1/4	13.5	40	708
		G3/8	13.5		
		G1/2	13.5		
		G3/4	27.5		
		G1	27.5		
	VZWF-...	G1 1/4	40	40	712
		G1 1/2	40		
		G2	50		

Solenoid-actuated media valves

Solenoid valves VZWF, force pilot operated

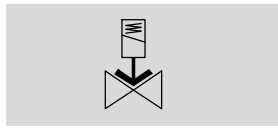
Type codes


		VZWF	-	B	-	L	-	M22C	-	G14	-	135	-	V	-	2AP4	-	10	-	R1	
Type		VZWF																			
		Solenoid valve, force pilot operated																			
Product version																					
		-	Standard																		
		B	Optimised function																		
Type of directional control valve																					
		L	In-line valve																		
Valve function																					
		M22C	2/2-way valve, normally closed																		
Process valve connection																					
		G14	Thread G1/4																		
		G38	Thread G3/8																		
		G12	Thread G1/2																		
		G34	Thread G3/4																		
		G1	Thread G1																		
		G114	Thread G1 1/4																		
		G112	Thread G1 1/2																		
		G2	Thread G2																		
Nominal size (DN)																					
		135	13.5 mm																		
		275	27.5 mm																		
		400	40 mm																		
		500	50 mm																		
Sealing material																					
		-	Standard (NBR)																		
		E	EPDM																		
		V	FPM																		
Nominal operating voltage																					
		1	24 V DC																		
		2A	110 V AC/50-60 Hz																		
		3A	230 V AC/50-60 Hz																		
Electrical connection																					
		P4	Plug socket, 3-pin																		
Medium pressure																					
		6	Max. 6 bar																		
		10	Max. 10 bar																		
Corrosion protection																					
		-	Standard (brass)																		
		R1	Stainless steel																		


Solenoid valves VZWF, force pilot operated

Technical data – Connecting thread G1/4 ... G1

Function



-  - Flow rate Kv
1.8 ... 11 m³/h

-  - Connecting thread
G1/4 ... G1



General technical data		G1/4	G3/8	G1/2	G3/4	G1
Process valve connection		G1/4	G3/8	G1/2	G3/4	G1
Nominal size (DN)		13.5	13.5	13.5	27.5	27.5
Valve function		2/2-way, single solenoid, closed				
Design		Diaphragm valve, force pilot operated				
Type of mounting		In-line installation				
Actuation type		Electric				
Manual override		None				
Mounting position		Solenoid vertical				
Sealing principle		Soft				
Direction of flow		Non-reversible				
Max. viscosity	[mm ² /s]	22				
Protection class		IP 65				
Product weight	[g]	1000			1500	

Solenoid valves VZWF, force pilot operated

Technical data – Connecting thread G1/4 ... G1

Operating and environmental conditions		G1/4	G3/8	G1/2	G3/4	G1
Process valve connection						
Switching time on	[ms]	130			275	
Switching time off	[ms]	180			290	
Standard nominal flow rate	[l/min]	1920	2350	2660	8020	11750
Flow rate	[m ³ /h]	1.8	2.2	2.5	7.5	11
Process valve nominal pressure (PN)		40				
Differential pressure	[bar]	0				
Medium pressure ²⁾	[bar]	0 ... 10			0 ... 6	
Medium		Compressed air in accordance with ISO 8573-1:2010 [7:-:-]				
		Inert gases				
		Mineral oil				
		Water				
		Neutral liquids				
		Further media upon request				
Ambient temperature	[°C]	-10 ... +35 °C				
Temperature of medium	[°C]	-10 ... +80 °C				
Leak rate to EN 12266-1		A				
Corrosion resistance class		3				
CRC ¹⁾ Stainless steel						

- 1) Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.
- 2) The valves are suitable for vacuum with Pabs > 100 mbar. Please ensure the direction of flow corresponds to the direction of the arrow.

Materials		Material number
Solenoid valves		
Housing	Brass casting	CW617N
	Stainless steel casting	1.4581
Screws	High-alloy stainless steel	1.4301
Seals	NBR	-
	FPM	-
	EPDM	-
Note on materials	Contains PWIS (paint-wetting impairment substances)	
	RoHS-compliant	

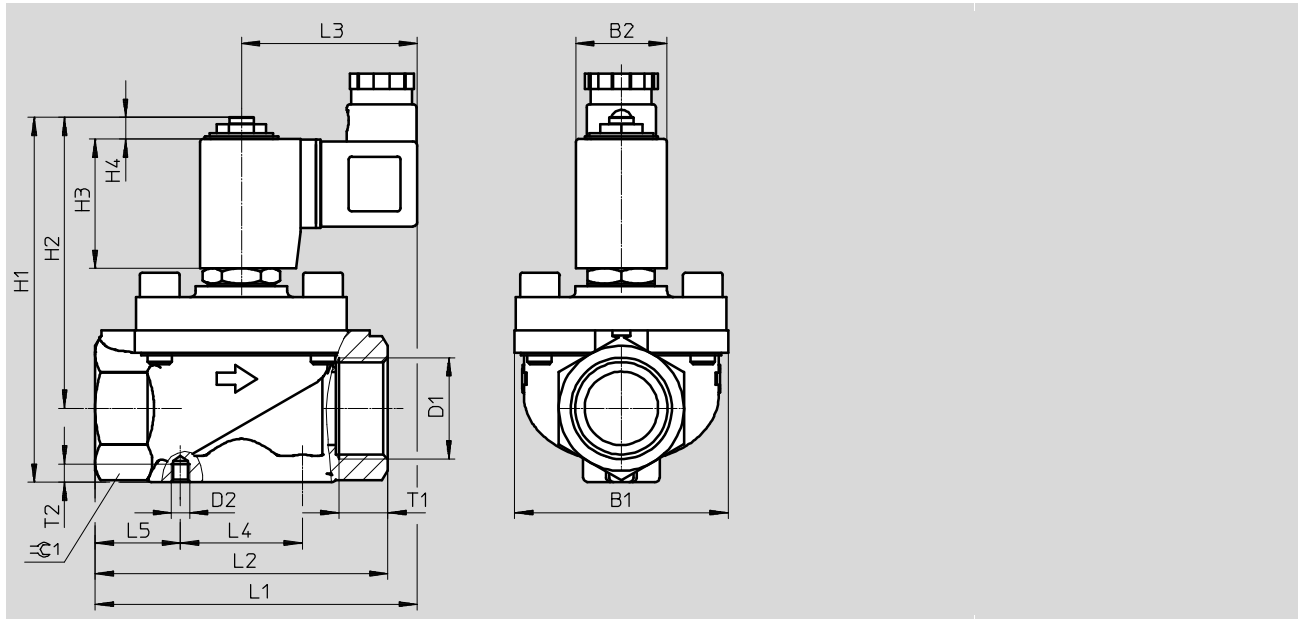
Electrical data		VZWF- ... 1	VZWF- ... 2A	VZWF- ... 3A
Electrical connection		Plug to EN 175301-803 type A, square design		
CE mark as per EU Pressure Equipment Directive		-	Yes	Yes
Coil characteristics				
Direct current DC	[V]	24	-	-
Alternating current AC	[V]	-	110	230
	[W]	11	-	-
Switching power	[VA]	-	19	18
Holding power	[VA]	-	16	15
	[Hz]	-	50, 60	50, 60
Permissible voltage fluctuations	[%]	±10		

Solenoid valves VZWF, force pilot operated

Technical data – Connecting thread G1/4 ... G1

Dimensions

Download CAD data → www.festo.com



	B1	B2	D1	D2	H1	H2	H3	H4	L1	L2	L3	L4	L5	T1	T2	☞
VZWF-B-L-M22C-G14-135-...	48	30	G1/4	M4	101	86	42	7	92	67	58	25	21	12	4	27
VZWF-B-L-M22C-G14-135-...-R1	44	30	G1/4	M4	101	86	42	7	94	67	58	25	21	12	4	27
VZWF-B-L-M22C-G38-135-...	48	30	G3/8	M4	101	86	42	7	92	67	58	25	21	12	4	27
VZWF-B-L-M22C-G38-135-...-R1	44	30	G3/8	M4	101	86	42	7	94	67	58	25	21	12	4	27
VZWF-B-L-M22C-G12-135-...	48	30	G1/2	M4	101	86	42	7	92	67	58	25	21	12	4	27
VZWF-B-L-M22C-G12-135-...-R1	44	30	G1/2	M4	101	86	42	7	94	67	58	25	21	12	4	27
VZWF-B-L-M22C-G34-275-...	70	30	G3/4	M6	120	96	42	7	106	96	58	40	28	16	6	41
VZWF-B-L-M22C-G1-275-...	70	30	G1	M6	120	96	42	7	106	96	58	40	28	16	6	41

★ Core product range

Ordering data – Solenoid valve VZWF

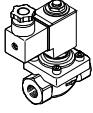
	Process valve connection	Brass housing	
		Part No.	Type
	G1/4	★ 1492110	VZWF-B-L-M22C-G14-135-1P4-10
	G3/8	★ 1492111	VZWF-B-L-M22C-G38-135-1P4-10
	G1/2	★ 1492112	VZWF-B-L-M22C-G12-135-1P4-10
	G3/4	★ 1492113	VZWF-B-L-M22C-G34-275-1P4-6
	G1	★ 1492114	VZWF-B-L-M22C-G1-275-1P4-6

Festo core product range

- ★ Generally ready for shipping ex works in 24 hours
- ☆ Generally ready for shipping ex works in 5 days

Solenoid valves VZWF, force pilot operated

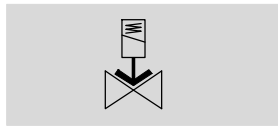
Technical data – Connecting thread G1/4 ... G1

Ordering data – Solenoid valve VZWF		Brass housing		Stainless steel casting housing			
Process valve connection	Part No.	Type	Part No.	Type			
	G1/4	1492126	VZWF-B-L-M22C-G14-135-E-1P4-10	1492118	VZWF-B-L-M22C-G14-135-1P4-10-R1		
		1492142	VZWF-B-L-M22C-G14-135-V-1P4-10	1492134	VZWF-B-L-M22C-G14-135-E-1P4-10-R1		
		1492206	VZWF-B-L-M22C-G14-135-2AP4-10	1492150	VZWF-B-L-M22C-G14-135-V-1P4-10-R1		
		1492222	VZWF-B-L-M22C-G14-135-E-2AP4-10	1492214	VZWF-B-L-M22C-G14-135-2AP4-10-R1		
		1492238	VZWF-B-L-M22C-G14-135-V-2AP4-10	1492230	VZWF-B-L-M22C-G14-135-E-2AP4-10-R1		
		1492302	VZWF-B-L-M22C-G14-135-3AP4-10	1492246	VZWF-B-L-M22C-G14-135-V-2AP4-10-R1		
		1492318	VZWF-B-L-M22C-G14-135-E-3AP4-10	1492310	VZWF-B-L-M22C-G14-135-3AP4-10-R1		
		1492334	VZWF-B-L-M22C-G14-135-V-3AP4-10	1492326	VZWF-B-L-M22C-G14-135-E-3AP4-10-R1		
			1492342	VZWF-B-L-M22C-G14-135-V-3AP4-10-R1			
	G3/8	1492127	VZWF-B-L-M22C-G38-135-E-1P4-10	1492119	VZWF-B-L-M22C-G38-135-1P4-10-R1		
		1492143	VZWF-B-L-M22C-G38-135-V-1P4-10	1492135	VZWF-B-L-M22C-G38-135-E-1P4-10-R1		
		1492207	VZWF-B-L-M22C-G38-135-2AP4-10	1492151	VZWF-B-L-M22C-G38-135-V-1P4-10-R1		
		1492223	VZWF-B-L-M22C-G38-135-E-2AP4-10	1492215	VZWF-B-L-M22C-G38-135-2AP4-10-R1		
		1492239	VZWF-B-L-M22C-G38-135-V-2AP4-10	1492231	VZWF-B-L-M22C-G38-135-E-2AP4-10-R1		
		1492303	VZWF-B-L-M22C-G38-135-3AP4-10	1492247	VZWF-B-L-M22C-G38-135-V-2AP4-10-R1		
		1492319	VZWF-B-L-M22C-G38-135-E-3AP4-10	1492311	VZWF-B-L-M22C-G38-135-3AP4-10-R1		
		1492335	VZWF-B-L-M22C-G38-135-V-3AP4-10	1492327	VZWF-B-L-M22C-G38-135-E-3AP4-10-R1		
				1492343	VZWF-B-L-M22C-G38-135-V-3AP4-10-R1		
		G1/2	1492128	VZWF-B-L-M22C-G12-135-E-1P4-10	1492120	VZWF-B-L-M22C-G12-135-1P4-10-R1	
	1492144		VZWF-B-L-M22C-G12-135-V-1P4-10	1492136	VZWF-B-L-M22C-G12-135-E-1P4-10-R1		
	1492208		VZWF-B-L-M22C-G12-135-2AP4-10	1492152	VZWF-B-L-M22C-G12-135-V-1P4-10-R1		
	1492224		VZWF-B-L-M22C-G12-135-E-2AP4-10	1492216	VZWF-B-L-M22C-G12-135-2AP4-10-R1		
	1492240		VZWF-B-L-M22C-G12-135-V-2AP4-10	1492232	VZWF-B-L-M22C-G12-135-E-2AP4-10-R1		
	1492304		VZWF-B-L-M22C-G12-135-3AP4-10	1492248	VZWF-B-L-M22C-G12-135-V-2AP4-10-R1		
	1492320		VZWF-B-L-M22C-G12-135-E-3AP4-10	1492312	VZWF-B-L-M22C-G12-135-3AP4-10-R1		
	1492336		VZWF-B-L-M22C-G12-135-V-3AP4-10	1492328	VZWF-B-L-M22C-G12-135-E-3AP4-10-R1		
			1492344	VZWF-B-L-M22C-G12-135-V-3AP4-10-R1			
	G3/4	1492129	VZWF-B-L-M22C-G34-275-E-1P4-6	1492121	VZWF-B-L-M22C-G34-275-1P4-6-R1		
1492145		VZWF-B-L-M22C-G34-275-V-1P4-6	1492137	VZWF-B-L-M22C-G34-275-E-1P4-6-R1			
1492209		VZWF-B-L-M22C-G34-275-2AP4-6	1492153	VZWF-B-L-M22C-G34-275-V-1P4-6-R1			
1492225		VZWF-B-L-M22C-G34-275-E-2AP4-6	1492217	VZWF-B-L-M22C-G34-275-2AP4-6-R1			
1492241		VZWF-B-L-M22C-G34-275-V-2AP4-6	1492233	VZWF-B-L-M22C-G34-275-E-2AP4-6-R1			
1492305		VZWF-B-L-M22C-G34-275-3AP4-6	1492249	VZWF-B-L-M22C-G34-275-V-2AP4-6-R1			
1492321		VZWF-B-L-M22C-G34-275-E-3AP4-6	1492313	VZWF-B-L-M22C-G34-275-3AP4-6-R1			
1492337		VZWF-B-L-M22C-G34-275-V-3AP4-6	1492329	VZWF-B-L-M22C-G34-275-E-3AP4-6-R1			
		1492345	VZWF-B-L-M22C-G34-275-V-3AP4-6-R1				
G1	1492130	VZWF-B-L-M22C-G1-275-E-1P4-6	1492122	VZWF-B-L-M22C-G1-275-1P4-6-R1			
	1492146	VZWF-B-L-M22C-G1-275-V-1P4-6	1492138	VZWF-B-L-M22C-G1-275-E-1P4-6-R1			
	1492210	VZWF-B-L-M22C-G1-275-2AP4-6	1492154	VZWF-B-L-M22C-G1-275-V-1P4-6-R1			
	1492226	VZWF-B-L-M22C-G1-275-E-2AP4-6	1492218	VZWF-B-L-M22C-G1-275-2AP4-6-R1			
	1492242	VZWF-B-L-M22C-G1-275-V-2AP4-6	1492234	VZWF-B-L-M22C-G1-275-E-2AP4-6-R1			
	1492306	VZWF-B-L-M22C-G1-275-3AP4-6	1492250	VZWF-B-L-M22C-G1-275-V-2AP4-6-R1			
	1492322	VZWF-B-L-M22C-G1-275-E-3AP4-6	1492314	VZWF-B-L-M22C-G1-275-3AP4-6-R1			
	1492338	VZWF-B-L-M22C-G1-275-V-3AP4-6	1492330	VZWF-B-L-M22C-G1-275-E-3AP4-6-R1			
		1492346	VZWF-B-L-M22C-G1-275-V-3AP4-6-R1				

Solenoid valves VZWF, force pilot operated

Technical data – Connecting thread G1 1/4 ... G2

Function



- - Flow rate Kv
20 ... 28 m³/h

- - Connecting thread
G1 1/4 ... G2



General technical data		G1 1/4	G1 1/2	G2
Process valve connection		G1 1/4	G1 1/2	G2
Nominal size (DN)		40	40	50
Valve function		2/2-way, single solenoid, closed		
Design		Diaphragm valve, force pilot operated		
Type of mounting		In-line installation		
Actuation type		Electric		
Manual override		None		
Mounting position		Solenoid vertical		
Sealing principle		Soft		
Direction of flow		Non-reversible		
Max. viscosity	[mm²/s]	22		
Protection class		IP 65		
Product weight	[g]	4500		6500

Solenoid valves VZWF, force pilot operated

Technical data – Connecting thread G1 ¼ ... G2

Operating and environmental conditions		G1 1/4	G1 1/2	G2
Process valve connection		G1 1/4	G1 1/2	G2
Switching time on	[ms]	620		1220
Switching time off	[ms]	1140		2140
Standard nominal flow rate	[l/min]	21370	23500	29900
Flow rate	[m ³ /h]	20	22.5	28
Process valve nominal pressure (PN)		40		
Differential pressure	[bar]	0		
Medium pressure ²⁾	[bar]	0 ... 10		0 ... 6
Medium		Compressed air in accordance with ISO 8573-1:2010 [7:-:-]		
		Inert gases		
		Mineral oil		
		Water		
		Neutral liquids		
		Further media upon request		
Ambient temperature	[°C]	-10 ... +35 °C		
Temperature of medium	[°C]	-10 ... +80 °C		
Leak rate to EN 12266-1		A		
Corrosion resistance class		3		
CRC ¹⁾ Stainless steel				

- 1) Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.
- 2) The valves are suitable for vacuum with Pabs > 100 mbar. Please ensure the direction of flow corresponds to the direction of the arrow.

Materials		Material number
Solenoid valves		
Housing	Brass casting	CW617N
	Stainless steel casting	1.4581
Screws	High-alloy stainless steel	1.4301
Seals	NBR	-
	FPM	-
	EPDM	-
Note on materials	Contains PWIS (paint-wetting impairment substances)	
	RoHS-compliant	

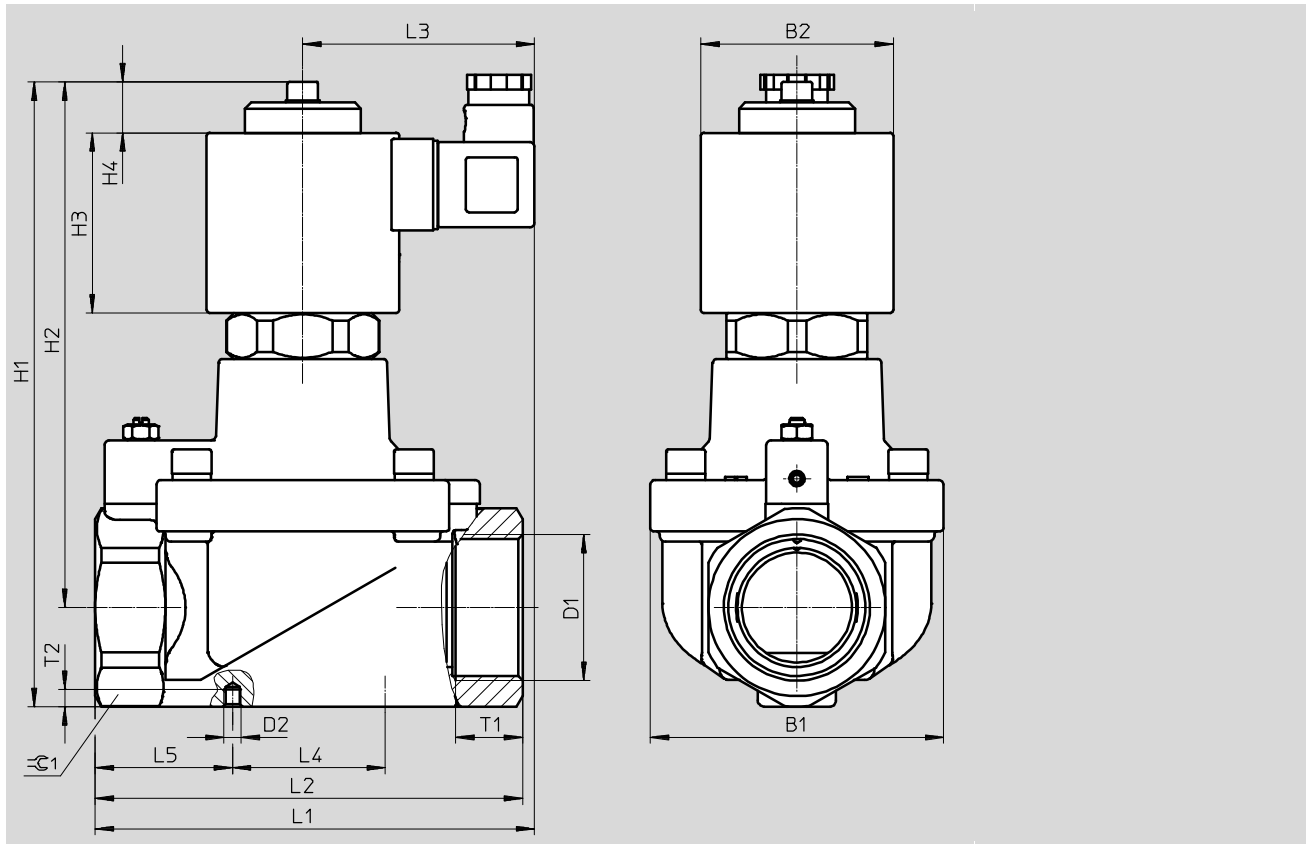
Solenoid valves VZWF, force pilot operated

Technical data – Connecting thread G1 1/4 ... G2

Electrical data		VZWF- ... 1	VZWF- ... 2A	VZWF- ... 3A
Electrical connection		Plug to EN 175301-803 type A, square design		
CE mark as per EU Pressure Equipment Directive		-	Yes	Yes
Coil characteristics				
Direct current DC	[V]	24	-	-
Alternating current AC	[V]	-	110	230
	[W]	30	-	-
Switching power	[VA]	-	30	30
Holding power	[VA]	-	30	30
	[Hz]	-	50, 60	50, 60
Permissible voltage fluctuations	[%]	±10		

Dimensions

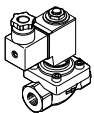
Download CAD data → www.festo.com



	B1	B2	D1	D2	H1	H2	H3	H4	L1	L2	L3	L4	L5	T1	T2	↺
VZWF-L-M22C-G114-400-...	96	63	G1 1/4	-	205	173	59	17	148	140	76	-	-	22	-	58
VZWF-L-M22C-G112-400-...	96	63	G1 1/2	-	205	173	59	17	148	140	76	-	-	22	-	58
VZWF-L-M22C-G2-500-...	112	63	G2	M6	218	179	59	17	159	168	76	60	55	25	6	70

Solenoid valves VZWF, force pilot operated

Technical data – Connecting thread G1 1/4 ... G2

Ordering data – Solenoid valve VZWF		Brass housing		Stainless steel casting housing	
	Process valve connection	Part No.	Type	Part No.	Type
			G1 1/4	1492115	VZWF-L-M22C-G114-400-1P4-10
		1492131	VZWF-L-M22C-G114-400-E-1P4-10	1492139	VZWF-L-M22C-G114-400-E-1P4-10-R1
		1492147	VZWF-L-M22C-G114-400-V-1P4-10	1492155	VZWF-L-M22C-G114-400-V-1P4-10-R1
		1492211	VZWF-L-M22C-G114-400-2AP4-10	1492219	VZWF-L-M22C-G114-400-2AP4-10-R1
		1492227	VZWF-L-M22C-G114-400-E-2AP4-10	1492235	VZWF-L-M22C-G114-400-E-2AP4-10-R1
		1492243	VZWF-L-M22C-G114-400-V-2AP4-10	1492251	VZWF-L-M22C-G114-400-V-2AP4-10-R1
		1492307	VZWF-L-M22C-G114-400-3AP4-10	1492315	VZWF-L-M22C-G114-400-3AP4-10-R1
		1492323	VZWF-L-M22C-G114-400-E-3AP4-10	1492331	VZWF-L-M22C-G114-400-E-3AP4-10-R1
		1492339	VZWF-L-M22C-G114-400-V-3AP4-10	1492347	VZWF-L-M22C-G114-400-V-3AP4-10-R1
	G1 1/4	1492116	VZWF-L-M22C-G112-400-1P4-10	1492124	VZWF-L-M22C-G112-400-1P4-10-R1
		1492132	VZWF-L-M22C-G112-400-E-1P4-10	1492140	VZWF-L-M22C-G112-400-E-1P4-10-R1
		1492148	VZWF-L-M22C-G112-400-V-1P4-10	1492156	VZWF-L-M22C-G112-400-V-1P4-10-R1
		1492212	VZWF-L-M22C-G112-400-2AP4-10	1492220	VZWF-L-M22C-G112-400-2AP4-10-R1
		1492228	VZWF-L-M22C-G112-400-E-2AP4-10	1492236	VZWF-L-M22C-G112-400-E-2AP4-10-R1
		1492244	VZWF-L-M22C-G112-400-V-2AP4-10	1492252	VZWF-L-M22C-G112-400-V-2AP4-10-R1
		1492308	VZWF-L-M22C-G112-400-3AP4-10	1492316	VZWF-L-M22C-G112-400-3AP4-10-R1
		1492324	VZWF-L-M22C-G112-400-E-3AP4-10	1492332	VZWF-L-M22C-G112-400-E-3AP4-10-R1
		1492340	VZWF-L-M22C-G112-400-V-3AP4-10	1492348	VZWF-L-M22C-G112-400-V-3AP4-10-R1
	G2	1492117	VZWF-L-M22C-G2-500-1P4-6	1492125	VZWF-L-M22C-G2-500-1P4-6-R1
		1492133	VZWF-L-M22C-G2-500-E-1P4-6	1492141	VZWF-L-M22C-G2-500-E-1P4-6-R1
		1492149	VZWF-L-M22C-G2-500-V-1P4-6	1492157	VZWF-L-M22C-G2-500-V-1P4-6-R1
		1492213	VZWF-L-M22C-G2-500-2AP4-6	1492221	VZWF-L-M22C-G2-500-2AP4-6-R1
		1492229	VZWF-L-M22C-G2-500-E-2AP4-6	1492237	VZWF-L-M22C-G2-500-E-2AP4-6-R1
		1492245	VZWF-L-M22C-G2-500-V-2AP4-6	1492253	VZWF-L-M22C-G2-500-V-2AP4-6-R1
		1492309	VZWF-L-M22C-G2-500-3AP4-6	1492317	VZWF-L-M22C-G2-500-3AP4-6-R1
		1492325	VZWF-L-M22C-G2-500-E-3AP4-6	1492333	VZWF-L-M22C-G2-500-E-3AP4-6-R1
		1492341	VZWF-L-M22C-G2-500-V-3AP4-6	1492349	VZWF-L-M22C-G2-500-V-3AP4-6-R1

Solenoid valves

VZWM-L



Overview, configuration and ordering
→ www.festo.com/catalogue/vzwm



Additional information, support and user documentation
→ www.festo.com/sp/vzwm



Quick ordering of basic designs
→ page 723



- + Connection G1/4...G2, also available with NPT thread
- + Flow rate KV 1400 ... 31,000 l/min
- + Electrically actuated, piloted, pneumatic spring return

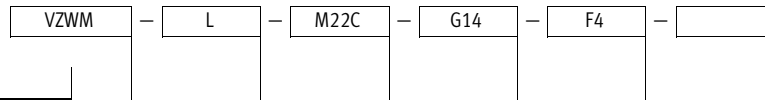
- + For controlling gaseous and liquid media
- + In-line mounting
- + Brass or stainless steel housing

Solenoid valves VZWM-L

Key features and type codes

Brief description

- Indirectly controlled poppet valve with diaphragm control
- Connection, valve G14 ... G2
- Flow rate 1400 ... 31000 l/min
- Available in brass or stainless steel casting
- Varied range of coils



Type	
VZWM	Solenoid valve, process directional control valve

Design	
L	In-line valve

Valve function	
M22C	2/2-way valve, normally closed

Connection, valve	
G14	G 1/4
G38	G 3/8
G12	G 1/2
G34	G 3/4
G1	G 1
G114	G 1 1/4
G112	G 1 1/2
G2	G 2

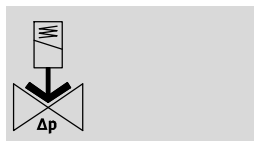
Electrical connection	
F4	With armature tube for solenoid coil MD-2- ... -PA
F5	With armature tube for solenoid coil MH-2- ... -PA


Housing material	
R1	Stainless steel casting
	Brass


Solenoid-actuated media valves

Technical data

Function



-  - Flow rate
1400 ... 31000 l/min

-  - Voltage
24 V DC
110/230 V AC



General technical data		G 1/4	G 3/8	G 1/2	G 3/4	G 1	G 1 1/4	G 1 1/2	G 2	
Connection, valve										
Nominal size DN (housing: brass)	[mm]	13.5	13.5	13.5	27.5	27.5	40	40	50	
Nominal size DN (housing: stainless steel casting)	[mm]	13	13	13	25	25	40	40	50	
Valve function		2/2, single solenoid								
Constructional design		Poppet valve with diaphragm control								
Sealing principle		Soft								
Actuation type		Electrical								
Reset method		Pneumatic spring								
Control type		Piloted								
Direction of flow		Non-reversible								
Exhaust function		No flow control								
Manual override		None								
Type of mounting		In-line installation								
Mounting position		Preferably vertical								
Standard nominal flow rate	[l/min]	1400	2100	2400	10000	11700	24000	26400	31000	
Flow rate Kv	[m ³ /h]	1.6	2	2.4	8.5	10.7	21.3	27.4	39	
C value	[l/sbar]	6	8.8	9.8	39	41	75	82	110	
b value		0.3	0.35	0.37	0.5	0.57	0.6	0.67	0.68	
Differential pressure	[bar]	0.5	0.5	0.5	0.5	0.7	0.7	0.7	0.7	
Materials	Housing	Brass or stainless steel casting								
	Diaphragm	NBR								
	Plunger tube	High-alloy steel								
Note on materials		Contains paint wetting impairment substances								
Max. tightening torque	Connecting thread	[Nm]	35	60	105	200	350	450	540	620
	Cover screw	[Nm]	20	20	20	30	30	30	30	30
	Coil mounting	[Nm]	2	2	2	2	2	2	2	2

Solenoid valves VZWM-L

Technical data

Operating and environmental conditions			G 1/4	G 3/8	G 1/2	G 3/4	G 1	G 1 1/4	G 1 1/2	G 2	
Connection, valve											
Medium			Compressed air in accordance with ISO 8573-1:2010 [7:4:4]								
			Neutral liquids								
			Inert gases								
			Water								
Ambient temperature ¹⁾		[°C]	-10 ... +60								
Medium pressure		Gases	[bar]	0.5 ... 10				0.7 ... 10			
		Fluids	[bar]	0.5 ... 6				0.7 ... 6			
Temperature of medium		Gases	[°C]	-10 ... +60							
		Fluids	[°C]	5 ... 50							
Max. viscosity		[mm ² /s]	22								
CE mark (see declaration of conformity)			To EU Pressure Equipment Directive								
Corrosion resistance class CRC ²⁾		Brass	1								
		Stainless steel casting	3								

1) Note ambient temperature of solenoid coils

2) Corrosion resistance class 1 to Festo standard 940 070

Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

Corrosion resistance class 3 to Festo standard 940 070

Components with heavy corrosion exposure. Externally visible components in direct contact with normal industrial atmosphere or media such as solvents and cleaning agents, where the surface requirement is predominantly functional.

Valve response times			G 1/4	G 3/8	G 1/2	G 3/4	G 1	G 1 1/4	G 1 1/2	G 2	
Connection, valve											
Gases											
Response time		off	[ms]	10	10	10	12	12	20	20	21
		on	[ms]	8	8	8	15	15	26	26	62
Fluids											
Response time		off	[ms]	200	210	220	930	930	1900	2000	2800
		on	[ms]	100	110	110	400	400	1400	1400	2100
Response time, variant R1		off	[ms]	210	190	200	950	950	1900	2000	2800
		on	[ms]	80	110	110	420	300	1400	1400	2100

Electrical data			G 1/4	G 3/8	G 1/2	G 3/4	G 1	G 1 1/4	G 1 1/2	G 2	
Connection, valve											
Electrical connection			With armature tube for solenoid coil MD-2- ... -PA, order separately					With armature tube for solenoid coil MH-2- ... -PA, order separately			
Operating voltage		DC voltage	[V DC]	24							
		AC voltage	[V AC]	110/230 (50 ... 60 Hz)							
Coil characteristics		DC voltage	[W]	6.8					7.9		
		AC voltage	[VA]	Pull: 14.5 Hold: 10.5					14		
Protection class to EN 60529			IP65 (with plug socket)								

Technical data

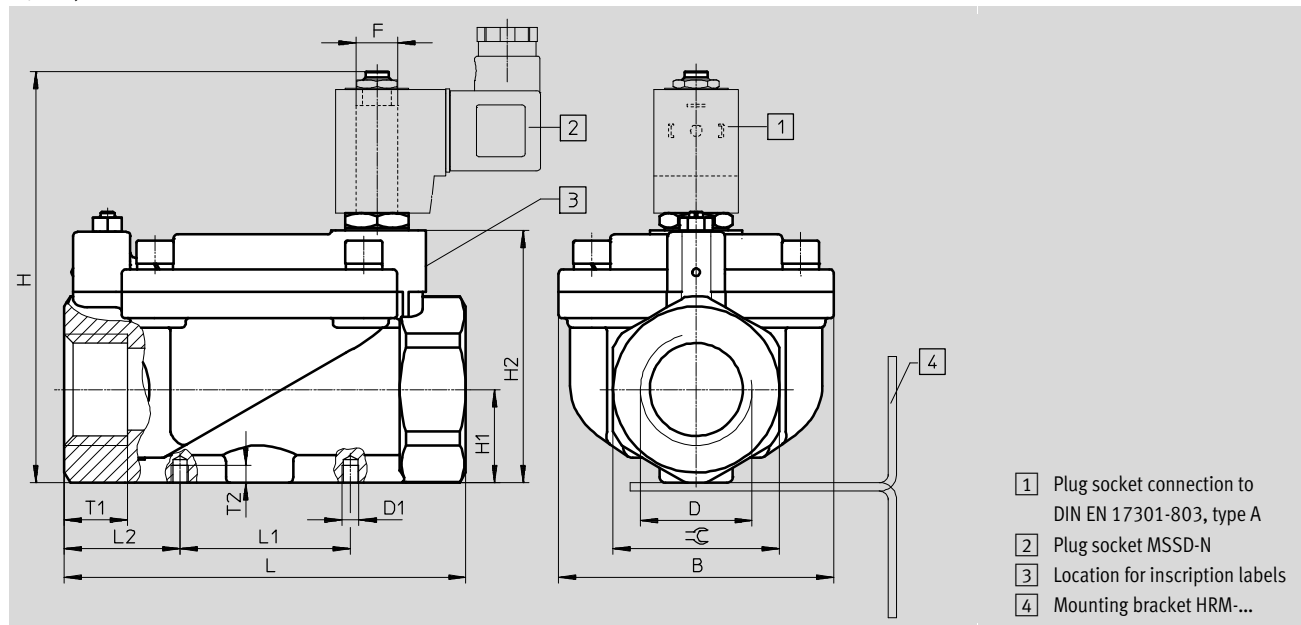
Weights [g]			
Brass housing		Stainless steel casting housing	
VZWM-...-G14-F4	500	VZWM-...-G14-F5-R1	400
VZWM-...-G38-F4	480	VZWM-...-G38-F5-R1	400
VZWM-...-G12-F4	450	VZWM-...-G12-F5-R1	360
VZWM-...-G34-F4	1270	VZWM-...-G34-F5-R1	1200
VZWM-...-G1-F4	1200	VZWM-...-G1-F5-R1	1100
VZWM-...-G114-F5	2850	VZWM-...-G114-F5-R1	2650
VZWM-...-G112-F5	2570	VZWM-...-G112-F5-R1	2400
VZWM-...-G2-F5	3800	VZWM-...-G2-F5-R1	3660

Solenoid valves VZWM-L

Technical data

Dimensions
2/2-way valve

Download CAD data → www.festo.com



- 1 Plug socket connection to DIN EN 17301-803, type A
- 2 Plug socket MSSD-N
- 3 Location for inscription labels
- 4 Mounting bracket HRM-...

Type	B ±1.5	D	D1	H ±2	H1 ±1.5	H2 ±1	L ±2	L1 ±1.5	L2	F	T1	T2 ±0.5	☞
VZWM-...-G14-F4	48	G 1/4	M4	85.5	15	49	67	25	21	F4	12	4	27
VZWM-...-G38-F4	48	G 3/8	M4	85.5	15	49	67	25	21	F4	12	4	27
VZWM-...-G12-F4	48	G 1/2	M4	85	15	49	67	25	21	F4	12	4	27
VZWM-...-G34-F4	70	G 3/4	M6	107	24.2	70.5	96	40	28	F4	16	6	41
VZWM-...-G1-F4	70	G 1	M6	107	24.2	70.5	96	40	28	F4	16	6	41
VZWM-...-G114-F5	96	G 1 1/4	M6	143.5	32.5	88	140	59.5	40.25	F5	22	6	58
VZWM-...-G112-F5	96	G 1 1/2	M6	143.5	32.5	88	140	59.5	40.25	F5	22	6	58
VZWM-...-G2-F5	112	G 2	M6	159	38.5	103.5	168	59.5	54.25	F5	25	6	70
VZWM-...-G14-F5-R1	44	G 1/4	M4	106	15.6	51	67	25	21	F5	-	4	27
VZWM-...-G38-F5-R1	44	G 3/8	M4	106	15.6	51	67	25	21	F5	-	4	27
VZWM-...-G12-F5-R1	44	G 1/2	M4	106	15.6	51	67	25	21	F5	-	4	27
VZWM-...-G34-F5-R1	70	G 3/4	M6	126	24.2	70	96	40	28	F5	-	6	41
VZWM-...-G1-F5-R1	70	G 1	M6	126	24.2	70	96	40	28	F5	-	6	41
VZWM-...-G114-F5-R1	96	G 1 1/4	M6	145	34	89.5	140	59.5	40.25	F5	-	6	58
VZWM-...-G112-F5-R1	96	G 1 1/2	M6	145	34	89.5	140	59.5	40.25	F5	-	6	58
VZWM-...-G2-F5-R1	112	G 2	M6	159	38.5	104	168	59.5	54.25	F5	-	6	70

Solenoid-actuated media valves

09

Technical data

★ Core product range

Ordering data Connection, valve	Brass housing	
	Part No.	Type
G 1/4	★ 546146	VZWM-L-M22C-G14-F4
G 3/8	★ 546147	VZWM-L-M22C-G38-F4
G 1/2	★ 546148	VZWM-L-M22C-G12-F4
G 3/4	★ 546149	VZWM-L-M22C-G34-F4
G 1	★ 546150	VZWM-L-M22C-G1-F4

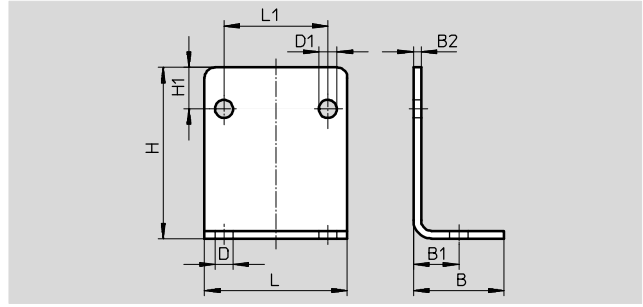
Ordering data Connection, valve	Part No.	Type
Brass housing		
G 1 1/4	546151	VZWM-L-M22C-G114-F5
G 1 1/2	546152	VZWM-L-M22C-G112-F5
G 2	546153	VZWM-L-M22C-G2-F5
Stainless steel casting housing		
G 1/4	546162	VZWM-L-M22C-G14-F5-R1
G 3/8	546163	VZWM-L-M22C-G38-F5-R1
G 1/2	546164	VZWM-L-M22C-G12-F5-R1
G 3/4	546165	VZWM-L-M22C-G34-F5-R1
G 1	546166	VZWM-L-M22C-G1-F5-R1
G 1 1/4	546167	VZWM-L-M22C-G114-F5-R1
G 1 1/2	546168	VZWM-L-M22C-G112-F5-R1
G 2	546169	VZWM-L-M22C-G2-F5-R1

Solenoid valves VZWM-L

Accessories

Mounting bracket HRM

Material:
Galvanised steel



Dimensions and ordering data

B	B1	B2	D Ø	D1 Ø	H	H1	L	L1	Weight [g]	Part No.	Type
25	12.5	2	6	5	37	10	40	25	39	9769	HRM-1
35	17.5	3	7	7	66	16	55	40	130	9770	HRM-2
47	23.5	3	9	7	87	23	75	59.5	246	9771	HRM-3



Solenoid coils MH-2

Type codes

		MH-2	-	24VDC	-	PA
Type						
MH-2	Solenoid coil with lock nut (hex nut) G $\frac{1}{8}$					
Operating voltage						
24VDC	24 V DC					
110VAC	110 V AC					
230VAC	230 V AC					
Electrical connection						
PA	Connection pattern to EN 175301-803, type A					

Solenoid coils MH-2

Technical data

-  Voltage
24 V DC
110, 230 V AC
-  Temperature range
-20 ... +50 °C
- Can be replaced without interrupting the pneumatic circuit
- Connection pattern to EN 175301-803, type A



General technical data

Type of mounting	Via lock nut
Max. tightening torque of fitting [Nm]	2
Mounting position	Any
Product weight [g]	150

Materials

Solenoid coil	Duroplast, copper, steel
Winding	Copper
Note on materials	Contains paint-wetting impairment substances

Electrical data

Electrical connection	Plug pins with connection pattern to EN 175301-803, type A
Min. pickup time [ms]	12
Permissible voltage fluctuations [%]	-10 / +10
Duty cycle [%]	100
Degree of protection to EN 60529	IP65 with plug socket

Characteristic coil data

Operating voltage	24 V DC	110 V AC	230 V AC
Power [W]	7.9	-	-
[VA]	-	14	14
Power factor cos(phi)	-	0.7	0.7
Frequency [Hz]	-	50/60	50/60
Permissible frequency fluctuations [%]	-10 / +10	-10 / +10	-10 / +10

Operating and environmental conditions

Operating voltage	24 V DC	110 V AC	230 V AC
Ambient temperature [°C]	-20 ... 50	-20 ... 50	-
CE mark (see declaration of conformity) ¹⁾	-	To EU Low Voltage Directive	

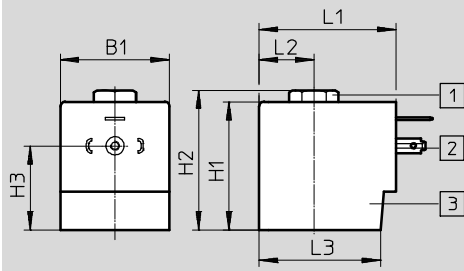
2) Additional information www.festo.com/sp → Certificates.

Technical data

★ Core product range

Dimensions

Download CAD data → www.festo.com



- 1 Lock nut (hex nut) G $\frac{1}{8}$
- 2 Plug pattern to EN 175301-803, type A
- 3 Solenoid coil

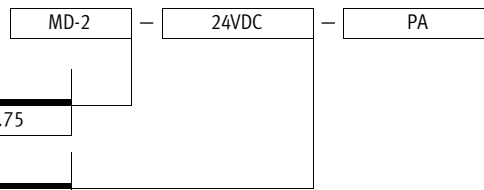
Type	B1	H1	H2	H3	L1	L2	L3
MH-2-...	35.8	42.1	45.9	27.6	45.5	18	39.8

Ordering data

	Description	Part No.	Type
Solenoid coil			
	Without plug socket, connection pattern to EN 175301-803, type A	24 V DC	549906 MH-2-24VDC-PA
		110 V AC	549907 MH-2-110VAC-PA
		230 V AC	549908 MH-2-230VAC-PA
Plug socket			
	3-pin, square design, connection pattern to EN 175301-803, type A	★ 550067	MSSD-N


Solenoid coils MD-2


Type codes



Type	
MD-2	Solenoid coil with knurled nut M8x0.75
Operating voltage	
24VDC	24 V DC
110VAC	110 V AC
230VAC	230 V AC
Electrical connection	
PA	Connection pattern to EN 175301-803, type A

Technical data

-  Voltage
24 V DC
110, 230 V AC

-  Temperature range
-20 ... +50 °C

- Can be replaced without interrupting the pneumatic circuit
- Connection pattern to EN 175301-803, type A



General technical data

Type of mounting	Via knurled nut
Max. tightening torque of fitting [Nm]	0.5
Mounting position	Any
Product weight [g]	110

Materials

Solenoid coil	Duroplast, copper, steel
Winding	Copper

Electrical data

Electrical connection	Plug pins with connection pattern to EN 175301-803, type A
Permissible voltage fluctuations [%]	-10 / +10
Duty cycle [%]	100
Degree of protection to EN 60529	IP65 with plug socket

Characteristic coil data

Operating voltage	24 V DC	110 V AC	230 V AC
Power [W]	6.8	–	–
Pick-up power, 50 Hz [VA]	–	14.5	14.5
Holding power, 50 Hz [VA]	–	10.5	10.5
Power factor cos(phi)	–	0.7	0.7
Frequency [Hz]	–	50/60	50/60
Permissible frequency fluctuations [%]	–	-10 / +10	-10 / +10

Operating and environmental conditions

Operating voltage	24 V DC	110 V AC	230 V AC
Ambient temperature [°C]	-20 ... 50	-20 ... 50	
CE mark (see declaration of conformity) ¹⁾	–	To EU Low Voltage Directive	

1) Additional information www.festo.com/sp → Certificates.

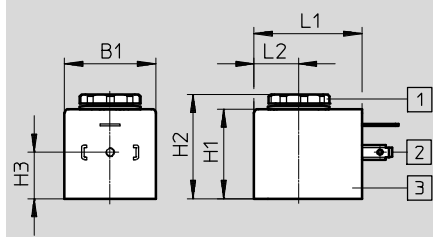
Solenoid coils MD-2

Technical data

★ Core product range

Dimensions



Download CAD data → www.festo.com



- 1 Knurled nut M8x0.75
- 2 Plug pattern to EN 175301-803, type A
- 3 Solenoid coil

Type	B1	H1	H2	H3	L1	L2
MD-2-...	30	29.5	34.3	15.3	35.5	14.7

Ordering data

	Description	Part No.	Type
Solenoid coil			
	Without plug socket, connection pattern to EN 175301-803, type A	24 V DC	★ 549903 MD-2-24VDC-PA
		110 V AC	549904 MD-2-110VAC-PA
		230 V AC	549905 MD-2-230VAC-PA
Plug socket			
	3-pin, square design, connection pattern to EN 175301-803, type A	★ 550067	MSSD-N

Solenoid valves, brass version

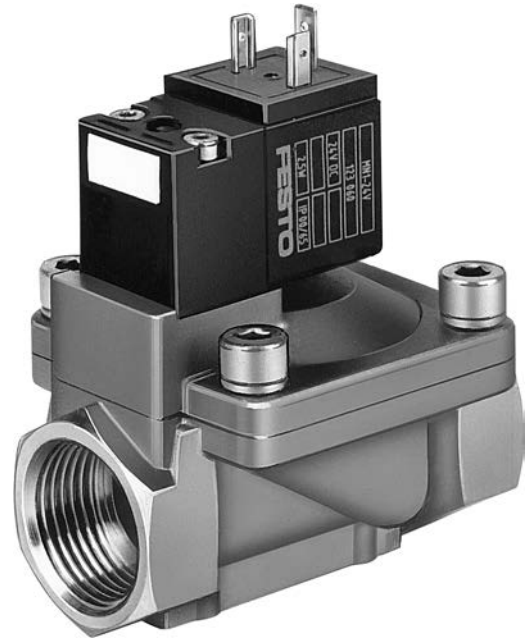
MN1H-MS



Overview, configuration and ordering
→ www.festo.com/catalogue/mn1h



Additional information, support and user documentation
→ www.festo.com/sp/mn1h

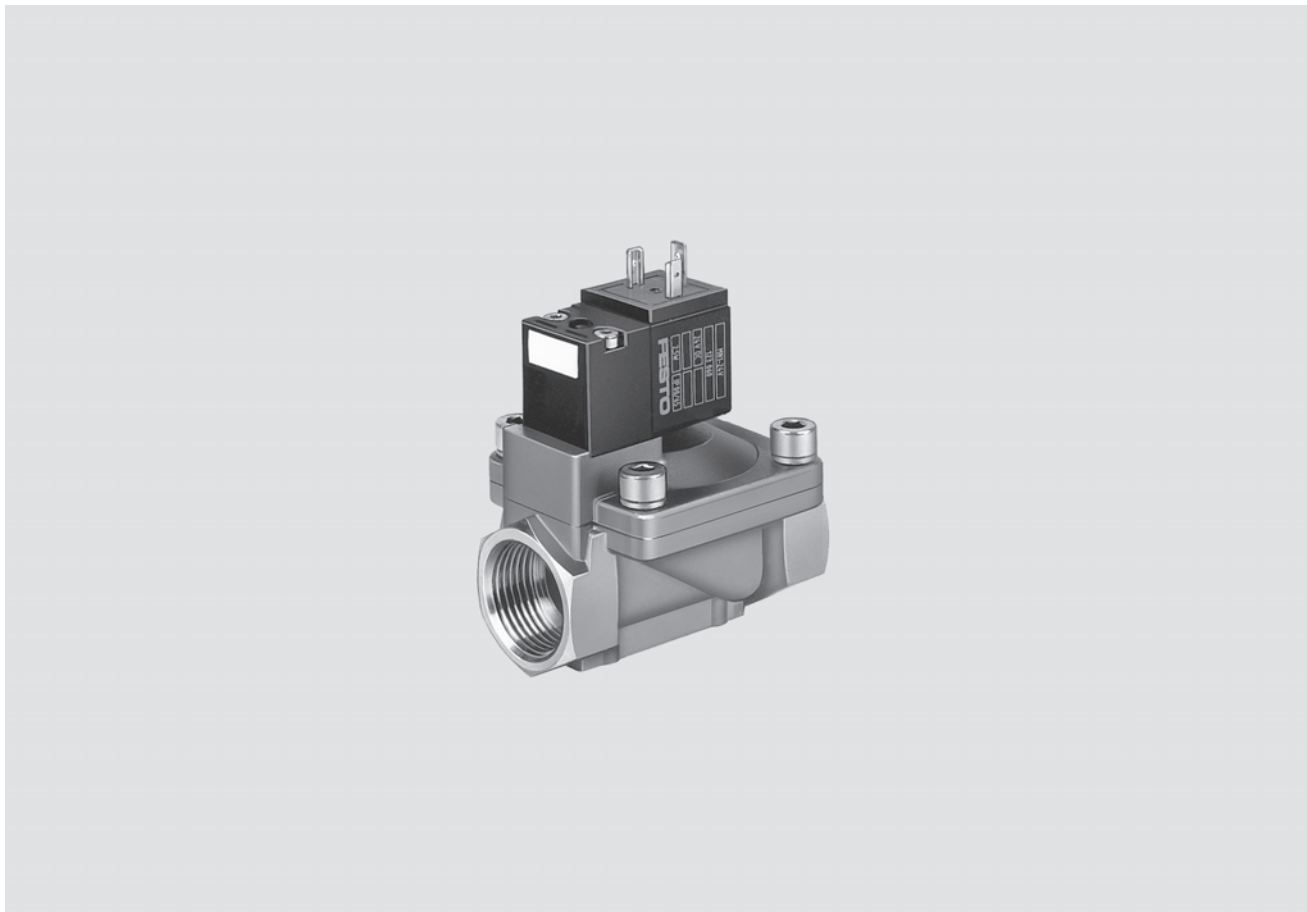


- + Connection G1/4 ... G1 1/2
- + Flow rate 2000 ... 30500 l/min
- + Voltage 24 V DC, 110 ... 230 V AC

- + For controlling gaseous media
- + In-line mounting electrically actuated, piloted, pneumatic spring return
- + Connection via plug/socket

Solenoid valves MN1H-MS, brass design

Key features



Solenoid-actuated media valves

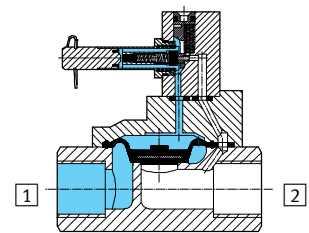
09


Function

When the solenoid is energised, the valve is actuated.

The valve MN1H-2-1½-MS is equipped with adjustable closing cushioning.

- 1 Supply port
- 2 Working or outlet line



-  - Note
 The diaphragm opens briefly when pressure is connected.

Solenoid valves MN1H-MS, brass design

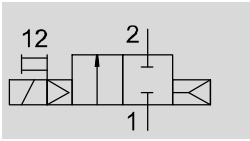
Type codes



		MN1H	-	2	-	1/4	-	MS
Type								
MN1H	Single pilot, for N1 solenoid coil							
Valve function								
2	2/2-way valve							
Connection, valve								
1/4	G 1/4							
3/8	G 3/8							
1/2	G 1/2							
3/4	G 3/4							
1	G 1							
1 1/2	G 1 1/2							
Housing material								
MS	Brass							

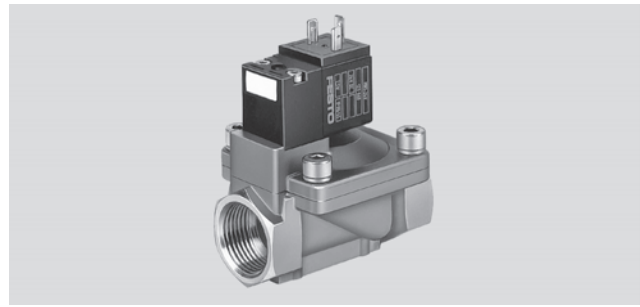
Solenoid valves MN1H-MS, brass design

Technical data

Function



-  Flow rate
2000 ... 30500 l/min
-  Voltage
24 V DC
110, 230 V AC



General technical data

Connection, valve	G 1/4	G 3/8	G 1/2	G 3/4	G 1	G 1 1/2	
Valve function	2/2-way, single pilot						
Constructional design	Diaphragm valve						
Sealing principle	Soft						
Actuation type	Electrical						
Type of reset	Air spring						
Type of pilot control	Piloted						
Direction of flow	Non-reversible						
Exhaust function	No flow control						
Manual override	Non-detenting, detenting via accessory						
Type of mounting	In-line installation						
Mounting position	Any						
Nominal size [mm]	13	13	13	20	25	40	
Standard nominal flow rate [l/min]	2000	2900	3100	10000	11500	30500	
Product weight [g]	450	450	400	1100	1000	2600	
Materials	Housing						
	Diaphragm						
		Brass					
		Nitrile rubber					
Max. tightening torque ¹⁾ [Nm]	35	60	105	200	380	850	

1) Ports 1 and 2

- Note: This product conforms to ISO 1179-1 and to ISO 228-1

Operating and environmental conditions

Medium	Filtered compressed air, lubricated or unlubricated
Note about operating/pilot medium	Lubricated operation possible (subsequently required for further operation)
Medium pressure [bar]	0.5 ... 10
Ambient temperature [°C]	-10 ... +60
Temperature of medium [°C]	-10 ... +60

Valve response times

Connection, valve	On	Off
G 1/4	30	100
G 3/8	30	100
G 1/2	30	100
G 3/4	120	180
G 1	120	180
G 1 1/2	230 ... 440	300 ... 1000

Materials

Solenoid valves		Material number
Housing	Brass	
Screws	High-alloy stainless steel	1.4301

Solenoid valves MN1H-MS, brass design

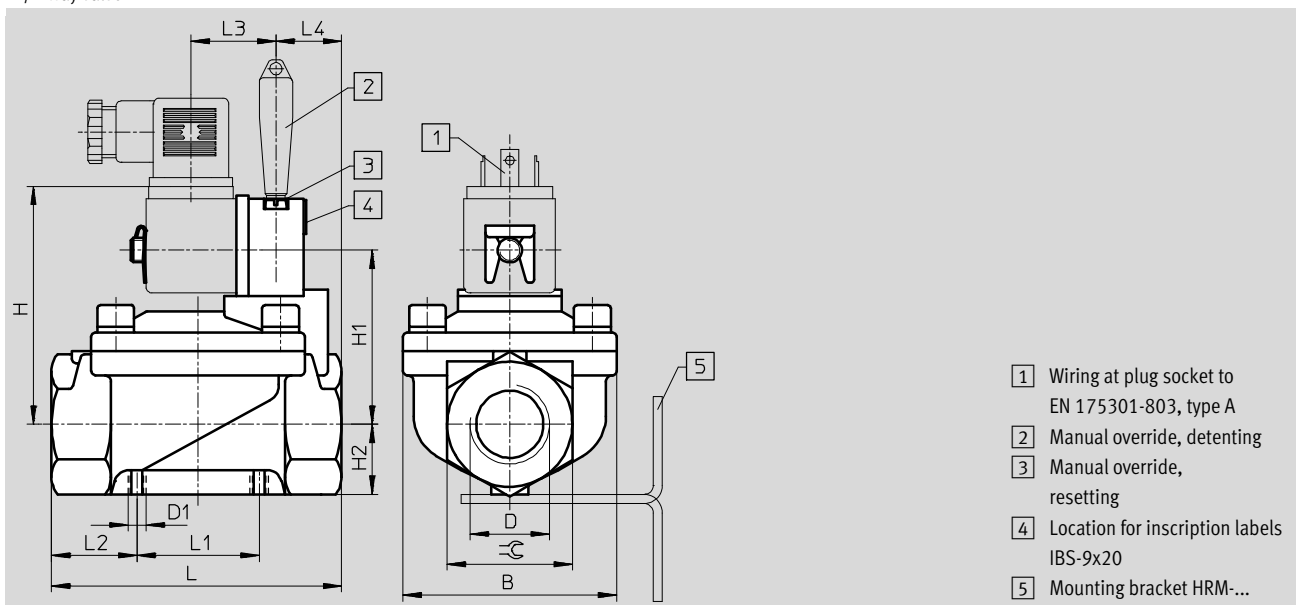
Technical data

Electrical data		
N1 solenoid coil		
Electrical connection	Plug, square design to EN 175301-803, type A	
Operating voltage	D.C. voltage [V DC]	24
	A.C. voltage [V AC]	110/230 (50 ... 60 Hz)
Coil characteristics	D.C. voltage [W]	2.5
	A.C. voltage [VA]	Pull: 5 Hold: 3.7
Protection class to EN 60 529	IP65 (with plug socket)	

Dimensions

2/2-way valve

Download CAD data → www.festo.com



Connection, valve D	B	D1	H	H1	H2	L	L1	L2	L3	L4	⌀
G 1/4	48	M4	67	46	15	67	25	21	26.5	20	27
G 3/8	48	M4	67	46	15	67	25	21	26.5	20	27
G 1/2	48	M4	67	46	15	67	25	21	26.5	20	27
G 3/4	70	M6	78	57	23	95	40	27.5	26.5	21.5	41
G 1	70	M6	78	57	23	95	40	27.5	26.5	21.5	41
G 1 1/2	96	M6	91.5	70.5	31.5	140	59.5	38.3	26.5	30	58

Note: This product conforms to ISO 1179-1 and to ISO 228-1

Ordering data

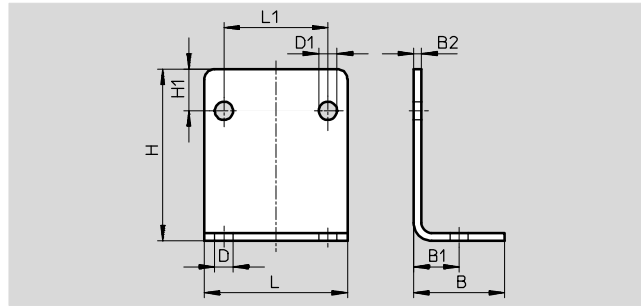
Circuit symbol	Pneumatic connection	Part No.	Type
	G 1/4	161725	MN1H-2-1/4-MS
	G 3/8	161727	MN1H-2-3/8-MS
	G 1/2	161728	MN1H-2-1/2-MS
	G 3/4	161731	MN1H-2-3/4-MS
	G 1	161732	MN1H-2-1-MS
	G 1 1/2	161734	MN1H-2-1 1/2-MS

Solenoid valves MN1H-MS, brass design

Accessories

Mounting bracket HRM

Material:
Galvanised steel




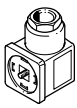
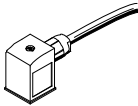
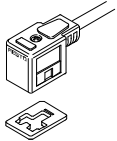
Dimensions and ordering data


For valve with pneumatic connection	B	B1	B2	D Ø	D1 Ø	H	H1	L	L1	Weight [g]	Part No.	Type
G $\frac{1}{4}$... G $\frac{1}{2}$	25	12.5	2	6	5	37	10	40	25	39	9769	HRM-1
G $\frac{3}{4}$... G1	35	17.5	3	7	7	66	16	55	40	130	9770	HRM-2
G $1\frac{1}{2}$	47	23.5	3	9	7	87	23	75	59.5	246	9771	HRM-3



Solenoid valves MN1H-MS, brass design

Accessories

Ordering data – Solenoid coils		Technical data → Internet: msn1g	
	Voltage	Part No.	Type
	24 V DC	123060	MSN1G-24DC-OD
	110 V AC, 50 ... 60 Hz	123061	MSN1W-110AC-OD
	230 V AC, 50 ... 60 Hz	123062	MSN1W-230AC-OD

Ordering data – Plug sockets, connecting cables				Technical data → Internet: mssd-c	
	Voltage	Cable length [m]	Switching status display with LED	Part No.	Type
Plug socket without cable					
	–	–	–	34583	MSSD-C
Plug socket without cable with insulation displacement technology					
	–	–	–	192748	MSSD-C-S-M16
Connecting cables					
	24 V DC	2.5	■	30931	KMC-1-24DC-2,5-LED
	24 V DC	5	■	30933	KMC-1-24DC-5-LED
	24 V DC	10	■	193459	KMC-1-24DC-10-LED
	Up to 230 V	2.5	–	30932	KMC-1-230AC-2,5
	Up to 230 V	5	–	30934	KMC-1-230AC-5

Ordering data – Illuminating seal		Technical data → Internet: mc-ld	
	Voltage	Part No.	Type
	12 ... 24 V DC	19145	MC-LD-12-24DC
	230 V DC/V AC	19146	MC-LD-230AC

Ordering data – General accessories			Part No.	Type
Manual override tool				
	For N1 coils		157651	AHB-MD/MF/MV
Inscription labels				
	Scope of delivery 20 labels in frame		18182	IBS-9x20

Solenoid valves, servo-controlled

VZWP



Overview, configuration and ordering
→ www.festo.com/catalogue/vzwp



Additional information, support and user documentation
→ www.festo.com/sp/vzwp



- + Connection 1/4", 3/8", 1/2", 3/4", 1"
- + G thread or NPT thread
- + Pressure of medium 0.5 ... 40 bar
- + Electrical actuation
- + Voltage 24 V DC, 110 V AC, 230 V AC
- + 2/2-way shut-off valve (NC)

- + For controlling gaseous and liquid media in open circuits
- + Sealing material NBR, FKM

Solenoid valves VZWP, servo-controlled



Key features and overview

Function

The solenoid valve VZWP-L... is a servo-controlled 2/2-way valve with solenoid coil. The solenoid valve is closed when de-energised. When energised, the

differential pressure from the secondary side of the piston is reduced via the servo hole. The differential pressure lifts the piston away from the valve seat.

General

-  - Connecting thread
G 1/4 ... G 1
-  - Flow rate Kv
1.5 ... 11.5 m³/h

Application

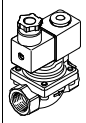
- All applications with a differential pressure of 0.5 bar
- Applications with an open medium circuit

Design

- The valve features a simple, sturdy design. The valve drive only fulfils a pilot control function, which relieves the burden on the main sealing element

Advantages

- High pressures can be controlled with large nominal diameters using small magnets
- The valves can be operated with air, neutral gases and neutral liquids
- The N/C version guarantees that the valve will be closed in the event of a voltage failure

Version	Type	Process valve connection	Nominal size (DN)	Process valve nominal pressure (PN)	→ Page/Internet
	VZWP-L-...	G 1/4	13	40	742
		G 3/8	13		
		G 1/2	13		
		G 3/4	25		
		G 1	25		

Solenoid valves VZWP, servo-controlled

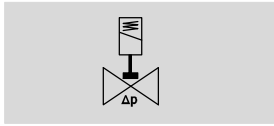
Type codes


		VZWP	-	L	-	M22C	-	G14	-	130	-	V	-	1	-	P4	-	40	
Type		VZWP	Electrically actuated process valve, servo-controlled																
Valve type		L	In-line valve																
Valve function		M22C	2/2-way valve, normally closed (N/C), mechanical reset																
Process valve connection		G14	Thread G 1/4																
		G38	Thread G 3/8																
		G12	Thread G 1/2																
		G34	Thread G 3/4																
		G1	Thread G 1																
Nominal size (DN)		130	13 mm																
		250	25 mm																
Sealing material		-	NBR																
		V	FPM																
Nominal voltage		1	24 V DC																
		2A	110 V AC																
		3A	230 V AC																
Electrical connection		P4	Plug socket, 3-pin																
Medium pressure		40	Max. 40 bar																


Solenoid valves VZWP, servo-controlled

Technical data

Function



-  - Flow rate Kv
1.5 ... 11.5 m³/h

-  - Connecting thread
G 1/4 ... G 1



General technical data		G 1/4	G 3/8	G 1/2	G 3/4	G 1
Process valve connection		G 1/4	G 3/8	G 1/2	G 3/4	G 1
Nominal size (DN)		13	13	13	25	25
Valve function		2/2-way, single solenoid, closed				
Design		Piloted piston poppet valve				
Type of mounting		In-line installation				
Actuation type		Electric				
Type of control		Piloted				
Manual override		None				
Mounting position		Coil preferably on top				
Sealing principle		Soft				
Direction of flow		Non-reversible				
Max. viscosity	[mm ² /s]	22				
Protection class		IP65				
Product weight	[g]	600	575	550	1500	1400

Operating and environmental conditions		G 1/4	G 3/8	G 1/2	G 3/4	G 1
Process valve connection		G 1/4	G 3/8	G 1/2	G 3/4	G 1
Switching time on	[ms]	100	100	100	130	130
Switching time off	[ms]	250	250	250	300	300
Standard nominal flow rate	[l/min]	1600	2100	2650	8750	12250
Flow rate	[m ³ /h]	1.5	2	2.5	8.2	11.5
Medium pressure	[bar]	0.5 ... 40				
Process valve nominal pressure (PN)		40				
Differential pressure	[bar]	0.5				
Medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4] Neutral liquids Inert gases Further media upon request				
Ambient temperature	[°C]	-10 ... 35				
Temperature of medium	[°C]	-10 ... 80				
Leak rate to EN 12266-1		A				
Corrosion resistance class CRC ¹⁾		1				

1) Corrosion resistance class 1 according to Festo standard 940 070
Components subject to low corrosion stress. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

Materials		Material number
Solenoid valves		
Housing	Cast brass	CW617N
Screws	High-alloy stainless steel	1.4301
Seals	NBR, FPM	-
Note on materials	Contains PWIS (paint-wetting impairment substances)	-
	RoHS-compliant	-

Solenoid valves VZWP, servo-controlled

Technical data

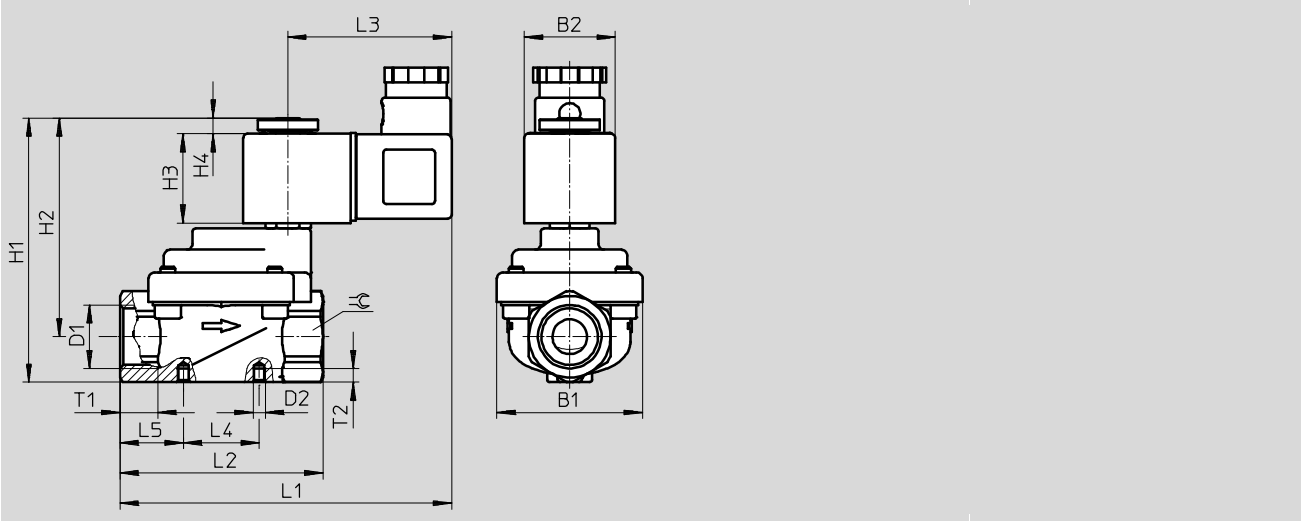
Electrical data		24 V DC	110 V DC	230 V DC
		Electrical connection	Type A Plug To EN 175301-803	Type A Plug To EN 175301-803
Coil characteristics				
Direct current DC	[V]	24	–	–
	[W]	6.8	–	–
Alternating current AC	[V]	–	110	230
	[Hz]	–	50, 60	50, 60
Pick-up power	[VA]	–	10.5	10.5
Holding power	[VA]	–	8	7.6
Permissible voltage fluctuations	[%]	±10	±10	±10
Duty cycle	[%]	100	100	100
Protection class		IP65	IP65	IP65
CE marking (see declaration of conformity)		–	To EU Low Voltage Directive	To EU Low Voltage Directive

Solenoid valves VZWP, servo-controlled

Technical data

Dimensions

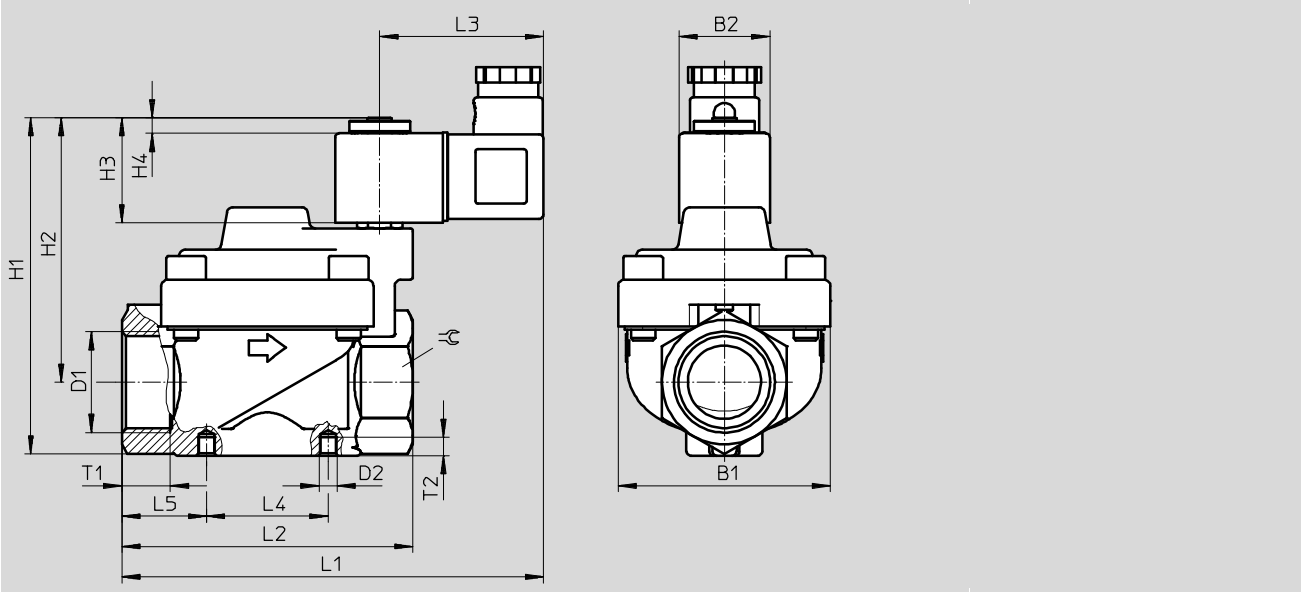
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	B1	B2	D1	D2	H1	H2	H3	H4	L1	L2	L3	L4	L5	T1	T2	↻
VZWP-L-M22C-G14-130-...	48	30	G 1/4	M4	88	73	30	5	110	67	54	25	21	12.5	4.5	27
VZWP-L-M22C-G38-130-...	48	30	G 3/8	M4	88	73	30	5	110	67	54	25	21	12.5	4.5	27
VZWP-L-M22C-G12-130-...	48	30	G 1/2	M4	88	73	30	5	110	67	54	25	21	12.5	4.5	27

Dimensions

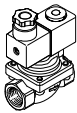
Download CAD data → www.festo.com



	B1	B2	D1	D2	H1	H2	H3	H4	L1	L2	L3	L4	L5	T1	T2	↻
VZWP-L-M22C-G34-250-...	70	30	G 3/4	M6	112	88	30	5	139	96	54	40	28	16	6	41
VZWP-L-M22C-G1-250-...	70	30	G 1	M6	112	88	30	5	139	96	54	40	28	16	6	41

Solenoid valves VZWP, servo-controlled

Technical data

Ordering data		Part No.	Type
	G 1/4	1489940	VZWP-L-M22C-G14-130-1P4-40
		1489950	VZWP-L-M22C-G14-130-2AP4-40
		1489960	VZWP-L-M22C-G14-130-3AP4-40
		1489945	VZWP-L-M22C-G14-130-V-1P4-40
		1489955	VZWP-L-M22C-G14-130-V-2AP4-40
		1489965	VZWP-L-M22C-G14-130-V-3AP4-40
	G 3/8	1489941	VZWP-L-M22C-G38-130-1P4-40
		1489951	VZWP-L-M22C-G38-130-2AP4-40
		1489961	VZWP-L-M22C-G38-130-3AP4-40
		1489946	VZWP-L-M22C-G38-130-V-1P4-40
		1489956	VZWP-L-M22C-G38-130-V-2AP4-40
		1489966	VZWP-L-M22C-G38-130-V-3AP4-40
	G 1/2	1489942	VZWP-L-M22C-G12-130-1P4-40
		1489952	VZWP-L-M22C-G12-130-2AP4-40
		1489962	VZWP-L-M22C-G12-130-3AP4-40
		1489947	VZWP-L-M22C-G12-130-V-1P4-40
		1489957	VZWP-L-M22C-G12-130-V-2AP4-40
		1489967	VZWP-L-M22C-G12-130-V-3AP4-40
	G 3/4	1489943	VZWP-L-M22C-G34-250-1P4-40
		1489953	VZWP-L-M22C-G34-250-2AP4-40
1489963		VZWP-L-M22C-G34-250-3AP4-40	
1489948		VZWP-L-M22C-G34-250-V-1P4-40	
1489958		VZWP-L-M22C-G34-250-V-2AP4-40	
1489968		VZWP-L-M22C-G34-250-V-3AP4-40	
G 1	1489944	VZWP-L-M22C-G1-250-1P4-40	
	1489954	VZWP-L-M22C-G1-250-2AP4-40	
	1489964	VZWP-L-M22C-G1-250-3AP4-40	
	1489949	VZWP-L-M22C-G1-250-V-1P4-40	
	1489959	VZWP-L-M22C-G1-250-V-2AP4-40	
	1489969	VZWP-L-M22C-G1-250-V-3AP4-40	

Reverse jet pulse valves, solenoid actuated

VZWE



Overview, configuration and ordering
→ www.festo.com/catalogue/vzwe



Additional information, support and user documentation
→ www.festo.com/sp/vzwe



- + Connection 3/4", 1", 1 1/2", 2", 2 1/2"
- + G thread
- + Flange diameter 60, 75, 89 mm
- + Operating pressure 0.35 ... 8 bar
- + 2/2-way poppet valve (NC), piloted

- + Sealing material NBR

Reverse jet pulse valves VZWE, solenoid actuated



Key features and product range overview

Function

Reverse jet pulse valves VZWE are piloted 2/2-way valves. They generate pulses of compressed air using a suitable solenoid coil for mechanically cleaning filters and dust filter systems. The valves are actuated using short electrical pulses.

These pulses generate short pulses of compressed air at the output of the valve, which travel through the filter against the normal direction of flow of the filter system to release adhering particles from the filter.

General information

-  - Connecting thread
G 3/4 ... G 2 1/2
-  - Flow rate Kv
15 ... 210 m³/h

Design

- 2/2-way NC valve with diaphragm

Advantages

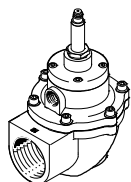
- High flow rates
- Fast opening and closing times
- Sturdy pilot system

Application

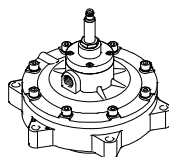
- Used in various filter systems for cleaning the filter elements
- Product filter systems
- Supply air filter systems
- Exhaust air filter systems

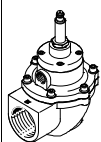
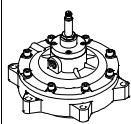
Variants

Angle valve, angle design



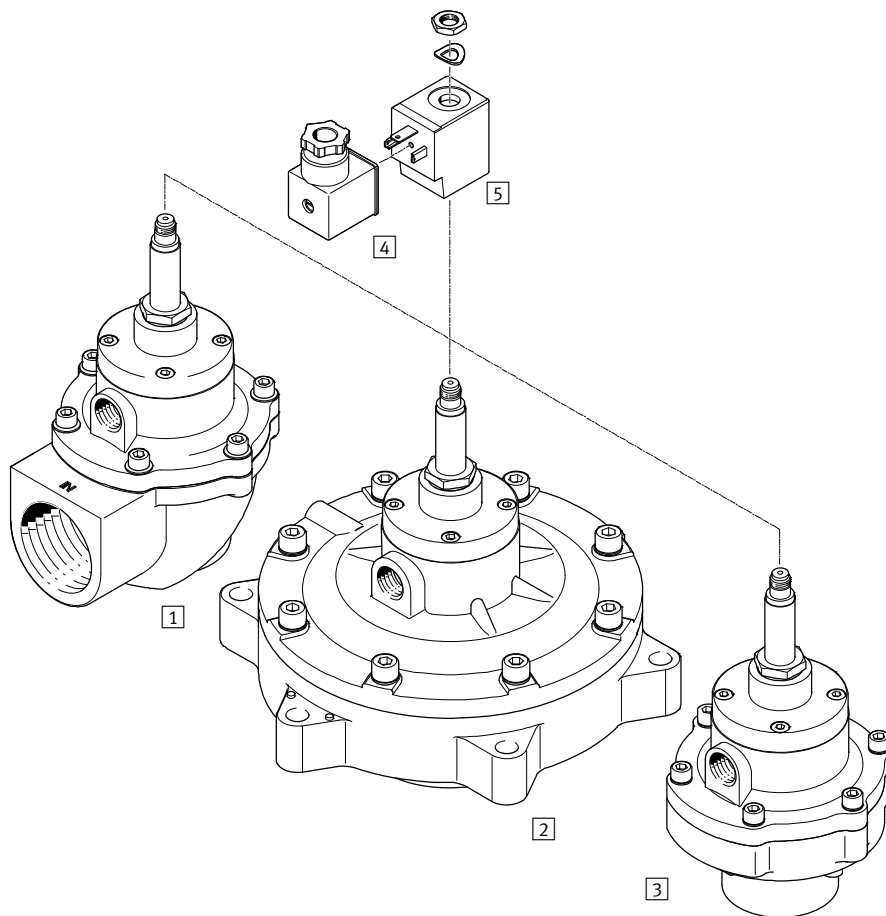
Flanged valve, straight design



Design	Type	Process valve connection	Nominal size DN	→ Page/Internet
Angle valve, angle design				
	VZWE-E-...	G 3/4	20	626
		G 1	25	
		G 1 1/2	40	
		G 2	50	
		G 2 1/2	62	
Flanged valve, straight design				
	VZWE-F-...	G 1	25	754
		G 1 1/2	40	
		F600	50	
		F750	62	
		F890	76	

Reverse jet pulse valves VZWE, solenoid actuated

Peripherals overview



Mounting components and accessories

	Brief description	→ Page/Internet
1	Angle valve VZWE-E-...-M-...-H	626
2	Flanged valve VZWE-F-...-M-...-H	754
3	Angle valve VZWE-E-...-M-...-H	626
4	Plug socket MSSD-C	760
5	Solenoid coil VACN	759

Reverse jet pulse valves VZWE, solenoid actuated

Type codes

VZWE - E - M22C - M - G2 - 500 - H

Type

VZWE	Reverse jet pulse valves, solenoid actuated
------	---------------------------------------------

Type of directional control valve

E	Angle valve (angle design)
F	Flanged valve (straight design)

Valve function

M22C	2/2-way valve, single solenoid
------	--------------------------------

Reset method for single solenoid valves

M	Mechanical spring
---	-------------------

Process valve connection

Pipe thread to DIN ISO 228	
G34	Thread G 3/4
G1	Thread G 1
G112	Thread G 1 1/2
G2	Thread G 2
G212	Thread G 2 1/2
Flange diameter	
F600	60 mm
F750	75 mm
F890	89 mm

Nominal size

200	20 mm
250	25 mm
400	40 mm
500	50 mm
620	62 mm
760	76 mm

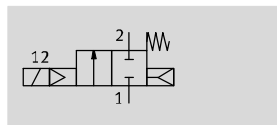
Electrical connection


H	14 mm, with armature tube
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
Reverse jet pulse valves VZWE, solenoid actuated

Technical data – Angle valve

Function



-  - Flow rate Kv
15 ... 95 m³/h

-  - Connecting thread
G 3/4 ... G 2 1/2



General technical data							
Nominal size	[mm]	20	25	40	50	62	
Valve function		2/2-way, single solenoid, closed					
Manual override		None					
Design		Diaphragm valve, angle design					
Reset method		Mechanical spring					
Type of control		Piloted					
Actuation type		Electric					
Type of mounting		Via thread, screwed in					
Mounting position		Any					
Direction of flow		Non-reversible					
Switching time on	[ms]	≤30					
Switching time off	[ms]	≤100					
Flow rate Kv	[m ³ /h]	15	22	48	78	95	
Process valve connection 1		G 3/4	G 1	G 1 1/2	G 2	G 2 1/2	
Process valve connection 2		G 3/4	G 1	G 1 1/2	G 2	G 2 1/2	

Operating and environmental conditions

Medium		Compressed air according to ISO 8573-1:2010 [7:4:4]
Note about the operating/pilot medium		Lubricated operation not possible
Medium pressure	[bar]	0.35 ... 8
Differential pressure	[bar]	0.35
Ambient temperature	[°C]	-20 ... 60
Protection class		IP65
Corrosion resistance class CRC ¹⁾		3

1) Corrosion resistance class 3 according to Festo standard 940 070
Components subject to high corrosion stress. Externally visible parts with primarily functional surface requirements which are in direct contact with a normal industrial environment or media such as solvents and cleaning agents.

Materials

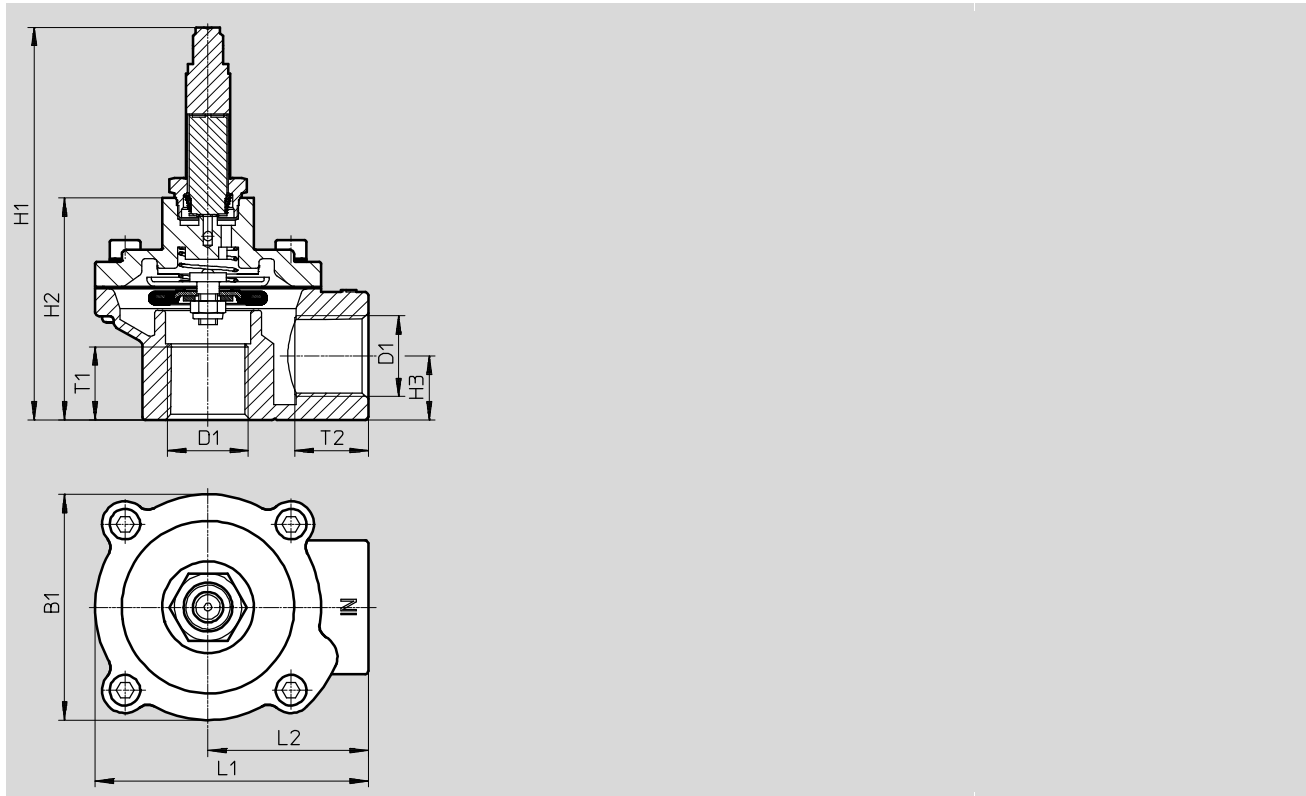
Reverse jet pulse valves		Material number
1	Valve housing	Die-cast aluminium EN AC-47100D
2	Screws	High-alloy steel 1.4301
3	Armature tube	High-alloy steel -
-	Seal	Nitrile rubber -
-	Diaphragm	Nitrile rubber/polyamide -
-	Note on materials	Contains PWIS (paint-wetting impairment substances), RoHS-compliant -

Reverse jet pulse valves VZWE, solenoid actuated

Technical data – Angle valve

Dimensions

Download CAD data → www.festo.com



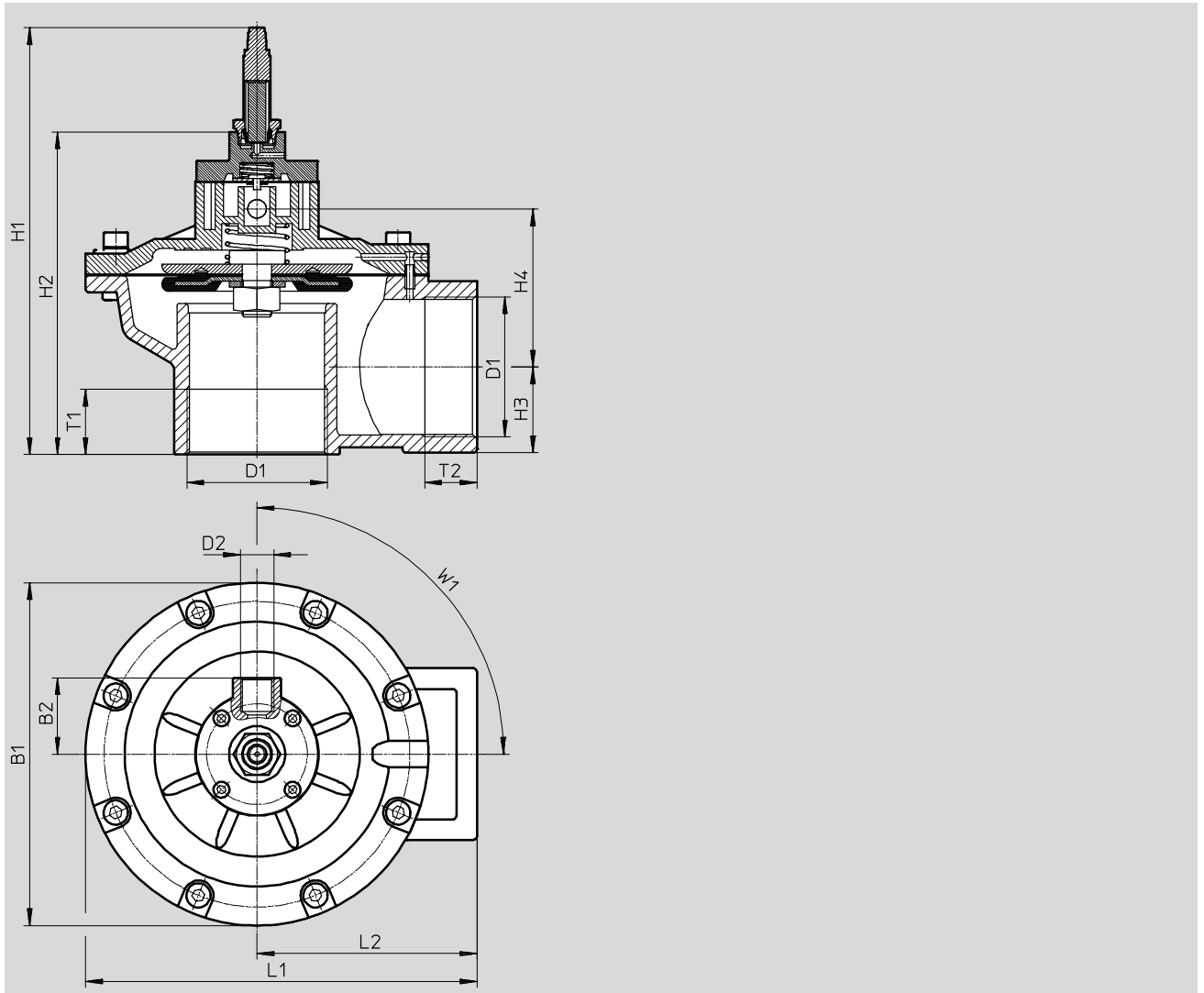
Type	B1	D1	H1	H2	H3	L1	L2	T1	T2
VZWE-E-M22C-M-G34-200-H	74	G 3/4	128.8	72.8	21	89.5	52.5	24	24
VZWE-E-M22C-M-G1-250-H	74	G 1	128.8	72.8	21	89.5	52.5	24	21.5

Reverse jet pulse valves VZWE, solenoid actuated

Technical data – Angle valve

Dimensions

Download CAD data → www.festo.com



Type	B1	B2	D1	D2	H1	H2	H3	H4	L1	L2	T1	T2	W1
VZWE-E-M22C-M-G112-400-H	112	39	G 1 1/2	G 3/8	187	131.5	31.5	59.8	124	74	34	34	0
VZWE-E-M22C-M-G2-500-H	184	41	G 2	G 3/8	210	154	40	72.8	205	92	25	25	90
VZWE-E-M22C-M-G212-620-H	184	41	G 2 1/2	G 3/8	229	173	47	131.8	210	92	35	28	90

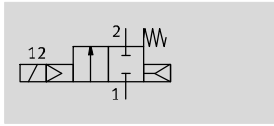
Ordering data – Reverse jet pulse valves VZWE

	Process valve connection	Weight [g]	Part No.	Type
	G 3/4	420	1794182	VZWE-E-M22C-M-G34-200-H
	G 1	420	1795142	VZWE-E-M22C-M-G1-250-H
	G 1 1/2	1300	1239565	VZWE-E-M22C-M-G112-400-H
	G 2	2800	1276955	VZWE-E-M22C-M-G2-500-H
	G 2 1/2	3100	1281702	VZWE-E-M22C-M-G212-620-H

Reverse jet pulse valves VZWE, solenoid actuated

Technical data – Flanged valve

Function



Flow rate Kv
22 ... 210 m³/h

Connecting thread
Ø 92 ... 162



General technical data

Nominal size	[mm]	25	40	50	62	76
Valve function		2/2-way, single solenoid, closed				
Manual override		None				
Design		Diaphragm valve, straight design with flange				
Reset method		Mechanical spring				
Type of control		Piloted				
Actuation type		Electric				
Type of mounting		Via thread, screwed in				
Mounting position		Any				
Direction of flow		Non-reversible				
Switching time on	[ms]	≤30				
Switching time off	[ms]	≤100				
Flow rate	[m ³ /h]	22	48	78	95	210
Process valve connection 1	[mm]	G 1	G 1 1/2	60	75	89
Process valve connection 2	[mm]	59	74	145.5	145.5	162

Operating and environmental conditions

Medium		Compressed air according to ISO 8573-1:2010 [7:4:4]
Note about the operating/pilot medium		Lubricated operation not possible
Medium pressure	[bar]	0.35 ... 8
Differential pressure	[bar]	0.35
Ambient temperature	[°C]	-20 ... 60
Protection class		IP65
Corrosion resistance class CRC ¹⁾		3

1) Corrosion resistance class 3 according to Festo standard 940 070
Components subject to high corrosion stress. Externally visible parts with primarily functional surface requirements which are in direct contact with a normal industrial environment or media such as solvents and cleaning agents.

Materials

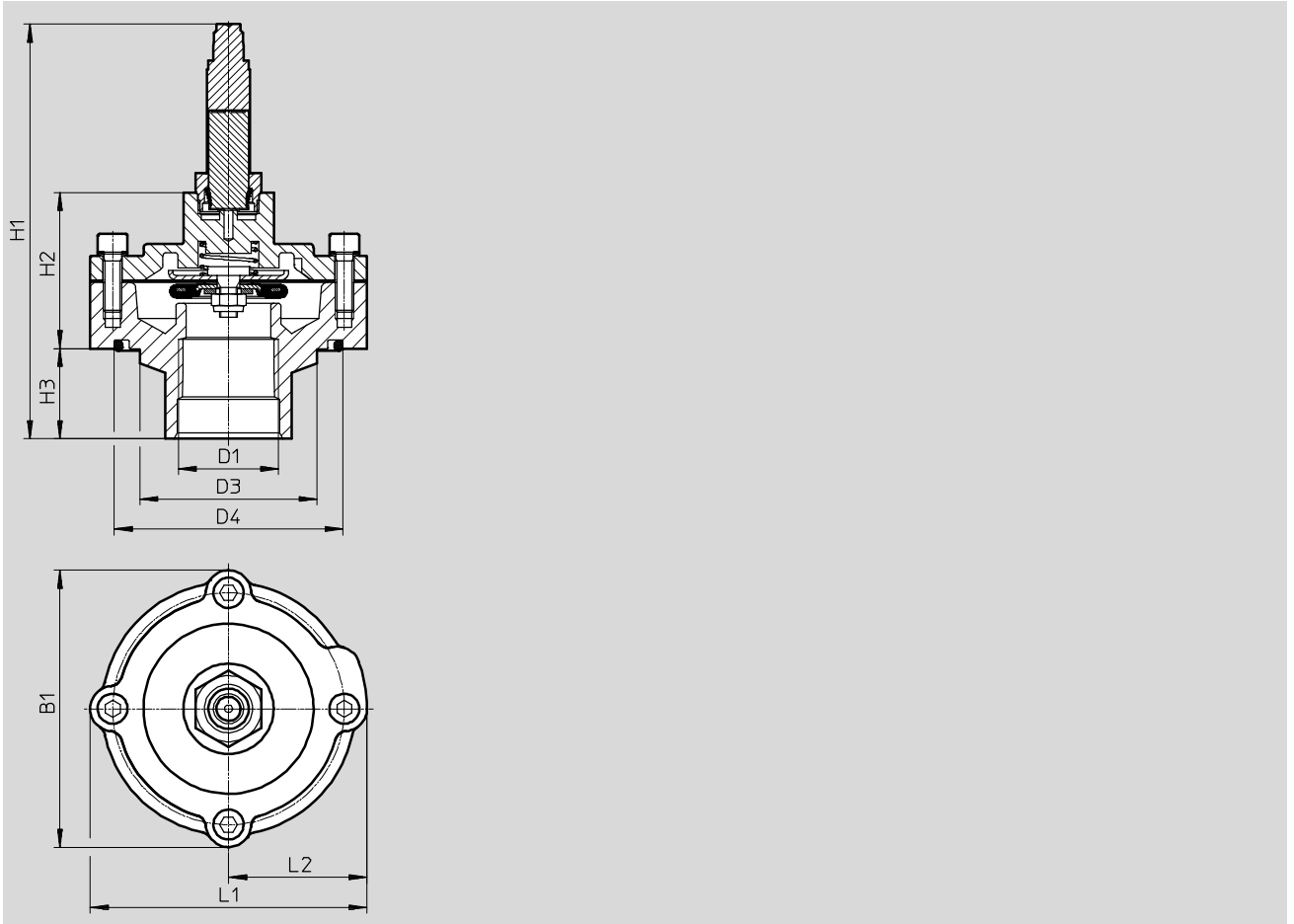
Reverse jet pulse valves		Material number
1 Housing	Die-cast aluminium	EN AC-47100D
2 Screws	High-alloy steel	1.4301
3 Armature tube	High-alloy steel	-
- Seal	Nitrile rubber	-
- Diaphragm	Nitrile rubber/polyamide	-
- Note on materials	Contains PWIS (paint-wetting impairment substances), RoHS-compliant	-

Reverse jet pulse valves VZWE, solenoid actuated

Technical data – Flanged valve

Dimensions

Download CAD data → www.festo.com



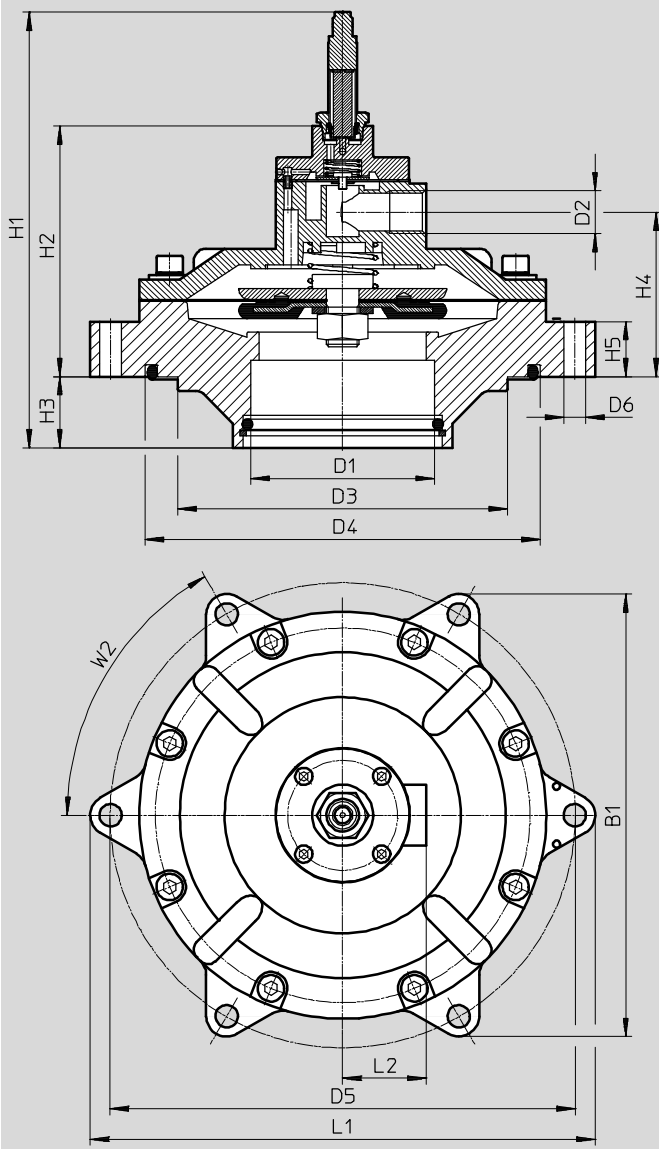
Type	B1	D1	D3 Ø	D4 Ø	H1	H2	H3	L1	L2
VZWE-F-M22C-M-G1-250-H	92	G 1	59	76	137.8	51.8	30	92	46

Reverse jet pulse valves VZWE, solenoid actuated

Technical data – Flanged valve

Dimensions

Download CAD data → www.festo.com



Solenoid-actuated media valves

09

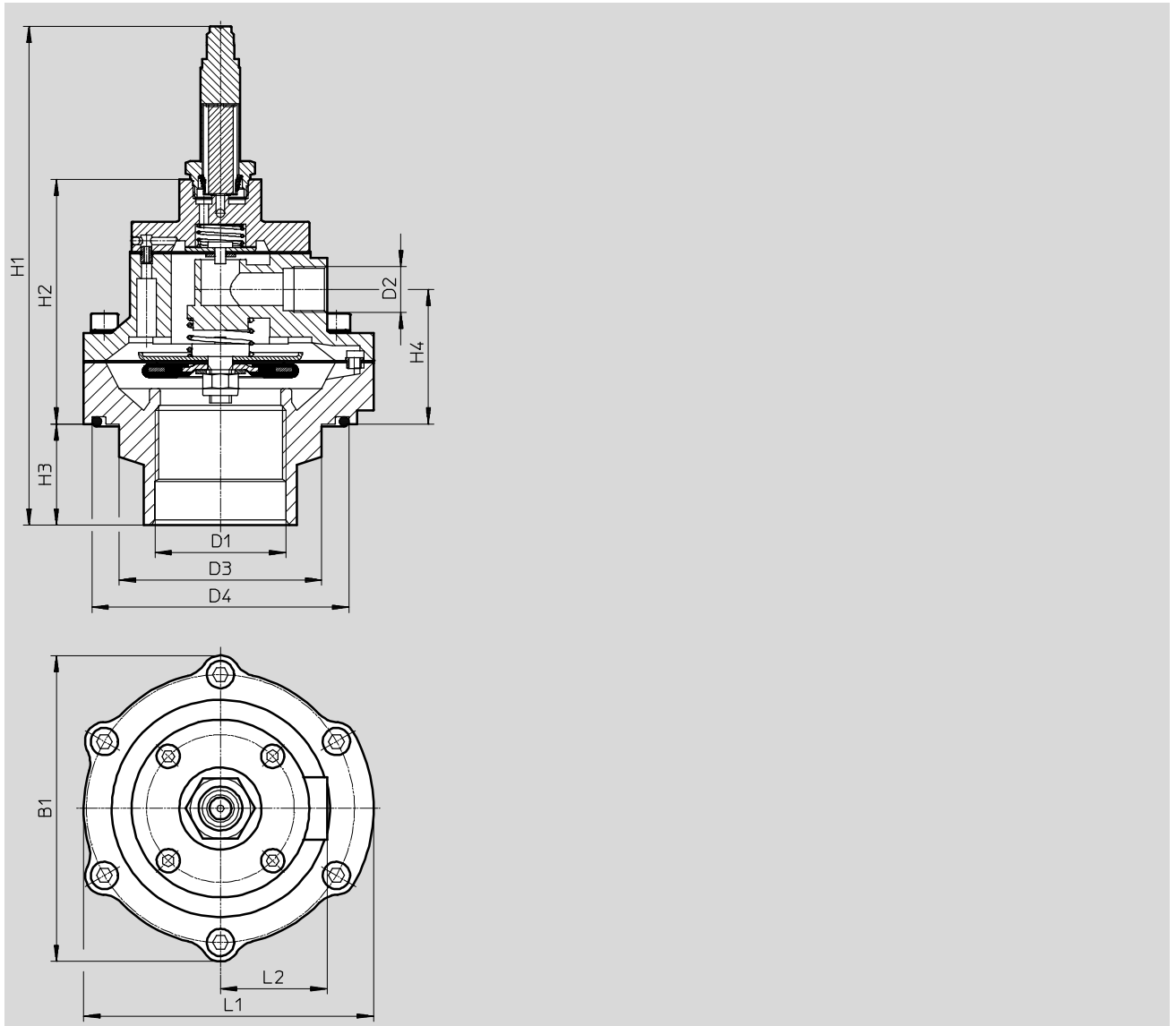
Type	B1	D1 Ø	D2	D3 Ø	D4 Ø	D5 Ø	D6 Ø	H1	H2	H3	H4	H5	L1	L2	W2
VZWE-F-M22C-M-F600-500-H	200	60	G 3/8	145.5	174	208	11	205	114	35	72.8	27	228	41	60
VZWE-F-M22C-M-F750-620-H	200	75	G 3/8	145.5	174	208	11	205	114	35	72.8	27	228	41	60
VZWE-F-M22C-M-F890-760-H	217	89	G 1/2	162	194	228	11	214	123	35	80.8	27	248	41	60

Reverse jet pulse valves VZWE, solenoid actuated

Technical data – Flanged valve

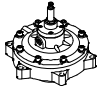
Dimensions

Download CAD data → www.festo.com



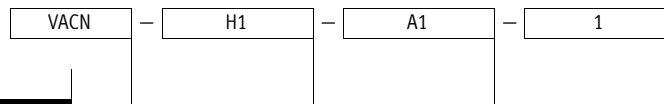
Type	B1	D1	D2	D3 ∅	D4 ∅	H1	H2	H3	H4	L1	L2
VZWE-F-M22C-M-G112-400-H	112	G 1 1/2	G 3/8	74	94	182.5	89.6	37	49.3	112	39

Ordering data – Reverse jet pulse valves VZWE

	Process valve connection	Weight [g]	Part No.	Type
	G 1	430	1795190	VZWE-F-M22C-M-G1-250-H
	G 1 1/2	950	1804475	VZWE-F-M22C-M-G112-400-H
	F600	3300	1808248	VZWE-F-M22C-M-F600-500-H
	F750	3100	1810664	VZWE-F-M22C-M-F750-620-H
	F890	3600	1214036	VZWE-F-M22C-M-F890-760-H

Accessories for reverse jet pulse valves VZWE – solenoid coils VACN-H1, VACN-X


Type codes



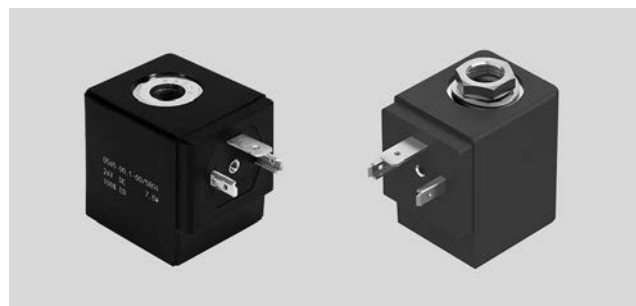
Type	
VACN	Solenoid coil, N series
Solenoid coil type	
H1	H1 solenoid coil, for 14 mm armature tube
X	X solenoid coil, for 14 mm armature tube
Electrical connection	
A1	Connection pattern type A, to EN 175301
Operating voltage	
1	24 V DC
2A	110 V AC, 50/60 Hz
3A	230 V AC, 50/60 Hz

Accessories for reverse jet pulse valves VZWE – solenoid coils VACN-H1, VACN-X

Technical data

 Voltage
24 V DC
110, 240 V AC

- Can be replaced without interrupting the pneumatic circuit
- Connection pattern to EN 175301-803, type A
- For 14 mm armature tube



General technical data		
Type	VACN-H1	VACN-X
Type of mounting	Via lock nut	Via lock nut
Max. tightening torque of fitting [Nm]	2	2
Mounting position	Any	Any
Switching position indication	No	No
Product weight [g]	150	148

Materials		
Type	VACN-H1	VACN-X
Solenoid coil	Copper	Copper
	Steel	Steel
	Thermoplastic	Duroplast
Winding	Copper	Copper
Note on materials	Contains paint-wetting impairment substances	Contains paint-wetting impairment substances
	RoHS-compliant	RoHS-compliant

Electrical data	
Electrical connection	Plug
	Square design
	To EN 175301-803
	Type A
Permissible voltage fluctuations [%]	-10 / +10
Duty cycle [%]	100
Degree of protection	IP65
Note on degree of protection	In assembled state

Characteristic coil data		VACN-H1			VACN-X		
		24 V DC	110 V AC	230 V AC	24 V DC	110 V AC	230 V AC
Frequency [Hz]		–	50	50/60	–	60	60
Permissible frequency fluctuations [%]		-10 / +10	-10 / +10	-10 / +10	-10 / +10	-10 / +10	-10 / +10
Power [W]		11.9	–	–	12.0	–	–
	[VA]	–	–	–	–	18.5	18.8
Pickup power [VA]		–	36	36	–	–	–
Holding power [VA]		–	21.4	21.8	–	–	–
Power factor cos(phi)		0.7	0.7	0.7	0.7	0.7	0.7
Surge resistance [kV]		–	2.5	4	–	2.5	4
Min. pickup time [ms]		12	12	12	12	12	12

Accessories for reverse jet pulse valves VZWE – solenoid coils VACN-H1, VACN-X

Data sheet

Operating and environmental conditions		VACN-H1			VACN-X		
		24 V DC	110 V AC	230 V AC	24 V DC	110 V AC	230 V AC
Ambient temperature	[°C]	-20 ... +50			-20 ... +60		
	[°C]	-20 ... +60 (with limited duty cycle)			-		
Corrosion resistance class CRC ¹⁾		4			2		
Contamination level		-	3		-	3	
CE marking (see declaration of conformity) ²⁾		-	To EU Low Voltage Directive		To EU Low Voltage Directive		

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
 Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
 Corrosion resistance class CRC 4 to Festo standard FN 940070
 Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (→ also FN 940082) using appropriate media.
- 2) Additional information www.festo.com/sp → Certificates.

Dimensions

Download CAD data → www.festo.com



Type	B1	D1	H1	H2	H3	H4	L1	L2	L3	L4	$\varnothing 1$
VACN-H1-A1-...	35.8	G1/8	45.9	42.1	27.6	12.5	57	45	39.8	17.9	A/F 14
VACN-X-A1-...	29.5	M10x1	46.9	42	27.4	12.4	50.4	38.4	32.9	14.5	A/F 14

Ordering data		Description	Retaining nut thread	Part no.	Type
Solenoid coil					
	Without plug socket, connection pattern to EN 175301-803, type A	24 V DC	G1/8	8022877	VACN-H1-A1-1
			M10x1	8049752	VACN-X-A1-1
		110 V AC	G1/8	8022878	VACN-H1-A1-2A
			M10x1	8049753	VACN-X-A1-2A
		230 V AC	G1/8	8022879	VACN-H1-A1-3A
			M10x1	8049754	VACN-X-A1-3A
Plug socket without cable					
	Cable connection with screw terminal		34583	MSSD-C	

Solenoid-actuated media valves

10 Pneumatically actuated media valves

Pinch valves for various media, from gaseous to highly viscous and abrasive media





VZQA ★

Pinch valves

- + For critical, abrasive and viscous media
- + Easy-to-clean design
- + Flow direction is freely selectable
- + Choice of NO (normally open) or NC (normally closed) variant

→ page 765

Contents

Pinch valves VZQA	765
Pneumatic valves VLX	781

Pinch valves

VZQA



Overview, configuration and ordering
→ www.festo.com/catalogue/vzqa



Additional information, support and user documentation
→ www.festo.com/sp/vzqa



Quick ordering of basic designs
→ page 772



- + Connection 1/4", 1/2", clamp
- + G thread or NPT thread
- + Pressure range 0 ... 6 bar
- + Pneumatic actuation
- + 2/2-way pinch valve
- + Housing made of aluminium, stainless steel (clean design)

- + For controlling liquid/powdery media, solids and mixed materials
- + Sealing material EPDM, NBR, silicone

Pinch valves VZQA

Key features

Application

- The pinch valve is a 2/2-way valve used to control liquid and powdery media, solids as well as a mixture of substances.

Design

- Easy-to-clean housing (clean design)
- Open or closed in normal position
- Shut-off element made of elastomer

Areas of application

- Filling systems
- Dosing and weighing systems
- Powder coating systems
- Suction and compressed air control units
- Pneumatic delivery systems
- Sandblast systems

Examples of operating media:

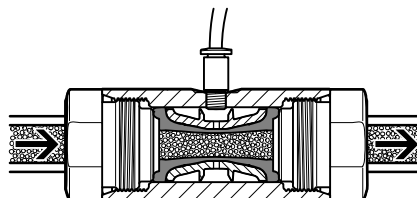
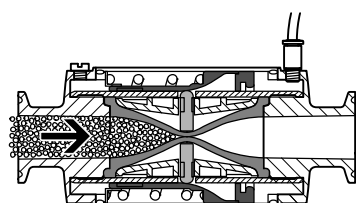
- Granules
- Powder
- Dust
- Liquids containing solids
- Fibrous products
- Highly viscous media
- Abrasive media
- Corrosive media
- Paste-like media

Function

The pinch valve is a 2/2-way valve with a tubular pinch sleeve made of elastomer. The free passage when the valve is opened ensures minimum flow resistance and prevents the valve becoming blocked or clogged.

VZQA-C-M22C (normally closed)

VZQA-C-M22U (normally open)



In the normal position, the pinch valve is closed. The pinch valve sleeve opens when the valve is pressurised, releasing the material

flow. When pressure is no longer applied, a spring closes the valve. The valve can be used to shut off liquid and gaseous media.

In the normal position, the pinch valve is open. The pinch valve sleeve closes when the valve is pressurised, shutting off the material flow. When pressure is no longer applied, the valve opens due to the inherent stress of the

pinch valve sleeve or the pressure of the medium. The valve can be used to shut off liquid and powdery media, solids (granules) as well as a mixture of substances.

Note

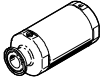
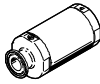
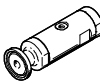
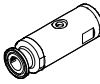
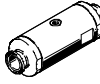
The hermetic separation between the media circuit and control circuit is no longer guaranteed if wear causes the pinch valve sleeve to leak. The flow medium can then get into the control circuit, from where

it can escape. Any potential hazard (e.g. due to aggressive or hot media) must be ruled out. The compressed air supply to the control valve must be protected against the ingress of the flow medium using a

suitable check valve, or suitable protection against return flow must be integrated in the pilot line in the immediate vicinity of the media valve. Pilot medium can get into the

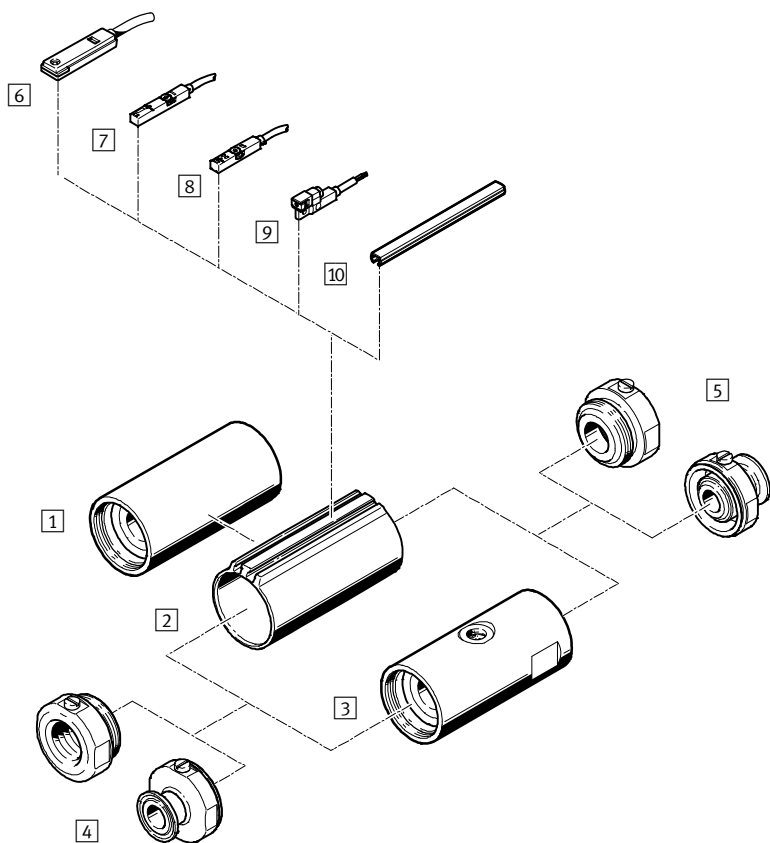
media circuit if the pinch valve sleeve fails. The media circuit must therefore be sized for the set operating pressure. Any potential hazard must be ruled out.

Product range overview

Version		Type	Nominal width DN	Process valve connection	Flow rate [m ³ /h]	Pilot air connection 12, max. permissible screw-in depth	→ Page/ Internet
Normally closed		VZQA-C-M22C-...	6	G1/4	0.7	M3, 3 mm	770
				1/4 NPT			
				Clamp ferrule to DIN 32676, series A			
				Clamp ferrule to ASME-BPE, type A			
		VZQA-C-M22C-...	15	G1/2	5	M5, 5 mm	770
				1/2 NPT			
Clamp ferrule to DIN 32676, series A							
Clamp ferrule to ASME-BPE, type A							
Normally open		VZQA-C-M22U-...	6	G1/4	0.7	M5, 4.5 mm	773
				1/4 NPT			
				Clamp ferrule to DIN 32676, series A			
				Clamp ferrule to ASME-BPE, type A			
		VZQA-C-M22U-...	15	G1/2	5	G1/8, 5 mm	773
				1/2 NPT			
				Clamp ferrule to DIN 32676, series A			
				Clamp ferrule to ASME-BPE, type A			
		VZQA-C-M22U-...	25	G1	18	G1/8, 6 mm	773
				1 NPT			
				Clamp ferrule to DIN 32676, series A			
				Clamp ferrule to ASME-BPE, type B			

Pinch valves VZQA

Peripherals overview



Accessories	Description	→ Page/Internet
Basic body		770
1 VZQA-C-M22C	<ul style="list-style-type: none"> • Normally closed • "Stainless steel housing material" variant 	770
2 VZQA-C-M22C	<ul style="list-style-type: none"> • Normally closed • "Aluminium housing material" variant (always with T-slots) • Integrated ring magnet only available when "End-position sensing type" is selected 	
3 Basic body VZQA-C-M22U	Normally open	773
4 Connection 1	Various connections are available: <ul style="list-style-type: none"> • G female thread • NPT female thread • Clamp ferrule DIN 32676, series A • Clamp ferrule ASME-BPE, type A • Clamp ferrule ASME-BPE, type B 	-
5 Connection 2	Various connections are available: <ul style="list-style-type: none"> • G female thread • NPT female thread • Clamp ferrule DIN 32676, series A • Clamp ferrule ASME-BPE, type A • Clamp ferrule ASME-BPE, type B 	-
Proximity sensors for T-slot		778
6 SME-8	Magnetic reed, insertable in the slot lengthwise	778
7 SME-8M	Magnetic reed, insertable in the slot from above	
8 SMT-8M	Magnetostrictive, insertable in the slot from above, to EU Explosion Protection Directive	
9 SMT-8G	Magnetostrictive, insertable in the slot lengthwise	
10 Slot cover ABP-5-S	To protect the sensor cables and slots from contamination	779

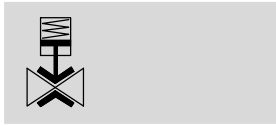
Type codes

		VZQA	-	C	-	M22U	-	6	-	G	G	-	V4	V4	N	-	4	-	E	
Type		VZQA	Pinch valve, pneumatically actuated																	
Product version		C	Easy-to-clean design																	
Valve function		M22C	2/2-way valve, normally closed																	
		M22U	2/2-way valve, normally open																	
Nominal diameter DN		6	6 mm																	
		15	15 mm																	
		25	25 mm																	
Process valve connection type 1		G	G female thread																	
		T	NPT female thread																	
		S1	Clamp ferrule to ASME-BPE, type A																	
		S5	Clamp ferrule to DIN 32676, series A																	
		S12	Clamp ferrule to ASME-BPE, type B																	
Process valve connection type 2		G	G female thread																	
		T	NPT female thread																	
		S1	Clamp ferrule to ASME-BPE, type A																	
		S5	Clamp ferrule to DIN 32676, series A																	
		S12	Clamp ferrule to ASME-BPE, type B																	
Housing material		AL	Aluminium																	
		V2	Stainless steel (chrome-nickel, austenitic)																	
		V4	Stainless steel (chrome-nickel-molybdenum, austenitic)																	
Housing cover material		Al	Aluminium																	
		V4	Stainless steel (chrome-nickel-molybdenum, austenitic)																	
		POM	Polyoxymethylene																	
Shut-off element material		E	EPDM																	
		N	NBR																	
		S1	Silicone																	
Pressure range of media		4	0 ... 4 bar																	
		6	0 ... 6 bar																	
Sensing type		-	None																	
		E	End positions																	

Pinch valves VZQA

Technical data M22C

Function



General technical data

Nominal width DN	6	15
Process valve nominal pressure PN	10	
Design	Pinch valve, pneumatically actuated	
Actuation type	Pneumatic	
Sealing principle	Soft	
Mounting position	Any	
Valve function	2/2-way, closed, monostable	
Flow direction	Reversible	
Reset method	Mechanical spring	
Type of control	Externally controlled	
Type of mounting	In-line installation	
Auxiliary pilot air connection 12	M3	M5
Switching time on [ms]	125	150
Switching time off [ms]	125	250
Flow rate Kv [m³/h]	0.7	5
Max. viscosity [mm²/s]	4000	

Operating and environmental conditions

Nominal width DN	6	15
Operating pressure [bar]	3.5 ... 6	
Burst pressure [bar]	16	
Pressure of medium [bar]	0 ... 4	0 ... 6
Ambient temperature [°C]	-5 ... +60	
Temperature of medium [°C]	-15 ... +50	-5 ... +100
Storage temperature [°C]	6 ... 8	
Food-safe ¹⁾	See supplementary material information	
Pilot medium	Compressed air to ISO 8573-1:2010 [7:4:1]	
Medium	Compressed air to ISO 8573-1:2010 [-:~:1]	
	Water	

1) Additional information www.festo.com/sp → Certificates.

Materials

Material number

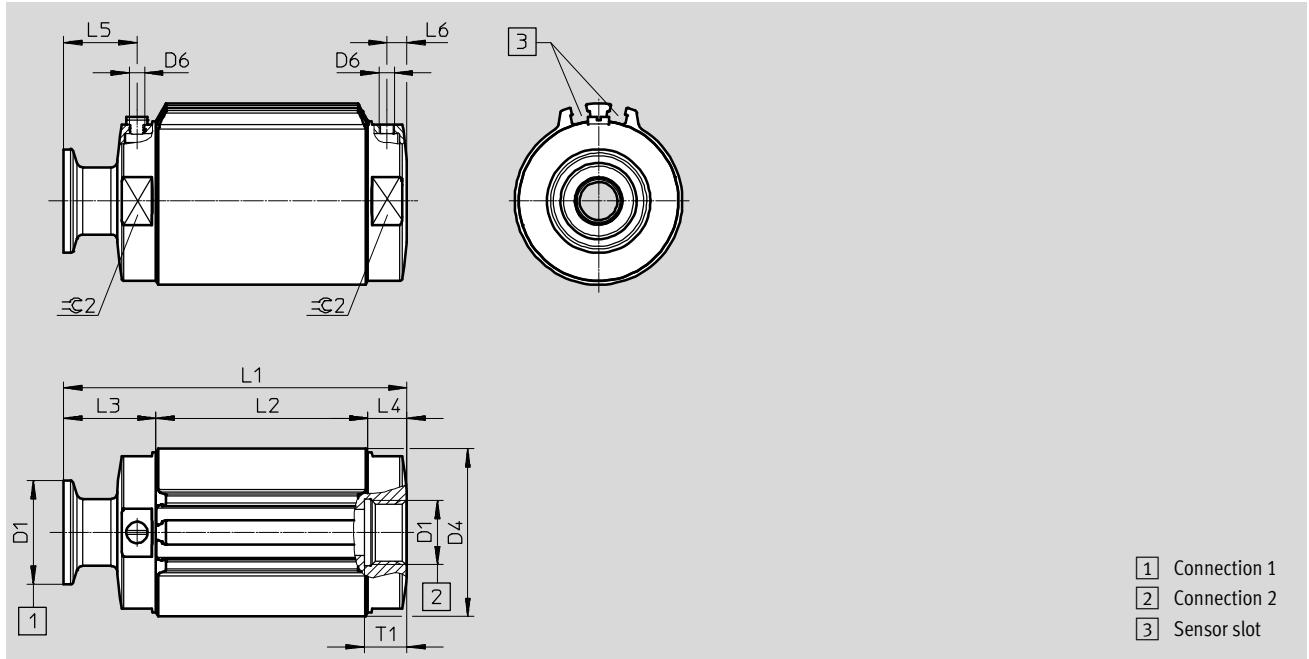
Housing		
V2V4	High-alloy stainless steel	1.4301
ALV4	Wrought aluminium alloy	-
Housing cover	High-alloy stainless steel	1.4435
Bowl	PA6	
Seals	FPM	
Shut-off element	EPDM	
Note on materials	RoHS-compliant	
	Contains PWIS (paint-wetting impairment substances)	

Technical data M22C

Dimensions

Download CAD data → www.festo.com

Illustration – connection 1: clamp ferrule to DIN 32676, series A; connection 2: G1/2



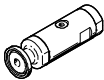
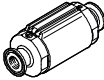
Process valve connection	D1	Material Housing	D4 Ø	D6	L2	L3	L4	L5	L6	T1	≈ 2
Nominal width DN6											
G	G1/4	V2	33.6	M3	47.2	10.9	10.9	4.8	4.8	12	32
T	1/4 NPT										
S5	DIN 32676, series A										
S1	ASME-BPE, type A										
Nominal width DN15											
G	G1/2	V2	52.4	M5	69.5	12.8	12.8	6.6	6.6	14	50
		AL	55								
T	1/2 NPT	V2	52.4			12.8	12.8	6.6	6.6		
		AL	55			12.8	12.8	6.6	6.6		
S5	DIN 32676, series A	V2	55			30.3	30.3	24	24		
S1	ASME-BPE, type A	V2	55			30.3	30.3	24	24		


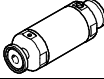
Process valve combinations	L1
Nominal width DN6	
GG	69
GT, TT, TG	69
S1S1, S1S5, S5S5, S5S1	95.1
S1G, S1T, GS1, TS1, S5G, S5T, GS5, TS5	82.1
Nominal width DN15	
GG	95
GT, TT, TG	95
S1S1, S1S5, S5S5, S5S1	130
S1G, S1T, GS1, TS1, S5G, S5T, GS5, TS5	112.5

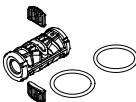
Pinch valves VZQA

Technical data M22C

★ Core product range

Ordering data						
Pinch valves	Nominal width DN	Process valve connection	Material shut-off element	Weight [g]	Part no.	Type
	15	G1/2	EPDM	536	★ 3412426	VZQA-C-M22C-15-GG-V2V4E-6
		Clamp ferrule to DIN 32676, series A		666	★ 3412424	VZQA-C-M22C-15-S5S5-V2V4E-6
With integrated ring magnet for sensing the end positions						
	15	Clamp ferrule to DIN 32676, series A	EPDM	607	★ 3412425	VZQA-C-M22C-15-S5S5-ALV4E-6-E

Ordering data						
Pinch valves	Nominal width DN	Process valve connection	Material shut-off element	Weight [g]	Part no.	Type
	6	G1/4	EPDM	253	8091739	VZQA-C-M22C-6-GG-V2V4E-4
		1/4 NPT		253	4748311	VZQA-C-M22C-6-TT-V2V4E-4
	6	Clamp ferrule to DIN 32676, series A	EPDM	302	8079858	VZQA-C-M22C-6-S1S1-V2V4E-4
		Clamp ferrule to ASME-BPE, type A		311	8079857	VZQA-C-M22C-6-S5S5-V2V4E-4

Ordering data						
Seal cartridge	Nominal width DN	Storage temperature [°C]	Shut-off element material	Note on materials	Part no.	Type
	15	6 ... 8	EPDM	RoHS-compliant	3418619	VAVC-Q2-M22C-15-E

Technical data M22U

Function



General technical data				
Nominal width DN		6	15	25
Process valve nominal pressure PN		10		
Design		Pinch valve, pneumatically actuated		
Actuation type		Pneumatic		
Sealing principle		Soft		
Mounting position		Any		
Valve function		2/2-way, open, monostable		
Flow direction		Reversible		
Reset method		Rebound resilience		
Type of control		Externally controlled		
Type of mounting		In-line installation		
Auxiliary pilot air connection 12		M5	G1/8	G1/8
Switching time on	[ms]	125	250	250
Switching time off	[ms]	125	250	250
Flow rate Kv	[m ³ /h]	0.7	5	18
Max. viscosity	[mm ² /s]	4000		

Materials				
VZQA-C-M22U-...	V4V4	ALAL	ALV4	ALPOM
Housing	High-alloy stainless steel	Wrought aluminium alloy		
Housing cover	High-alloy stainless steel	Wrought aluminium alloy	High-alloy stainless steel	POM
Bowl	PA6			
Seals	FPM			
Note on materials				
For shut-off element NBR, EPDM or VMQ	RoHS-compliant			
For shut-off element VMQ	Contains PWIS (paint-wetting impairment substances)			

Pinch valves VZQA

Technical data M22U

Operating and environmental conditions		6	15	25
Nominal width DN		6	15	25
Operating pressure	[bar]	1 ... 6.5		
Overload pressure	[bar]	7.8		
Pressure of medium	[bar]	0 ... 4		
Differential pressure				
For shut-off element NBR or EPDM	[bar]	2.5	2.5	2.5
For shut-off element VMQ	[bar]	2.5	2.5	3
Burst pressure	[bar]	16		
Ambient temperature	[°C]	-5 ... +60		
Temperature of medium				
For shut-off element NBR	[°C]	-5 ... +60		
For shut-off element EPDM	[°C]	-5 ... +100		
For shut-off element VMQ	[°C]	-5 ... +150		
Storage temperature				
For shut-off element NBR or EPDM	[°C]	6 ... 8		
For shut-off element VMQ	[°C]	0 ... 25		
Food-safe				
For shut-off element EPDM		See supplementary material information ¹⁾		
For shut-off element NBR or VMQ		See declaration of conformity		
Pilot medium				
For shut-off element EPDM		Compressed air to ISO 8573-1:2010 [7:4:1]		
For shut-off element NBR or VMQ		Compressed air to ISO 8573-1:2010 [7:4:4]		
Medium				
For shut-off element EPDM		Compressed air to ISO 8573-1:2010 [-:-:1]		
		Water		
For shut-off element NBR or VMQ		Compressed air to ISO 8573-1:2010 [-:-:-]		

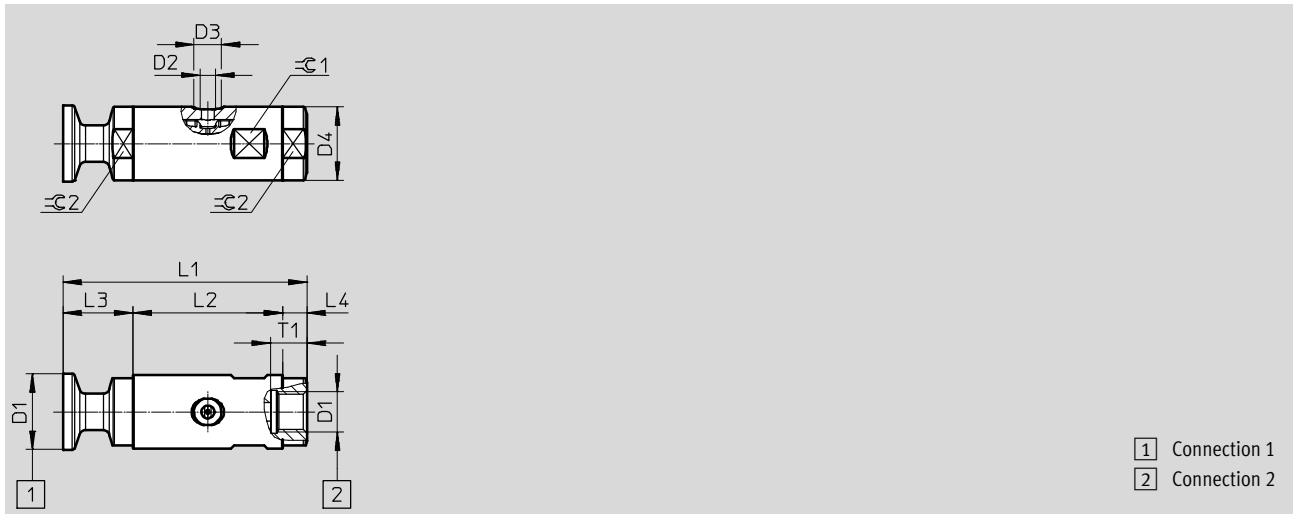
1) Additional information www.festo.com/sp → Certificates.

Technical data M22U

Dimensions

Download CAD data → www.festo.com

Illustration – connection 1: clamp ferrule to DIN 32676, series A; connection 2: G1/2

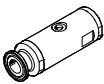



Process valve connection	D1	Material housing cover	D2	D3 ∅	D4 ∅	L2	L3	L4	T1	≈C 1	≈C 2
Nominal width DN6											
G	G1/4	V4, AL	M5	9	24	49	8	8	12	22	22
T	1/4 NPT	V4, AL					8	8			
S5	DIN 32676, series A	V4					23	23			
S1	ASME-BPE, type A	V4					23	23			
Nominal width DN15											
G	G1/2	V4, AL	G1/8	15	38	81	7	7	14	36	36
		POM					12	12			
T	1/2 NPT	V4, AL					7	7			
		POM					12	12			
S5	DIN 32676, series A	V4	24.5	24.5							
S1	ASME-BPE, type A	V4	24.5	24.5							
Nominal width DN25											
G	G1	V4, AL	G1/8	15	58	109	10.5	10.5	18	55	55
		POM					15.5	15.5			
T	1 NPT	V4, AL					10.5	10.5			
		POM					15.5	15.5			
S5	DIN 32676, series A	V4	28	28							
S1	ASME-BPE, type A	V4	28	28							
S12	ASME-BPE, type B	V4	28	28							

Process valve combinations	L1		
	Nominal width DN6	Nominal width DN15	Nominal width DN25
GG, GT, TT, TG made of V4 or AL	65	95	130
GG, GT, TT, TG made of POM	-	105	140
GG, GT, TT, TG made of V4 or AL with POM	-	100	135
S1S1, S1S5, S5S5, S5S1, S1S12, S12S1, S5S12, S12S5, S12S12	80	130	165
S1G, S1T, GS1, TS1, S5G, S5T, GS5, TS5, S12G, S12T, GS12, TS12	95	112.5	147.5

Pinch valves VZQA

Technical data M22U

Ordering data							
Pinch valves	Nominal width DN	Process valve connection	Material shut-off element	Weight [g]	Part no.	Type	
	6	G1/4	NBR	105.5	2931679	VZQA-C-M22U-6-GG-ALV4N-4	
			EPDM	157	2931678	VZQA-C-M22U-6-GG-V4V4E-4	
			Silicone	157	2931683	VZQA-C-M22U-6-GG-V4V4S1-4	
		1/4 NPT	Silicone	157	2931685	VZQA-C-M22U-6-TT-V4V4S1-4	
		Clamp ferrule to DIN 32676, series A	EPDM	215	2931681	VZQA-C-M22U-6-S5S5-V4V4E-4	
			Silicone	215	2931682	VZQA-C-M22U-6-S5S5-V4V4S1-4	
			Clamp ferrule to ASME-BPE, type A	Silicone	195	2931684	VZQA-C-M22U-6-S1S1-V4V4S1-4
		15	G1/2	NBR	431	3022830	VZQA-C-M22U-15-GG-V4V4N-4
				NBR	265	3022831	VZQA-C-M22U-15-GG-ALV4N-4
	NBR			158	3022832	VZQA-C-M22U-15-GG-ALPOMN-4	
	EPDM			431	3022829	VZQA-C-M22U-15-GG-V4V4E-4	
	Silicone			431	3022835	VZQA-C-M22U-15-GG-V4V4S1-4	
	1/2 NPT		Silicone	431	3022838	VZQA-C-M22U-15-TT-V4V4S1-4	
	Clamp ferrule to DIN 32676, series A		EPDM	559	3022833	VZQA-C-M22U-15-S5S5-V4V4E-4	
			Silicone	559	3022834	VZQA-C-M22U-15-S5S5-V4V4S1-4	
	Clamp ferrule to ASME-BPE, type A		Silicone	495	3022837	VZQA-C-M22U-15-S1S1-V4V4S1-4	
	25	G1	EPDM	1178	3968922	VZQA-C-M22U-25-GG-V4V4E-4	
			EPDM	480	3968923	VZQA-C-M22U-25-GG-ALALE-4	
			Silicone	1178	3968926	VZQA-C-M22U-25-GG-V4V4S1-4	
		1 NPT	Silicone	1178	3968928	VZQA-C-M22U-25-TT-V4V4S1-4	
		Clamp ferrule to DIN 32676, series A	EPDM	1474	3968924	VZQA-C-M22U-25-S5S5-V4V4E-4	
Silicone			1474	3968925	VZQA-C-M22U-25-S5S5-V4V4S1-4		
Clamp ferrule to ASME-BPE, type B		Silicone	1516	3968927	VZQA-C-M22U-25-S12S12-V4V4S1-4		

Ordering data							
Seal cartridge	Nominal width DN	Material shut-off element	Storage temperature [°C]	Note on materials	Food-safe	Part no. Type	
	6	NBR	6 ... 8	–	RoHS-compliant	–	2392881 VAVC-Q2-M22U-6-N
		EPDM	–	–		1)	2392882 VAVC-Q2-M22U-6-E
		VMQ (silicone)	0 ... 25	Contains PWIS (paint-wetting impairment substances)		2)	2392883 VAVC-Q2-M22U-6-S1
	15	NBR	6 ... 8	–	–	–	3019151 VAVC-Q2-M22U-15-N
		EPDM	–	–	–	1)	3019148 VAVC-Q2-M22U-15-E
		VMQ (silicone)	0 ... 25	Contains PWIS (paint-wetting impairment substances)	–	2)	3019144 VAVC-Q2-M22U-15-S1
	25	NBR	6 ... 8	–	–	–	★ 3970092 VAVC-Q2-M22U-25-N
		EPDM	–	–	–	–	3970093 VAVC-Q2-M22U-25-E
		VMQ (silicone)	0 ... 25	Contains PWIS (paint-wetting impairment substances)	–	2)	3970094 VAVC-Q2-M22U-25-S1

- 1) See supplementary material information
Additional information www.festo.com/sp → Certificates.
- 2) See declaration of conformity

Ordering data – Modular product system

Ordering table		M22C	M22U	Conditions	Code	Enter code
VZQA-C-...						
M	Module no.	3174282	2037881			
	Product type	Pinch valve			VZQA	VZQA
	Version	Easy-to-clean design			-C	-C
	Valve function	2/2-way valve, normally closed	–		-M22C	
		–	2/2-way valve, normally open		-M22U	
	Nominal diameter DN	6			-6	
		15			-15	
		–	25			-25
	Process valve connection type 1	G female thread			-G	
		Clamp ferrule to ASME-BPE, type A		1 4	-S1	
		Clamp ferrule to DIN 32676, series A		1	-S5	
		NPT female thread			-T	
		Clamp ferrule to ASME-BPE, type B		1 3 4 6	-S12	
	Process valve connection type 2	G female thread			G	
		Clamp ferrule to ASME-BPE, type A		1 4	S1	
		Clamp ferrule to DIN 32676, series A		1	S5	
		NPT female thread			T	
		Clamp ferrule to ASME-BPE, type B		1 3 4 6	S12	
	Housing material	Aluminium			-AL	
		Stainless steel (chrome-nickel, austenitic)	–		-V2	
		–	Stainless steel (chrome-nickel-molybdenum, austenitic)		-V4	
	Housing cover material	Aluminium			AL	
		–	Polyoxymethylene	3	POM	
		Stainless steel (chrome-nickel-molybdenum, austenitic)			V4	
	Shut-off element material	EPDM			E	
		–	NBR		N	
		–	Silicone		S1	
	Pressure range of media [bar]	0 ... 4		7	-4	
		0 ... 6	–	3	-6	
O	Sensing type	None				
		End positions		2 5	-E	

1 S1, S5, S12 Only in combination with housing cover material V4 (stainless steel)

2 E Only in combination with valve function M22C

3 POM, S12, 6 Not in combination with nominal diameter DN6

4 S1, S12 Not in combination with nominal diameter DN25 with valve function M22C

5 E Not in combination with housing material V2 (stainless steel)

6 S12 Not in combination with nominal diameter DN15

7 4 Not in combination with nominal diameter DN15 with valve function M22C

M Mandatory data

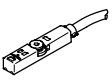
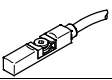
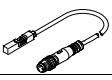
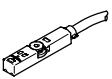
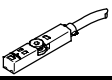
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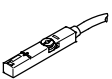
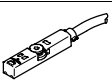
Transfer order code

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Pinch valves VZQA

Accessories

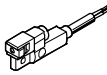

Ordering data – Proximity sensors for T-slot, magnetoresistive					Technical data → Internet: smt-8		
	Switching output	Electrical connection			Cable length [m]	Part no.	Type
		Cable	Cable with plug, rotatable thread				
			M8x1	M12x1			
N/O contact							
	PNP	–	3-pin	–	0.3	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
		3-wire	–	–	2.5	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		3-wire	–	–	5	★ 574336	SMT-8M-A-PS-24V-E-5,0-OE
		–	–	3-pin	0.3	★ 574337	SMT-8M-A-PS-24V-E-0,3-M12
	NPN	3-wire	–	–	2.5	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
		–	3-pin	–	0.3	★ 574339	SMT-8M-A-NS-24V-E-0,3-M8D
	To EU Explosion Protection Directive (ATEX)						
	Non-contacting	2-wire	–	–	5	★ 574341	SMT-8M-A-ZS-24V-E-5,0-OE-EX2
	PNP	–	3-pin	–	0.3	574342	SMT-8M-A-PS-24V-E-0,3-M8D-EX2
N/O contact, corrosion resistant							
	PNP	3-wire	–	–	5	574380	CRSMT-8M-PS-24V-K-5,0-OE
		3-wire	–	–	10	574381	CRSMT-8M-PS-24V-K-10,0-OE
	PNP	–	–	3-pin	0.3	574382	CRSMT-8M-PS-24V-K-0,3-M12
		–	3-pin	–	0.3	574383	CRSMT-8M-PS-24V-K-0,3-M8D
N/C contact							
	PNP	3-wire	–	–	7.5	★ 574340	SMT-8M-A-PO-24V-E-7,5-OE
Switchable							
	PNP/NPN	–	3-pin	–	0.3	574343	SMT-8M-A-PNS-24V-E-0,3-M8D
		–	3-pin	–	0.3	574344	SMT-8M-A-PSO-24V-E-0,3-M8D

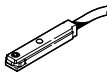

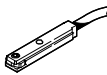
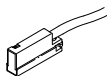
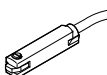
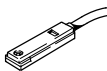
Ordering data – Proximity sensors for T-slot, magnetic reed					Technical data → Internet: sme-8		
	Switching output	Electrical connection			Cable length [m]	Part no.	Type
		Cable	Cable with plug, rotatable thread				
			M8x1				
N/O contact							
	Contacting, bipolar	–	3-pin	–	0.3	★ 543861	SME-8M-DS-24V-K-0,3-M8D
		3-wire	–	–	2.5	★ 543862	SME-8M-DS-24V-K-2,5-OE
		3-wire	–	–	5	★ 543863	SME-8M-DS-24V-K-5,0-OE
		2-wire	–	–	2.5	★ 543872	SME-8M-ZS-24V-K-2,5-OE
		3-wire	–	–	7.5	543876	SME-8M-DS-24V-K-7,5-OE
N/C contact							
	Contacting, bipolar	3-wire	–	–	7.5	★ 546799	SME-8M-DO-24V-K-7,5-OE

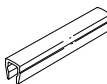
Pneumatically actuated media valves

10

Accessories

Ordering data – Proximity sensors for T-slot, magnetoresistive					Technical data → Internet: smt-8	
	Switching output	Electrical connection		Cable length [m]	Part no.	Type
		Cable	Plug M8x1			
N/O contact						
	PNP	3-wire	–	2.5	547859	SMT-8G-PS-24V-E-2,5Q-OE
		–	3-pin	0.3	547860	SMT-8G-PS-24V-E-0,3Q-M8D
	PNP	–	3-pin	–	562019	SMT-8-SL-PS-LED-24-B

Ordering data – Proximity sensors for T-slot, magnetic reed					Technical data → Internet: sme-8	
	Switching output	Electrical connection		Cable length [m]	Part no.	Type
		Cable	Plug M8x1			
N/O contact						
	Contacting, bipolar	3-wire	–	2.5	150855	SME-8-K-LED-24
		3-wire	–	5.0	175404	SME-8-K5-LED-24
		3-wire	–	7.5	530491	SME-8-K-7,5-LED-24
		–	3-pin	0.3	150857	SME-8-S-LED-24
		2-wire	–	2.5	171169	SME-8-ZS-KL-LED-24
	Contacting, bipolar	–	3-pin	–	526622	SME-8-SL-LED-24
	Contacting, bipolar, heat-resistant	2-wire	–	2.5	161756	SME-8-K-24-S6
	Contacting, bipolar, operating voltage range up to 230 V AC/DC	2-wire	–	2.5	152820	SME-8-K-LED-230
	Contacting, bipolar	3-wire	–	1	562515	SME-8-FM-DS-24V-K-1,0-OE
		2-wire	–	1	562516	SME-8-FM-ZS-24V-K-1,0-OE
N/C contact						
	Contacting, bipolar	3-wire	–	7.5	160251	SME-8-O-K-LED-24

Ordering data – Slot cover for T-slot				Part no.	Type
	Mounting	Length [m]			
	Insertable	2x 0.5		151680	ABP-5-S

Pneumatic valves

VLX



Overview, configuration and ordering
→ www.festo.com/catalogue/vlx



Additional information, support and user documentation
→ www.festo.com/sp/vlx





- + Poppet valve, indirectly actuated with diaphragm control
- + Connection G1/4 ... G1, also available with NPT thread
- + Flow rate 2400 ... 14,000 l/min

- + Pneumatically actuated

Pneumatic valves VLX


Product range overview and type codes

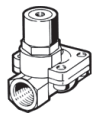
General information

-  - G $\frac{1}{4}$... G1
-  - Standard nominal flow rate
2,400 ... 14,000 l/min

Design

- Poppet valve, indirectly actuated with diaphragm control

-  - Note
Attention: If the pressure is switched on, the valve will open briefly.

Design	Type	Process valve connection	Nominal size DN	→ Page/Internet
	VLX-2-...	G $\frac{1}{4}$	13	783
		G $\frac{3}{8}$	13	
		G $\frac{1}{2}$	13	
		G $\frac{3}{4}$	20	
		G1	25	

VLX - 2 - $\frac{1}{4}$ - MS -

Type	
VLX	Pneumatic valve

Connection	
G14	Thread G $\frac{1}{4}$
G38	Thread G $\frac{3}{8}$
G12	Thread G $\frac{1}{2}$
G34	Thread G $\frac{3}{4}$
G1	Thread G1

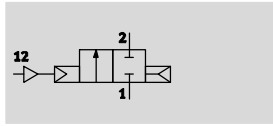
Material	
MS	Brass


Design	
-	G thread


Pneumatically actuated media valves

Technical data

Function



-  - Standard nominal flow rate
2,400 ... 14,000 l/min

-  - G $\frac{1}{4}$... G1

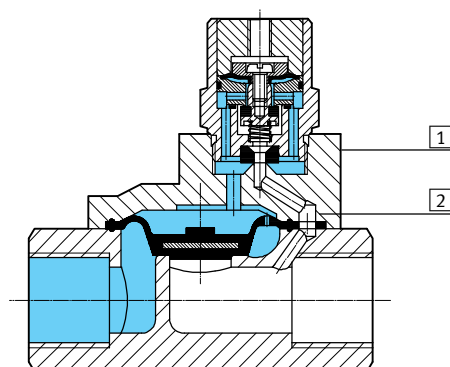


General technical data	VLX-2-1/4-MS	VLX-2-3/8-MS	VLX-2-1/2-MS	VLX-2-3/4-MS	VLX-2-1-MS
Process valve connection	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G1
Nominal size DN	13	13	13	20	25
Auxiliary pilot air port 12	M5				
Valve function	2/2-way, single pilot, closed				
Design	Diaphragm valve				
Type of mounting	In-line installation				
Actuation type	Pneumatic				
Type of control	Piloted				
Reset method	Pneumatic spring				
Mounting position	Any				
Sealing principle	Soft				
Direction of flow	Non-reversible				
Exhaust function	No flow control				
Product weight [g]	490	470	450	1,135	1,010

Operating and environmental conditions	VLX-2-1/4-MS	VLX-2-3/8-MS	VLX-2-1/2-MS	VLX-2-3/4-MS	VLX-2-1-MS
Standard nominal flow rate [l/min]	2,400	3,800	4,000	10,500	14,000
Operating pressure [bar]	1 ... 10				
Medium	Filtered compressed air, degree of filtration 200 μ m				
Pilot medium	Compressed air to ISO 8573-1:2010 [7:-:-]				
Ambient temperature [°C]	-10 ... 60				
Temperature of medium [°C]	-10 ... 80				

Materials

Sectional view



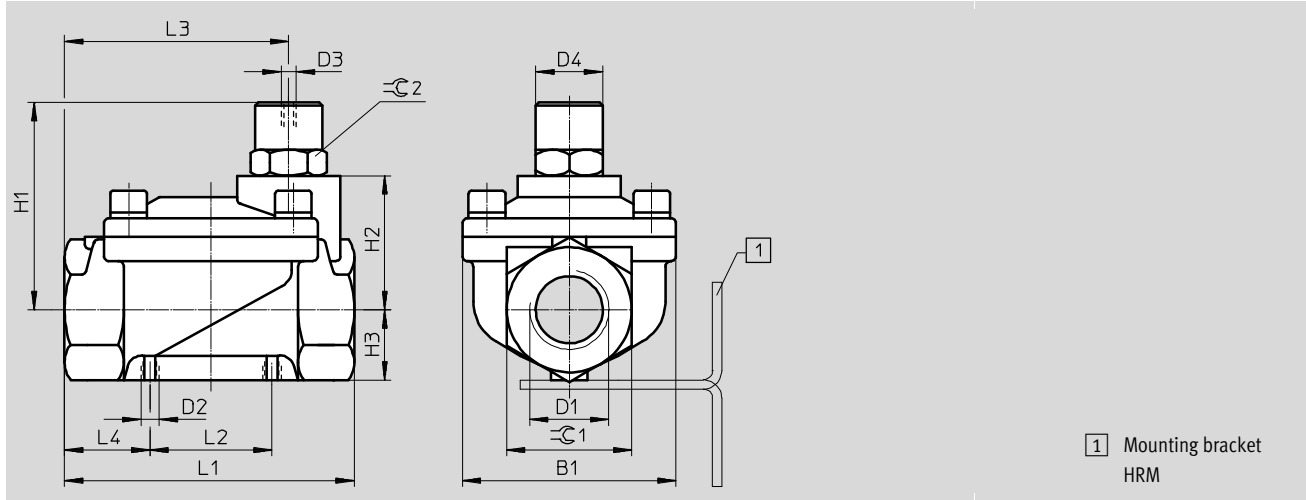
Pneumatic valves		
1	Housing	Brass
2	Screws	High-alloy stainless steel
-	Material number, screw	1.4301

Pneumatic valves VLX

Technical data

Dimensions

Download CAD data → www.festo.com



Type	B1	D1	D2	D3	D4 Ø	H1	H2	H3	L1	L2	L3	L4	≈ 1	≈ 2
VLX-2-1/4-MS	48	G1/4	M4	M5	22	56.5	32.5	15.5	67	25	47	21	27	22
VLX-2-3/8-MS	48	G3/8	M4	M5	22	56.5	32.5	15.5	67	25	47	21	27	22
VLX-2-1/2-MS	48	G1/2	M4	M5	22	56.5	32.5	15.5	67	25	47	21	27	22
VLX-2-3/4-MS	70	G3/4	M6	M5	22	68	44	23	95	40	73.5	28	41	22
VLX-2-1-MS	70	G1	M6	M5	22	68	44	23	95	40	73.5	28	41	22

Ordering data

	Process valve connection	Part No.	Type
	G1/4	34432	VLX-2-1/4-MS
	G3/8	34433	VLX-2-3/8-MS
	G1/2	34434	VLX-2-1/2-MS
	G3/4	34435	VLX-2-3/4-MS
	G1	34436	VLX-2-1-MS

Pneumatic valves VLX

Accessories


Dimensions

Download CAD data → www.festo.com



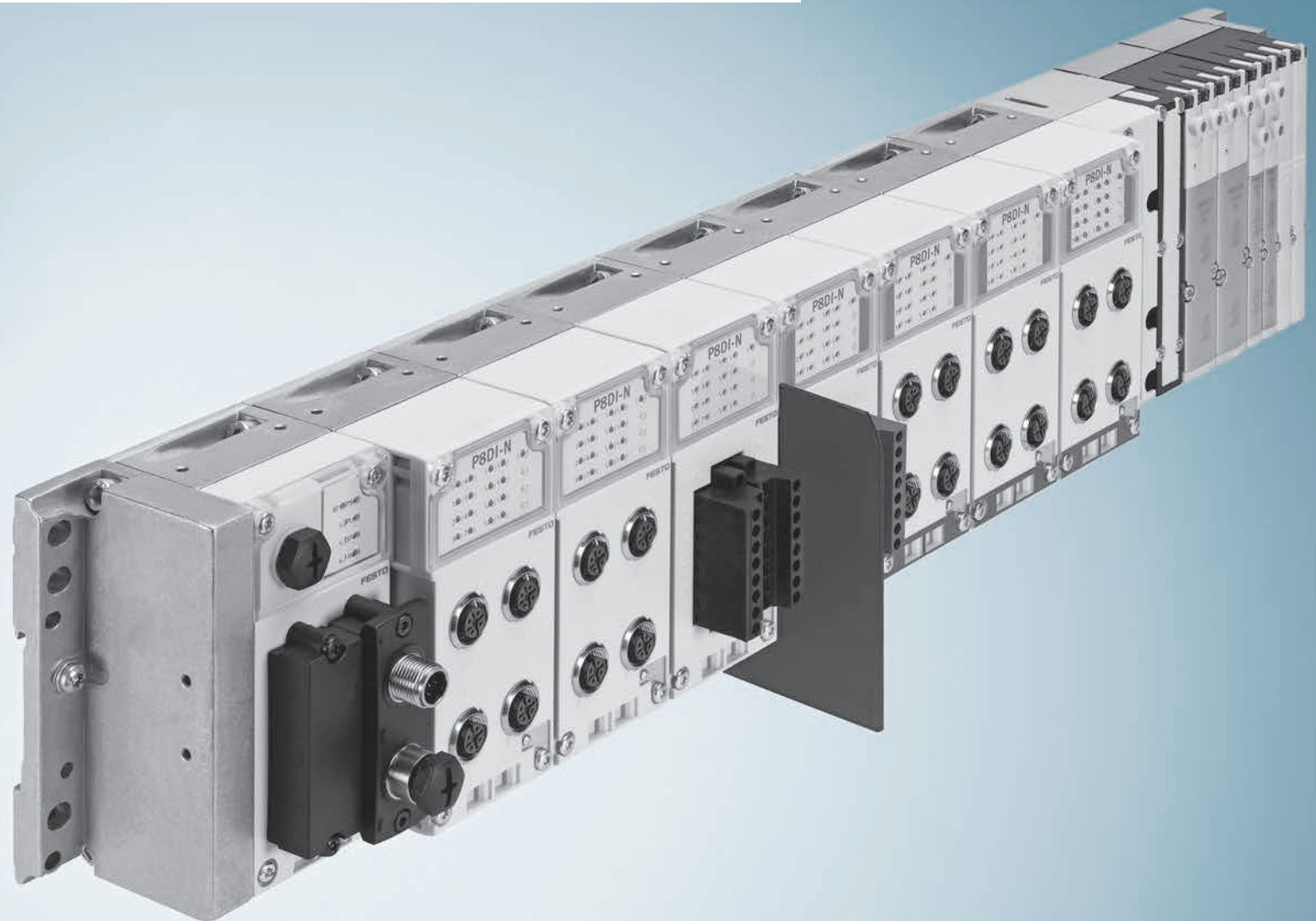
Type	B1	B2	B3	D1 ∅	D2 ∅	H1	H2	L1	L2 ±0.1
HRM-1	25	12.5	2	6	5	37	10	40	25
HRM-2	35	17.5	3	7	7	66	16	55	40

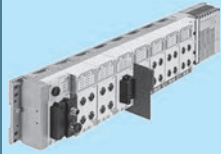
Ordering data

	Mounting bracket	Part No.	Type
	For type VLX-2-1/4, VLX-2-3/8, VLX-2-1/2	9769	HRM-1
	For type VLX-2-3/4, VLX-2-1	9770	HRM-2

11 Other devices

- + Control technology and remote I/O
- + Sensors
- + Motion Terminal
- + Valve terminals
- + Compressed air preparation
- + Pneumatic fittings system
- + Electrical connector technology
- + Control cabinets





Control technology and remote I/O

- + Pneumatic and electropneumatic controllers

→ page 788



Sensors

- + Position sensors
- + Pressure and vacuum sensors
- + Force sensors
- + Sensor boxes

→ page 795



Motion Terminal

- + Combines the advantages of electric and pneumatic technologies

→ page 798



Valve terminals

- + Universal valve terminals
- + Standards-based valve terminals
- + Application-specific valve terminals
- + Electrical peripherals

→ page 799



Compressed air preparation

- + Service units
- + Filter regulators
- + Lubricators
- + On/off valves and soft start valves

→ page 803



Connection technology

- + Pneumatic
- + Electric

→ page 815



Control cabinets

- + Individually tailored to the application

→ page 834

Contents

Control technology and remote I/O 788

Sensors 795

Motion Terminal 798

Valve terminals 799

Compressed air preparation 803


Pneumatic fittings system 799

Electrical connector technology 825



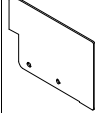
Control cabinets 834

Product overview – Control technology and remote I/O




For Terminal CPX

	
Type	Control blocks CPX-CEC-M1-V3, CPX-CEC-S1-V3, CPX-CEC-C1-V3
CPU data	256 MB RAM, 32 MB flash, 800 MHz processor
Configuration support	CODESYS V3
Processing time	Approx. 200 µs/1 k instructions
Degree of protection	IP65, IP67
Description	<ul style="list-style-type: none"> • Easy actuation of valve terminal configurations • Programming with CODESYS to IEC 61131-3 • Connection to all fieldbuses as a remote controller and for pre-processing • Actuation of electric drives via CANopen • SoftMotion functions for coordinated multi-axis movements
→ online	cpx-cec-m1


For Terminal CPX

			
Type	Input modules CPX-P-8DE	Connection blocks CPX-P-AB	Insulating plates CPX-P-AB-IP
Degree of protection	Dependent on the manifold block	IP20, IP65	
Diagnostics	Wire break per channel, limit value violation per channel, short circuit per channel, parameterisation error		
Parameterisation	Data format, input debounce time per channel, input function per channel, substitute value in case of diagnostics per channel, signal extension time per channel, dead time per channel, limit value monitoring per channel, short circuit monitoring per channel, parameter monitoring, counter configuration per channel, upper limit value per channel, lower limit value		
Description	<ul style="list-style-type: none"> • Variant with ATEX certification • 8 digital inputs for NAMUR sensors or wired mechanical contacts • Variant with intrinsically safe design 	<ul style="list-style-type: none"> • Variant with ATEX certification • Polymer • Variants for intrinsically safe design • Compatible with digital input module CPXP-8DE • 4x socket, M12, 4-pin • 2x plug, 8-pin 	<ul style="list-style-type: none"> • Insulating plate for safe separation of intrinsically safe and non-intrinsically safe areas of the CPX terminal
→ online	cpx-p	cpx-p	cpx





Pneumatic and electropneumatic controllers

Type	 Pulse generators TAA, TAB	 Memory modules SBA-2N	 Pulse generators VLG
Pneumatic connection	Barbed connector for 3 mm I.D. plastic tubing	Barbed connector for 3 mm I.D. plastic tubing	G1/8, G1/4
Type of mounting	On mounting frame	On mounting frame	Through-hole in housing
Nominal width	2 mm	3 mm	3.5 mm, 7 mm
Standard nominal flow rate	60 l/min	70 l/min	120 l/min, 600 l/min
Description	<ul style="list-style-type: none"> For ensuring a logical program sequence Poppet valve with integrated AND as well as OR element 	<ul style="list-style-type: none"> For input logic operations For simplifying the design and installation of pneumatic controllers 	<ul style="list-style-type: none"> For generating infinitely adjustable signals in controllers For high-speed cylinder movements of diaphragm cylinders, single and double-acting cylinders
→ online	taa	sba	vlg

Software tool




CODESYS	 <p>CODESYS The IEC 61131-3 Programming System provided by Festo</p>	<p>CODESYS for standardised programming of embedded devices to IEC 61131-3. It makes your life easier with simple commissioning, fast programming and parameterisation.</p> <p>Advantages</p> <ul style="list-style-type: none"> Hardware-neutral software platform for quick and easy configuration, programming and commissioning of pneumatic and electric automation solutions Extensive module libraries for single or multi-axis positioning motions <ul style="list-style-type: none"> The IEC 61131-3 standard means that CODESYS is flexible and open for all types of control tasks Modular: offline and online functions as well as components for hardware configuration and visualisation Convenient IEC function element extension Re-use of existing application parts <p>The parameterisation software can be found in the support portal at www.festo.com/sp > enter search term "CODESYS" > start "Search" > select "Software" tab.</p>
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Electronic controllers



Type	 Controllers CECC-D, CECC-LK, CECC-S	 Controllers CECX-X-M1, CECX-X-C1	 Input/output modules CECX-D-E8A, CECX-A-4E4A	 Input modules CECX-D-16E, CECX-A-4E-V, CECX-E-E-T-P
Operating voltage	19.2 ... 30 V DC, 20.4 ... 30 V DC	19.2 ... 30 V DC	19.2 ... 30 V DC	19.2 ... 30 V DC
CPU data	400 MHz processor	64 MB DRAM, 400 MHz processor	64 MB DRAM, 400 MHz processor	64 MB DRAM, 400 MHz processor
Fieldbus interface, type	CAN bus	CAN bus		
Ethernet, connector plug	RJ45	8-pin, socket, RJ45		
Description	<ul style="list-style-type: none"> Compact programmable logic controller Programming with CODESYS to IEC 61131-3 12 digital inputs, 8 digital outputs, additionally two high-speed counters up to 250 kHz Ethernet 10/100 Mbps USB interface for data transfer CECC-LK with CANopen, IO-Link®, I-Port and Modbus TCP protocol 	<ul style="list-style-type: none"> Modular master controller with CODESYS or motion controller with CODESYS and SoftMotion Programming to standard IEC 61131-3 Three plug-in slots for optional modules Optional: communication module for PROFIBUS 	<ul style="list-style-type: none"> Digital modules: 6 or 8 digital inputs and 8 digital outputs Analogue modules for voltage: 4 analogue voltage inputs and 4 analogue voltage outputs Analogue modules for current: 4 analogue current inputs and 4 analogue current outputs Address setting function, short circuit monitoring function for outputs, debounce function, interrupt function, sensor failure detection function 	<ul style="list-style-type: none"> Digital modules: 16 digital inputs Analogue modules for voltage: 4 analogue voltage inputs Temperature input modules: 4 or 6 temperature inputs
→ online	cecc	cecx-x-m1	cecx	cecx

Product overview – Control technology and remote I/O

Electronic controllers





			
Type	Output modules CECX-D-14A-2, CECX-A-4A-V	Encoder interfaces CECX-C-2G	Bus interfaces CECX-F-PB-S-V, CECX-F-PB-V1, CECX-B-CO
Operating voltage	24 V DC +25%/-15%	19.2 ... 30 V DC	19.2 ... 30 V DC
CPU data			
Fieldbus interface, type			CAN bus, PROFIBUS master DP-V1, PROFIBUS slave DP-V0, PROFIBUS slave DP-V1
Ethernet, connector plug		9-pin, socket, RJ45	8-pin, socket, 9-pin, plug connector
Description	<ul style="list-style-type: none"> Digital modules: 14 digital outputs Analogue modules: 4 analogue voltage outputs 	<ul style="list-style-type: none"> Displacement measurement function Pulse counter Speed measurement function Shaft encoder monitoring function Counter reading latch function Sensor break monitoring Status display function 	<ul style="list-style-type: none"> Connection via CAN bus to the modular controller For connecting decentralised peripheral modules in series
→ online	cecx	cecx	cecx

Electronic controllers




		
Type	Electrical interfaces CECX-C-2S1	AS-Interface® modules CESA
Operating voltage	9.2 ... 30 V DC	AS-Interface® voltage 30 V DC
CPU data		
Fieldbus interface, type		CANopen device specification CIA DS-301, PROFIBUS to DIN 19245 Part 3
Ethernet, connector plug	8-pin	
Description	<ul style="list-style-type: none"> For extending the controller with two RS232 serial interfaces 	<ul style="list-style-type: none"> AS-Interface® master gateway Duplicate address recognition Direct operation via pushbuttons Graphic display Comprehensive diagnostics via LED and display Specification 3.0
→ online	cecx	cesa

Product overview – Control technology and remote I/O

Electrical peripherals



Type	 Terminal CPX	 Automation systems CPX-E	 Terminal CPX-P	 Electrical interfaces CPX-CTEL
Max. no. of inputs	Digital 512, analogue 32	Digital 512, analogue 32	512	256
Max. no. of outputs	Digital 512, analogue 18	Digital 512, analogue 32	512	256
No. of module positions	Max. 9 electric input/output modules	10	10	Max. 4 modules with I-Port interface
Electric actuation	Fieldbus, integrated controller	Fieldbus, integrated controller	Fieldbus, integrated controller	I-Port
Description	<ul style="list-style-type: none"> Automation platform Open to all common fieldbus protocols and Ethernet Integrated diagnostic and maintenance functions Can be used as stand-alone remote I/O or with valve terminals MPA-S, MPA-L, VTSA/VTSA-F Choice of polymer or metal housing with individual linking Analogue inputs and outputs, 2-way/4-way, optionally with HART protocol 	<ul style="list-style-type: none"> Modern control system with high performance Fieldbus master interfaces, EtherCAT® master, fieldbus slave interfaces, PROFINET, EtherNet/IP, PROFIBUS, EtherCAT® Digital input modules (16DI), digital output modules (8DO/0.5 A) Analogue input modules (current, voltage), analogue output modules (current, voltage) Modern programming system CODESYS V3 to IEC 61131-3 Integration of motion functions (SoftMotion) High I/O component density Easy mounting of the control system on an H-rail 	<ul style="list-style-type: none"> Use of matching remote I/O and valve terminals in a control cabinet Combination with modules of the electrical terminal CPX, which enables use for hybrid applications Unique modular structure Comprehensive integrated diagnostic and maintenance functions Analogue inputs and outputs with HART protocol 	<ul style="list-style-type: none"> CPX-CTEL master module with 4 I-Port connections Decentralised point-to-point connection to input modules and/or valve terminals possible Standardised M12 connections
→ online	cpx	cpx-e	cpx-p	cpx-ctel

Electrical peripherals



Type	 Measuring modules CPX-CMIX	 Input modules CTSL	 CPI installation system CTEC
Max. no. of inputs	6x8	16	128
Max. no. of outputs	6x8		128
No. of module positions	9		
Electric actuation	Via fieldbus	IO-Link®, I-Port	Fieldbus, integrated controller
Description	<ul style="list-style-type: none"> Pneumatics and electrics – movement and measurement on one platform Innovative measurement technology – piston rod drives, rodless drives, rotary drives Actuation via fieldbus Remote maintenance, remote diagnostics, web server, SMS and e-mail alert are all possible via TCP/IP Modules can be quickly exchanged and expanded without altering the wiring 	<ul style="list-style-type: none"> For installation system CTEL For recording sensor input signals Display of the input status for each input signal via an assigned LED Diagnostic LED for short circuit/overload of sensor supply 	<ul style="list-style-type: none"> CPX master module for four CPI strings Combination of centralised and decentralised installation possible Decentralised pneumatic components and sensors for fast processes Can be connected to valve terminal CPV, MPA-S, CPV-SC
→ online	cpc-cmix	ctsl	ctec

Product overview – Control technology and remote I/O


Electrical peripherals

		
Type	Fieldbus modules CTEU	AS-Interface® components ASI, CACC
Max. no. of inputs	128	4, 8
Max. no. of outputs	128	8
No. of module positions	32	
Electric actuation	CANopen, DeviceNet, AS-Interface®, CC-Link, PROFIBUS, EtherCAT, Ethernet/IP, PROFINET, CPI-B, I-Port	AS-Interface®
Description	<ul style="list-style-type: none"> For valve terminals VTUB-12, VTUG, MPA-L, CPV, VTOC Can be expanded into installation system CTCL Fieldbus-typical LEDs, interfaces and switching elements available Isolated power supply for electronics and valves 	<ul style="list-style-type: none"> Accessories for the AS-Interface® installation system Cable distributor ASI-KVT Addressing device ASI-PRG-ADR Compact I/O modules (IP65, IP67)
→ online	cteu	as-interface

Operator units





		
Type	Operator units, with touchscreen CDPX	Simulators CDSM
Display	Colour TFT	
Display size	4.3", 7", 10.4", 13.3"	
Recipe memory	32 KB	
Display resolution	480x272 pixels, SVGA, 800x600 pixels, WVGA, 800x480 pixels, WXGA, 1280x800 pixels	
Ethernet interface	RJ45 10/100 MBd	
Description	<ul style="list-style-type: none"> Powerful processors combined with wide-screen technology Remote access, remote control FTP and HTTP servers Open for web and multimedia applications With touchscreen 	<ul style="list-style-type: none"> Straightforward design of human-machine dialogues Semi-graphical display of process values makes them easier to read Suitable for commissioning the following motor controllers: CMMO-ST, CMMP-AS, CMMS-ST To simulate input and output signals during commissioning
→ online	cdpx	cdsm

Documentation




	
Type	Manuals GDCW, GDCC, GSIB, P.BE, P.BP
Description	<ul style="list-style-type: none"> For software For control blocks For motors and controllers For valve terminals and electrical peripherals For vision systems
→ online	documentation

Product overview – Control technology and remote I/O

Software


				
Type	Operator packages GSIB	Operator packages P.BP	Software GSPF	Software and manuals P.SW
Description	<ul style="list-style-type: none"> Information software and documentation for motor controllers CMMD-AS, CMMP-AS, CMMS-ST The operator package contains a CD-ROM with user documentation for motor controller and configuration software FCT (Festo Configuration Tool) and a brief description 	<ul style="list-style-type: none"> Information software and documentation for motor controllers CMMP-AS and SFC-DC, handling module HSP/HSW The operator package contains a CD-ROM with user documentation for motor controller and configuration software FCT (Festo Configuration Tool) and a brief description 	<ul style="list-style-type: none"> Programming software and documentation for motor controller CMMP-AS with additional functions for cam disc functionality Software for configuring, programming, commissioning and maintaining the controller CECC Programming software for creating custom application programs for safety systems CMGA Operating software for configuring, programming and for AS-Interface® diagnostics with serial connecting cable The software package contains a CD-ROM with user documentation for the motor controller 	<ul style="list-style-type: none"> For configuring the terminal CPX, for parameterising the CPX modules, for programming the controller CPX-FEC Software for Checkbox CHB-C for image evaluation, display, protocol and adaptation of the I/O parameters Software for Checkbox CHB-C for the complete analysis of recognition processes
→ online	gsib	software	gspf	software

Software



			
Type	Software licenses GSLO	FluidDraw® software GSWF	EPLAN projects GDDE
Description	<ul style="list-style-type: none"> For enabling tools on the compact vision system SBOC-Q/SBOI-Q 	<ul style="list-style-type: none"> Quick and easy creation of pneumatic circuit diagrams Comprehensive library of pneumatic and electrical symbols User-specific product databases and translation tables Terminal plans, cable diagrams, cable lists, parts lists Dimensioning function for preparing simple control cabinet and system layouts Consistent equipment identification Multi-level project tree 	<ul style="list-style-type: none"> The EPLAN documentation for a complex Festo product can be created within a few minutes Automated generation to IEC 61355, IEC 81346 and ISO 1219 Available at any time via the web service
→ online	gslo	gswf	gdde

Product overview – Control technology and remote I/O

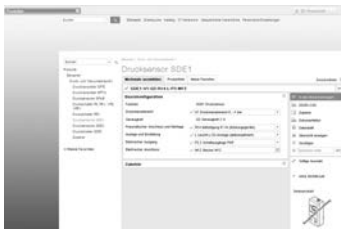

Software

	
Type	Motion Apps GAMM
NEW	
Description	<ul style="list-style-type: none"> • A new dimension in flexibility thanks to Motion Apps – one valve, numerous functions • Accelerated engineering processes • Short response times without adjusting the hardware • Reduced system complexity • Shorter market launch times for your application • Control programs for VEVM valves
→ online	gamm



Software

		
Type	App World	Smartenance GASM
Description	<ul style="list-style-type: none"> • As a customer, you can use this portal to buy directly online and, with your type code, see the apps that are relevant for your system. • Simply log in via the link provided • Order and receive your digital product immediately • View your App World order history - it's quick, convenient and transparent 	<ul style="list-style-type: none"> • Digital maintenance manager for production managers and system operators • Maintenance management is finally paperless • Clear schedule and evaluation for your system maintenance • Fast and easy transition to digital maintenance • Clear structures • Easy to use • 2 parts: 1 dashboard for production managers to manage and document and 1 mobile maintenance app for the shop floor • Transform the maintenance tasks for every system directly into a digital solution and offer customers added value for the system
→ online	www.festo.com/appworld	www.festo.com/smartenance

Software tool



<p>Configurator</p>		<p>Design a product with numerous features reliably and quickly with the help of the configurator.</p> <p>Select all the relevant product features step-by-step.</p> <p>The use of logic checks ensures that only correct configurations are available for selection.</p>	<p>The configurator is part of the electronic catalogue and is not available as a separate software program.</p>
<p>Festo Design Tool 3D</p>		<p>The Festo Design Tool 3D is a 3D product configurator for generating specific CAD product combinations from Festo. The configurator makes your search for the right accessory easier, more reliable and faster.</p> <p>You can then order the module that has been created with a single order item – either completely pre-assembled or as individual parts in a single box. As a result, your bill of materials is considerably shortened and downstream processes such as product ordering, order picking and assembly are significantly simplified.</p>	<p>All ordering options are available in the following countries: AT, BE, CH, CZ, DE, DK, ES, EST, FI, FR, GB, GR, HU, IE, IT, NL, NO, PL, PT, RU, SE, SI, SK, TR, ZA.</p> <p>This tool can be found</p> <ul style="list-style-type: none"> via the address: www.festo.com/fdt-3d-online in the above listed countries.

Proximity sensors, for T-slot


Type	 <p>Proximity sensors SMT-8M-A ★</p>	 <p>Proximity sensors SME-8, SME-8M ★</p>
Electrical connection	2-wire, 3-wire, 2-pin, 3-pin, cable, cable with plug, M8x1, M12x1, rotatable thread	2-wire, 3-wire, 3-pin, cable, cable with plug, M8x1, plug
Operating voltage range DC	5 ... 30 V	0 ... 230 V
Switching element function	N/C contact, N/C contact or N/O contact switchable, N/O contact	N/O contact, N/C contact
Switching output	Non-contacting, 2-wire, NPN, PNP, PNP/NPN switchable	Contacting, bipolar, without LED function
Description	<ul style="list-style-type: none"> Measuring principle: magneto-resistive Short design Variant Ex2 for use in potentially explosive areas Insertable in the slot from above, flush with the cylinder profile LED switching status indication LED operating reserve indication Cable length 0.1 ... 30 m 	<ul style="list-style-type: none"> Measuring principle: magnetic reed SME-8-...-S6: heat-resistant design Variants suitable for use with energy chains and robots Screw-clamped or clamped in the slot, insertable in the slot from above or lengthwise LED switching status indication Cable length 0.3, 2.5, 5, 7.5, 0.2 ... 10 m
→ online	smt	sme

Product overview – Sensors

Proximity sensors, for T-slot




	 <p>Proximity sensors SMT-8F, SMT-8G, SMT-8-SL</p>	 <p>Proximity sensors CRSMT-8</p>
Type		
Electrical connection	2-wire, 3-wire, 3-pin, cable, cable with plug, M8x1, plug, rotatable thread	3-wire, cable
Operating voltage range DC	10 ... 30 V	10 ... 30 V
Switching element function	NAMUR, N/O contact	N/O contact
Switching output	PNP, NAMUR	PNP
Description	<ul style="list-style-type: none"> • Measuring principle: magneto-resistive • SMT-8-F: in accordance with the ATEX Directive for explosive atmospheres • SMT-8-G: design ideally matched to gripper sensing • SMT-8-SL: sturdy thanks to long guides and plug directly at the sensor • Variants suitable for use with energy chains and robots • Insertable in the slot lengthwise or from above • LED switching status indication • Cable length 0.3, 2.5, 5 m 	<ul style="list-style-type: none"> • Measuring principle: magneto-resistive • Corrosion-resistant design • Suitable for use in the food industry (see www.festo.com/sp/crsmt-8 > "Certificates" tab), resistant to acids, lye and cooling lubricants • Insertable in the slot lengthwise, flush with the cylinder profile • LED switching status indication • Cable length 2.5, 5 m
→ online	smt-8	crsmt-8

Proximity sensors, for C-slot



	 <p>Proximity sensors SME-10, SME-10M</p>	★
Type		
Electrical connection	2-pin, 3-pin, 3-wire, cable, cable with plug, M12, M8x1, snap collar, plug, rotatable thread, open end	
Operating voltage range DC	5 ... 30 V	
Switching element function	N/O contact	
Switching output	Contacting, bipolar	
Description	<ul style="list-style-type: none"> • Measuring principle: magnetic reed • Clamped in C-slot, insertable in the slot from above or lengthwise • LED switching status indication • Cable length 0.3, 2.5 m 	
→ online	sme	

Product overview – Sensors

Pressure and vacuum sensors

Type	 Pressure sensors SPAU	 Pressure sensors SPAW	 Pressure transmitters SPTW
Pressure measuring range	-1 ... 16 bar	-1 ... 100 bar	-1 ... 10 bar
Switching element function	N/C or N/O contact, switchable	Switchable	
Pneumatic connection	G1/8, M5, M7, NPT1/8-27, QS-4, QS-5/32, QS-6, R1/4, R1/8	Male thread G1/2, female thread G1/4	G1/4
Electrical connection	4-pin, M12x1, M8x1, plug, to EN 60947-5-2, round design	Plug, to EN 60947-5-2, M12x1, 4-pin, 5-pin, round design	4-pin, M12x1, plug, to EN 60947-5-2, round design
Display type	LED, illuminated LCD	4-character alphanumeric, LED indicator	
Description	<ul style="list-style-type: none"> For monitoring compressed air and non-corrosive gases With and without display Transfer of the pressure value as switching signal, analogue signal or via IO-Link® to the connected control system Maximum flexibility through various pneumatic adaptation options and switchable electric outputs 	<ul style="list-style-type: none"> Highly robust For liquid and gaseous media Quick and easy setting of the switching outputs using three pushbuttons Optimum legibility: display housing rotatable 320°, display at an angle of 45° 	<ul style="list-style-type: none"> Sensor versions: piezoresistive pressure sensor or metal thin-film pressure sensor Measured variable: relative pressure Operating medium: liquid and gaseous media No seal: pressure measuring cell and stainless steel interfaces IP67 degree of protection
→ online	spau	spaw	sptw

Flow sensors

Type	 Flow sensors SFAW	 Flow sensors SFAB
Flow measuring range	1.8 ... 100 l/min	10 ... 1000 l/min
Operating medium	Liquid media, water, neutral liquids	Compressed air to ISO 8573-1:2010 [6:4:4], compressed air to ISO 8573-1:2010 [7:4:4], nitrogen
Operating pressure	0 ... 12 bar	0 ... 10 bar
Pneumatic connection		QS-5/16, QS-1/4, QS-3/8, QS-6, QS-8, QS-10, QS-12
Electrical connection	Straight plug, M12x1, 5-pin, A-coded	5-pin, M12x1, straight plug
NEW		
Description	<ul style="list-style-type: none"> Cooling circuit monitoring, leakage or line break monitoring, process water monitoring, fill level monitoring Input connection: clamped terminal connection DN15, DN20, barbed hose fitting 13 mm, female thread G1/2, G3/4, G1, user-specific connection With optional integrated temperature sensor Connection to higher-level systems is provided by two switching outputs, an analogue output and/or an IO-Link® interface Certification: RCM, c UL us Listed (OL) Display is rotatable 90° anti-clockwise and 180° clockwise 	<ul style="list-style-type: none"> Flow sensor with integrated digital display With unidirectional flow input Mounting: H-rail mounting, wall or surface mounting Certification: C-Tick
→ online	sfaw	sfab

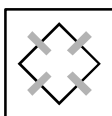
Product overview – Motion Terminal

Motion Terminal



Type	Motion Terminal VTEM
Valve terminal design	Fixed grid
Grid dimension	28 mm
Max. no. of valve positions	8
Standard nominal flow rate	480 l/min
Pneumatic connection 1	G3/8
Operating pressure	3 ... 8 bar
Pilot pressure	3 ... 8 bar
Actuation type	Electric
Nominal operating voltage DC	24 V
Temperature of medium	-5 ... +50 °C
Description	<ul style="list-style-type: none"> • Many functions in one component – thanks to apps • Combines the benefits of electric and pneumatic components • Maximum standardisation • Reduced complexity and time to market • Increasing profitability and know-how protection • Minimal installation • Increased energy efficiency
→ online	vtem

Motion Apps






Type	Motion Apps GAMM
Description	<ul style="list-style-type: none"> • A new dimension in flexibility thanks to Motion Apps – delivering a wide range of different functions in a single valve • Faster engineering processes • Short response times without the need to adapt the hardware • Reduced system complexity • Shorter time-to-market for your application • Control programs for VEVN valves
→ online	gamm

Product overview – Valve terminals

Software tool





<p>Product Finder for valve terminals</p>		<p>Find the right valve terminal quickly with the help of the Product Finder. Start the Product Finder via the blue icons in the product tree. Select the technical features on the left-hand side step-by-step; the selection of suitable products on the right-hand side is automatically updated to reflect the chosen technical features.</p>	<p>The use of logic checks ensures that only correct configurations are available for selection. The Product Finder for valve terminals is part of the electronic catalogue and is not available as a separate software program.</p> <p>This tool can be found</p> <ul style="list-style-type: none"> on the Internet at www.festo.com/catalogue by clicking on the blue "Product Finder" button
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Universal valve terminals




Type	 Valve terminals with individual electrical connection VUVG-S	★  Valve terminals with multi-pin plug or fieldbus connection VTUG	 Valve manifolds VTUS
Width	10 mm, 14 mm, 18 mm	10 mm, 14 mm, 18 mm	21 mm, 26.5 mm, 30 mm
Standard nominal flow rate	1380 l/min at 18 mm, 380 l/min at 10 mm, 780 l/min at 14 mm	1200 l/min at 18 mm, 330 l/min at 10 mm, 630 l/min at 14 mm	600.. 2300 l/min
Max. no. of valve positions	16	24	16
Electrical actuation	Individual connection	Multi-pin plug, I-Port interface, IO-Link, fieldbus	Individual connection
Valve terminal design	Fixed grid	Fixed grid	Fixed grid
Description	<ul style="list-style-type: none"> Compact with small valves VUVG Connection technology easy to change via the electrical connection box Wide range of valve functions Also with semi in-line valves 	<ul style="list-style-type: none"> Low-cost fixed grid Extremely easy assembly Exchangeable electrical actuation IO-Link capable Valves VUVG with individual electrical connection can be integrated Also available with pneumatic multi-pin plug 	<ul style="list-style-type: none"> Robust valves VUVS with long service life Individual electrical connection Pilot air supply in the manifold rail Comprehensive range of accessories
→ online	vuvg-s	vtug	vtus

Product overview – Valve terminals

Universal valve terminals

Type	 Valve terminals MPA-L	 Valve terminals MPA-S	 Valve terminals VTSA-F	 Valve terminals, Compact Performance CPV
Width	10 mm, 14 mm, 20 mm	10 mm, 20 mm	18 mm, 26 mm, 42 mm, 52 mm, 65 mm	10 mm, 14 mm, 18 mm
Standard nominal flow rate	360 l/min at 10 mm, 670 l/min at 14 mm, 870 l/min at 20 mm	360 l/min at 10 mm, 700 l/min at 20 mm	700 l/min at 18 mm, 1350 l/min at 26 mm, 1860 l/min at 42 mm, 2900 l/min at 52 mm, 4000 l/min at 65 mm	400 l/min at 10 mm, 800 l/min at 14 mm, 1600 l/min at 18 mm
Max. no. of valve positions	32	64	32	8
Electrical actuation	Fieldbus, multi-pin plug, electrical terminal CPX, IO-Link, I-Port	Fieldbus, multi-pin plug, electrical terminal CPX, AS-Interface®, CP installation system	Ethernet, fieldbus, multi-pin plug, electrical terminal CPX, integrated controller, AS-Interface® connection	AS-Interface, CP installation system, individual connection, fieldbus, multi-pin plug, IO-Link®
Valve terminal design	Modular, valve sizes can be mixed	Modular, valve sizes can be mixed	Modular, valve sizes can be mixed	Fixed grid
Description	<ul style="list-style-type: none"> • Maximum modularity • Single granular • Polymer sub-base • Three valve sizes • Max. 32 valves • Fieldbus connection via CPX • IO-Link capable 	<ul style="list-style-type: none"> • Valve terminals for universal applications • High-performance valves in a sturdy metal housing • Metal linking • Two valve sizes can be combined • Excellent communication thanks to serial linking • Fieldbus connection via CPX 	<ul style="list-style-type: none"> • Flow rate-optimised VTSA valve terminal • Linking with increased flow rates • Functions as per VTSA 	<ul style="list-style-type: none"> • Maximum performance in the smallest of spaces • Three sizes • Wide range of connection and mounting options • Multi-pin or fieldbus control • IO-Link capable
→ online	mpa-l	mpa-s	vtsa	cpv



Universal valve terminals

Type	 Valve terminals, Smart Cubic CPV-SC	 Valve manifolds, Compact Performance CPV10-EX-VI	 Valve terminals VTUB-12
Width	10 mm	10 mm	12 mm, 24 mm
Standard nominal flow rate	170 l/min	400 l/min	400 l/min
Max. no. of valve positions	16	8	35
Electrical actuation	CP installation system, individual connection, fieldbus, multi-pin plug	Individual connection	Multi-pin plug, IO-Link, fieldbus
Valve terminal design	Fixed grid	Fixed grid	Fixed grid
Description	<ul style="list-style-type: none"> • Small and compact • High flow rate even with compact design • Suitable for vacuum • Multi-pin or fieldbus control 	<ul style="list-style-type: none"> • Intrinsically safe valve manifold design to ATEX Category 2 (Zone 1) • Optimised for control cabinet assembly • Optimal for pilot control of process valves 	<ul style="list-style-type: none"> • Compact dimensions • Poppet valves in polymer technology • Multi-pin or fieldbus control • IO-Link capable
→ online	cpv-sc	cpv10-ex	vtub-12





Other devices

Product overview – Valve terminals

Standards-based valve terminals





		
Type	Valve terminals, ISO 15407-2/ISO 5599-2 VTSA	Valve manifolds, ISO 15407-1 VTIA
Width	18 mm, 26 mm, 42 mm, 52 mm, 65 mm	18 mm, 26 mm
Max. standard nominal flow rate	1100 l/min at 26 mm, 1300 l/min at 42 mm, 2900 l/min at 52 mm, 4000 l/min at 65 mm, 550 l/min at 18 mm	1100 l/min at 26 mm, 550 l/min at 18 mm
Max. no. of valve positions	32	16
Electrical actuation	Ethernet, fieldbus, multi-pin plug, integrated controller	Individual connection
Valve terminal design	Modular, valve sizes can be mixed	Modular, valve sizes can be mixed
Description	<ul style="list-style-type: none"> Conforms to ISO 15407-2/ISO 5599-2 Multi-pin plug connection or fieldbus connection via the CPX system Five valve sizes can be combined on one valve terminal Integratable safety functions 	<ul style="list-style-type: none"> Conforms to ISO 15407-1 Wide range of individual electrical connections Two valve sizes can be combined
→ online	vtsa	vtia

Electrical peripherals

				
Type	Terminal CPX	Fieldbus modules CTEU Installation system CTEL	CPI installation system CTEC	Automation systems CPX-E
Protocol	INTERBUS, DeviceNet, PROFIBUS, CANopen, CC-Link, Ether-Net/IP, PROFINET, EtherCAT, ModbusTCP	AS-Interface®, CANopen, CC-Link, DeviceNet, EtherCAT, PROFINET, PROFIBUS DP, CPI-B	INTERBUS, DeviceNet, PROFIBUS, CANopen, CC-Link, Ether-Net/IP, PROFINET, EtherCAT, ModbusTCP	
Max. address volume for inputs	64 bytes	2 ... 64 bytes	16 bytes	64 bytes
Max. address volume for outputs	64 bytes	2 ... 64 bytes	16 bytes	64 bytes
Parameterisation	Diagnostic behaviour, failsafe response, forcing of channels, signal setup	Activate diagnostics, diagnostic behaviour, failsafe and idle response, failsafe response, watchdog disable, watchdog enable		
Degree of protection	IP65, IP67	IP65, IP67	IP65, IP67	IP20
Nominal operating voltage DC	24 V	24 ... 30 V	24 V	24 V
Operating voltage range DC	18 ... 30 V	18 ... 31.6 V	18 ... 30 V	
Description	<ul style="list-style-type: none"> Automation platform Open to all common fieldbus protocols and Ethernet Integrated diagnostic and maintenance functions Can be used as stand-alone as remote I/O or with valve terminals MPA-S, MPA-L, VTSA/VTSA-F Choice of polymer or metal housing with individual linking 	<ul style="list-style-type: none"> For valve terminals VTUB-12, VTUG, MPA-L, CPV, VTOC Can be expanded into installation system CTEL Fieldbus-typical LEDs, interfaces and switching elements available Isolated power supply for electronics and valves 	<ul style="list-style-type: none"> CPX master module for four CPI strings Combination of centralised and decentralised installation possible Decentralised pneumatic components and sensors for fast processes Can be connected to valve terminal CPV, MPA-S, CPV-SC 	<ul style="list-style-type: none"> Modern control system with high performance Fieldbus master interfaces, EtherCAT master, fieldbus slave interfaces, PROFINET, EtherNet/IP, PROFIBUS, EtherCAT Digital input modules (16DI), digital output modules (8DO/0.5 A) Analogue input modules (current, voltage), analogue output modules (current, voltage) Modern programming system CODESYS V3 to IEC 61131-3 Integration of motion functions (SoftMotion) High I/O component density Easy mounting of the control system on an H-rail
→ online	cpx	cteu	ctec	cpx-e

Product overview – Valve terminals

Electrical peripherals

Type	 Terminal CPX-P	 AS-Interface® components ASI, CACC	 Electrical interfaces CPX-CTEL	 AS-Interface® modules CESA
Protocol	DeviceNet, PROFIBUS, EtherNet/IP, PROFINET, ModbusTCP		I-Port, IO-Link	AS-Interface®, CANopen, PROFIBUS
Max. address volume for inputs	64 bytes		32	
Max. address volume for outputs	64 bytes		32	
Parameterisation	Diagnostic behaviour, failsafe response, forcing of channels, signal setup		Diagnostic behaviour, fail-safe mode per channel, force mode per channel, idle mode per channel, module parameter, tool changeover mode	
Degree of protection	IP20, IP65	IP65	IP65, IP67	IP20
Nominal operating voltage DC	24 V	24 V	24 V	AS-Interface® voltage 30 V DC
Operating voltage range DC	18 ... 30 V	26.5 ... 31.6 V	18 ... 30 V	
Description	<ul style="list-style-type: none"> • Use of harmonised remote I/O and valve terminals in a control cabinet • Combination with modules of the electrical terminal CPX, which enables use for hybrid applications • Unique modular structure • Comprehensive integrated diagnostic and maintenance functions 	<ul style="list-style-type: none"> • Accessories for the AS-Interface® installation system • Cable distributor ASI-KVT • Addressing device ASI-PRG-ADR • Compact I/O modules (IP65, IP67) • AS-Interface® power supply unit CACN 	<ul style="list-style-type: none"> • CPX-CTEL master module with 4 I-Port connections • Decentralised pneumatic components and sensors for fast processes • Standardised M12 connections 	<ul style="list-style-type: none"> • AS-Interface® master gateway • Duplicate address recognition • Direct operation via pushbuttons • Graphic display • Comprehensive diagnostics via LED and display • Specification 3.0
→ online	cpx-p	as-interface	cpx-ctel	cesa

Customised components – for your specific requirements



Valve terminals with customised designs

Can't find the valve terminal you need in our catalogue?

We can offer you customised components that are tailored to your specific requirements.

Common product modifications:



- Coatings for special ambient conditions
- Customised cables: length, pin allocation, pre-assembled with plug
- Modified actuating elements
- Modified connecting thread
- Modified valve sub-bases

Many additional variants are possible. Ask your Festo sales engineer, who will be happy to help.



→ www.festo.com/contact

Product overview – Compressed air preparation

Software tool



<p>Air consumption</p>		<p>Calculate your system's air consumption quickly and conveniently. Simply enter all the drives and tubing, set the cycle times and working pressure and the air consumption per minute and per day will be calculated for you. It includes a feature for exporting the input table together with the result directly to Excel.</p>	<p>This tool can be found</p> <ul style="list-style-type: none"> on the Internet at www.festo.com/catalogue by clicking on the blue "Engineering" button
<p>Configurator</p>		<p>Design a product with numerous features reliably and quickly with the help of the configurator. Select all the relevant product features step-by-step. The use of logic checks ensures that only correct configurations are available for selection. A dynamic graphic generated on the basis of the configuration provides visual assistance in selecting the correct product features.</p>	<p>The configurator is part of the electronic catalogue and is not available as a separate software program.</p>

Service unit combinations: MS series


Type	 <p>Service unit combinations MSB4, MSB6, MSB9</p>	 <p>★ Service unit combinations MSE6</p>
Pneumatic connection 1	G1, G1 1/2, G1 1/4, G1/2, G1/4, G1/8, G3/4	G1/2
Standard nominal flow rate	750 ... 18,000 l/min	4500 l/min
Pressure regulation range	0.5 ... 16 bar	
Flow measuring range		50 ... 5000 l/min
Operating pressure	0 ... 20 bar	4 ... 10 bar
Grade of filtration	0.01 ... 40 µm	
Fieldbus interface		Sub-D socket, 9-pin; 2x M12x1 socket, 4-pin, D-coded; 2x RJ45 push-pull socket, AIDA; 2x SCRJ push-pull socket, AIDA
Description	<ul style="list-style-type: none"> Combination of filter regulator MS-LFR, lubricator MS-LOE, on-off valve MS-EM, MS-EE, soft-start valve MS-DL, branching module MS-FRM Sizes: 4, 6, 9 	<ul style="list-style-type: none"> Intelligent pneumatic service unit for optimising the use of compressed air as an energy source Function: energy saving (2/2-way function DE, V24) Equipped with measuring, control and diagnostic functions Identification of production downtime and leakages Use as process monitoring module Electrical actuation via bus node Size: 6
→ online	, msb9	mse6

Product overview – Compressed air preparation


Service unit combinations: D series, polymer

Type	 Service unit combinations FRC-K	 Service unit combinations LFR-DB
Pneumatic connection 1	G1/4	G1/4
Standard nominal flow rate	400 ... 700 l/min	1900 l/min
Pressure regulation range	0.5 ... 7 bar	0.5 ... 7 bar
Operating pressure	1.5 ... 10 bar	1.5 ... 10 bar
Grade of filtration	40 µm	40 µm
Description	<ul style="list-style-type: none"> • Combination of on-off valve, filter regulator, distributor module and lubricator • Size: mini 	<ul style="list-style-type: none"> • Combination of on-off valve, filter regulator and distributor module • Size: mini
→ online	frc	lfr

Filter regulators/lubricators: MS series


Type	 Service unit combinations MSB4-FRC, MSB6-FRC	★
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2	
Standard nominal flow rate	850 ... 4800 l/min	
Pressure regulation range	0.3 ... 12 bar	
Operating pressure	0.8 ... 20 bar	
Grade of filtration	5 ... 40 µm	
Description	<ul style="list-style-type: none"> • Filter, regulator and lubricator functions in a single unit • High flow rate and highly efficient in removing contaminants • Good regulation characteristics with minimal pressure hysteresis • Sizes: 4, 6 	
→ online	msb4-frc	

Filter regulators/lubricators: D series, polymer


Type	 Service units FRC-DB
Pneumatic connection 1	G1/4
Standard nominal flow rate	≥550 l/min
Pressure regulation range	0.5 ... 7 bar
Operating pressure	1.5 ... 10 bar
Grade of filtration	5 ... 40 µm
Description	<ul style="list-style-type: none"> • Filter, regulator and lubricator functions in a single unit • With manual or semi-automatic condensate drain • Size: mini
→ online	frc

Other devices


Filter regulators: MS series

	
Type	Filter regulators MS4-LFR, MS6-LFR, MS9-LFR, MS12-LFR
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2, internal
Standard nominal flow rate	850 ... 24,000 l/min
Pressure regulation range	0.3 ... 16 bar
Operating pressure	0.8 ... 20 bar
Grade of filtration	5 ... 40 µm
Description	<ul style="list-style-type: none"> MS4-LFR, MS6-LFR: directly actuated diaphragm regulator, MS9-LFR: piloted or directly actuated filter-diaphragm regulator, MS12-LFR: piloted diaphragm regulator without internal air consumption Good regulation characteristics with primary pressure compensation and minimal hysteresis Good particle and condensate separation With or without secondary exhausting High flow rate Lockable rotary knob Return flow option for exhausting from output 2 to input 1 already integrated Sizes: 4, 6, 9, 12
→ online	ms4-lfr

Filter regulators: D series, polymer

	
Type	Filter regulators LFR-DB
Pneumatic connection 1	G1/4
Standard nominal flow rate	≥1000 l/min
Pressure regulation range	0.5 ... 7 bar
Operating pressure	1.5 ... 10 bar
Grade of filtration	5 ... 40 µm
Description	<ul style="list-style-type: none"> With manual or semi-automatic condensate drain Size: mini
→ online	lfr

Filter regulators: D series, metal


	
Type	Filter regulators LFR-EX4
Pneumatic connection 1	G1/4, G1/2, NPT-1/4-18, NPT-1/2-14
Standard nominal flow rate	1150 ... 3400 l/min
Pressure regulation range	0.5 ... 16 bar
Operating pressure	1 ... 20 bar
Grade of filtration	5 ... 40 µm
Description	<ul style="list-style-type: none"> Filter regulators D series, metal Sturdy thanks to full metal design High corrosion resistance (corrosion resistance class CRC 3 to Festo standard 940 070) Ambient temperature -40...+80 °C Resistant to UV radiation and corrosive environments Use in zone 1, 21, 2, 22 Reliable manual drain Energy efficient: excellent leakage values Attractively priced Size midi
→ online	lfr

Festo core product range





- ★ Generally ready for shipping ex works in 24 hours
- ★ Generally ready for shipping ex works in 5 days

Product overview – Compressed air preparation



Filter regulators: Individual devices

	
Type	Filter regulators PCRP
Pneumatic connection 1	G1/4, G1/2, NPT1/4-18, NPT1/2-14
Standard nominal flow rate	1920 ... 4115 l/min
Pressure regulation range	0.5 ... 12 bar
Operating pressure	1 ... 20 bar
Grade of filtration	5 ... 40 µm
Description	<ul style="list-style-type: none"> Sturdy housing for the specific requirements of the process automation industry Suitable for use outdoors and at temperatures down to -60 °C Resistant to UV radiation and corrosive environments Size: 64
→ online	pcrp

Filters: MS series

				
Type	Filters MS4-LF, MS6-LF, MS9-LF, MS12-LF	Fine filters MS4-LFM-B, MS6-LFM-B, MS9-LFM-B, MS12-LFM-B	Micro filters MS4-LFM-A, MS6-LFM-A, MS9-LFM-A, MS12-LFM-A	Activated carbon filters MS4-LFX, MS6-LFX, MS9-LFX, MS12-LFX
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2, internal	G1/8, G1/4, G3/8, G1/2, G3/4, G1, manifold module	G1/8, G1/4, G3/8, G1/2, G3/4, G1, manifold module	G1/2, G1/4, G1/8, G3/8
Standard nominal flow rate	1000 ... 16,000 l/min	54 ... 23,300 l/min	54 ... 23,300 l/min	360 ... 7090 l/min
Operating pressure	0 ... 20 bar	0 ... 20 bar	0 ... 20 bar	0 ... 20 bar
Grade of filtration	5 ... 40 µm	1 µm	0.01 µm	
Description	<ul style="list-style-type: none"> Good particle and condensate separation High flow rate with minimal pressure drop Optionally with manual, semi-automatic, fully automatic or fully automatic, electrically actuated condensate drain Sizes: 4, 6, 9, 12 	<ul style="list-style-type: none"> High-efficiency filter for exceptionally clean compressed air Removal of oil aerosols from compressed air Optionally with differential pressure indicator for indication of contamination Optionally with electronic filter pollution indicator Sizes: 4, 6, 9, 12 	<ul style="list-style-type: none"> High-efficiency filter for exceptionally clean compressed air Removal of oil aerosols from compressed air Optionally with differential pressure indicator for indication of contamination Optionally with electronic filter pollution indicator Sizes: 4, 6, 9, 12 	<ul style="list-style-type: none"> Removal of gaseous oil particles from compressed air using activated carbon Air quality class at the output [1.4.1] to ISO 8573-1 Elimination of odours and vapours Residual oil content ≤ 0.003 mg/m³ Sizes: 4, 6, 9, 12
→ online	ms4-lf	ms4-lfm-b	ms4-lfm-a	ms4-lfx

Filters: individual devices




		
Type	Micro filters PFML	Filter silencers Lfu
Size	90 mm, 186 mm	G1/4, G3/8
Grade of filtration	0.01 µm	1 µm
Operating pressure	0 ... 50 bar	0 ... 16 bar
Flow rate with respect to atmosphere	3406 ... 138,233 l/min	4000 ... 12,500 l/min
Noise reduction		Reduction by 40 dB
Description	<ul style="list-style-type: none"> For high-pressure applications For use with food see www.festo.com/sp/pfml > tab "Certificates" 	<ul style="list-style-type: none"> Removes up to 99.99% of oil and other contaminants from exhaust air Manual rotary condensate drain Reduced exhaust noise regardless of frequency
→ online	pfml	lfu

Other devices



11

Product overview – Compressed air preparation

Regulators: MS series



Type	 Pressure regulators MS4-LR, MS6-LR, MS9-LR	 Pressure regulators MS12-LR	 Pressure regulators MS4-LRB, MS6-LRB
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2	Connecting plate	G1/4, G1/2
Standard nominal flow rate	1000 ... 26,000 l/min	12000 ... 22,000 l/min	300 ... 7300 l/min
Pressure regulation range	0.3 ... 16 bar	0.15 ... 16 bar	0.3 ... 16 bar
Operating pressure	0.8 ... 20 bar	0.8 ... 21 bar	0.8 ... 20 bar
Max. pressure hysteresis	0.25 ... 0.4 bar	0.04 ... 0.4 bar	0.25 bar
Description	<ul style="list-style-type: none"> • High flow rate with minimal pressure drop • Good regulation characteristics with minimal hysteresis and primary pressure compensation • Available with or without secondary exhausting • Lockable rotary knob • Optional pressure sensor and rotary knob pressure gauge • Sizes: 4, 6, 9 	<ul style="list-style-type: none"> • High flow rate with minimal pressure drop • Good regulation characteristics with minimal hysteresis and primary pressure compensation • With secondary exhausting • Lockable rotary knob • MS12-LR-...-PO: pneumatically actuated (pressure range determined by means of pilot regulator) • MS12-LR-...-PE6: solenoid actuated (pilot control by proportional pressure regulator) • Size: 12 	<ul style="list-style-type: none"> • To build up a regulator manifold with through air supply for pressure ranges that can be adjusted independently of another • Good regulation characteristics with minimal hysteresis and primary pressure compensation • Lockable rotary knob • With and without secondary exhausting • Integrated return flow option for exhausting from output 2 to input 1 • Optional pressure sensor and rotary knob pressure gauge • Sizes: 4, 6
→ online	ms4-lr	ms12-lr	ms4-lrb

Regulators: MS series


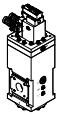
Type	 Precision pressure regulators MS6-LRP, MS6-LRPB	 Electrical pressure regulators MS6-LRE
Pneumatic connection 1	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2
Standard nominal flow rate	800 ... 5000 l/min	2200 ... 7500 l/min
Pressure regulation range	0.05 ... 12 bar	0.3 ... 16 bar
Operating pressure	1 ... 14 bar	0.8 ... 20 bar
Max. pressure hysteresis	0.02 bar	0.25 bar
Description	<ul style="list-style-type: none"> • As individual device and for manifold assembly • Manifold assembly with through air supply • Good regulation characteristics with minimal hysteresis and primary pressure compensation • High secondary exhausting • Lockable rotary knob • Optionally with pressure sensor with display • Size: 6 	<ul style="list-style-type: none"> • With integrated electric drive unit for remotely setting the output pressure • Constant output pressure even in the event of a power failure thanks to the fail-safe function • Optionally with operator unit with display • Optional pressure sensor • With or without secondary exhausting • Size: 6
→ online	ms6-lrp	ms6-lre

Product overview – Compressed air preparation

Regulators: D series, polymer


		
Type	Pressure regulators LR-DB	Pressure regulator combinations LRB-DB
Pneumatic connection 1	G1/4	G1/2
Standard nominal flow rate	≥1300 l/min	≥1000 l/min
Pressure regulation range	0.5 ... 7 bar	0.5 ... 7 bar
Operating pressure	1.5 ... 10 bar	1.5 ... 10 bar
Max. pressure hysteresis	0.5 bar	0.5 bar
Description	<ul style="list-style-type: none"> • Set values are secured by the detent on the rotary knob • Optionally with pressure gauge • Size: mini 	<ul style="list-style-type: none"> • Regulator manifold with through air supply for pressure ranges that can be adjusted independently of another • Set values are secured by the detent on the rotary knob • Without pressure gauge • Size: mini
→ online	lr-db	lrb-db

Regulators: individual devices




		
Type	Precision pressure regulators LRP, LRPS	★ Electrical pressure regulators PREL
Pneumatic connection 1	G1/8, G1/4, for connecting plate Ø 7 mm	G1
Standard nominal flow rate	240 ... 2300 l/min	
Pressure regulation range	0.05 ... 10 bar	0.2 ... 40 bar
Operating pressure	1 ... 12 bar	0 ... 50 bar
Max. pressure hysteresis	0.02 bar	0.1 bar
Description	<ul style="list-style-type: none"> • Lockable design • Good regulation characteristics with minimal hysteresis and primary pressure compensation • High secondary exhausting 	<ul style="list-style-type: none"> • For high-pressure applications • For use with food see www.festo.com/sp/prel > tab "Certificates" • Size: 186 mm
→ online	lrp	prel

Product overview – Compressed air preparation

Lubricators: MS series




	
Type	Lubricators MS4-LOE, MS6-LOE, MS9-LOE, MS12-LOE
Pneumatic connection 1	G1/4, G1/8, G3/8, G1/2, internal
Standard nominal flow rate	1100 ... 27,000 l/min
Operating pressure	1 ... 16 bar
Minimum flow rate for lubricator function	40 ... 400 l/min
Description	<ul style="list-style-type: none"> • Proportional lubricator with precision oil metering • Quick and easy top-up even under pressure • Oil capacity 30 ... 1500 cm³ • Sizes: 4, 6, 9, 12
→ online	ms4-loe

On-off and soft-start valves: MS series


			
Type	Soft-start/quick exhaust valves MS6-SV-E, MS6-SV-D	Soft-start/quick exhaust valves MS6-SV-C, MS9-SV-C	On-off valves MS4-EM1, MS6-EM1, MS9-EM, MS12-EM
Pneumatic connection 1	G1/2	G1/2	Manifold module, G1/8, G1/4, G3/8, G1/2
Standard nominal flow rate	4300 l/min	5700 ... 16,550 l/min	1200 ... 32,000 l/min
Operating pressure	3.5 ... 10 bar	3 ... 16 bar	0 ... 20 bar
Type of actuation	Electric	Electric	Manual
Description	<ul style="list-style-type: none"> • Reliable 2-channel exhausting with self-monitoring up to Performance Level e and category 4 to EN ISO 13849-1 • SIL 3 • For reducing pressure quickly and reliably and for building up pressure gradually • Adjustable pressure build-up time • Optionally with silencer • Supply voltage 24 V DC • Size: 6 	<ul style="list-style-type: none"> • Single-channel exhausting up to Performance Level c and category 1 to EN ISO 13849-1 • For reducing pressure quickly and reliably and for building up pressure gradually • Adjustable pressure build-up time • Adjustable switch-through pressure • Supply voltage 24 V DC • Sizes: 6, 9 	<ul style="list-style-type: none"> • Manual 3/2-way valve for pressurising and exhausting pneumatic systems • A silencer can be attached or the exhaust air can be ducted at port 3 • Switching position is immediately recognisable • Optionally with pressure gauge and pressure sensor • Sizes: 4, 6, 9, 12
→ online	ms6-sv-e	ms6-sv-c	ms4-em1

Product overview – Compressed air preparation



On-off and soft-start valves: MS series

Type	 On-off valves MS4-EE, MS6-EE, MS9-EE, MS12-EE ★	 Soft-start valves MS4-DL, MS6-DL, MS12-DL ★	 Soft-start valves MS4-DE, MS6-DE, MS12-DE
Pneumatic connection 1	Manifold module, G1/8, G1/4, G3/8, G1/2	Manifold module, G1/8, G1/4, G3/8, G1/2	Manifold module, G1/8, G1/4, G3/8, G1/2
Standard nominal flow rate	1000 ... 32,000 l/min	1000 ... 42,000 l/min	1000 ... 42,000 l/min
Operating pressure	3 ... 18 bar	2 ... 20 bar	3 ... 18 bar
Type of actuation	Electric	Pneumatic	Electric
Description	<ul style="list-style-type: none"> • Electrical 3/2-way valve for pressurising and exhausting pneumatic systems • A silencer can be attached or the exhaust air can be ducted at port 3 • Supply voltage 24 V DC, 110, 230 V AC • Optionally with pressure gauge and pressure sensor • With solenoid coil, without plug socket • Sizes: 4, 6, 9, 12 	<ul style="list-style-type: none"> • 2/2-way valve for slowly pressurising pneumatic systems (for use with on-off valves EM1 and EE) • For building up pressure gradually • Adjustable pressure build-up time • Sizes: 4, 6, 12 	<ul style="list-style-type: none"> • 2/2-way valve for slowly pressurising pneumatic systems with electrically switchable pressure switchover point • Supply voltage 24 V DC, 110, 230 V AC • Switchable pressure switching point • For advancing the drives slowly and reliably into the initial position • For avoiding sudden and unexpected movements • Adjustable pressure build-up time • Sizes: 4, 6, 12
→ online	ms4-ee	ms4-dl	ms4-de


On-off and soft-start valves: D series, polymer

Type	 On-off valves HE-DB
Pneumatic connection 1	G1/4
Standard nominal flow rate	2300 l/min
Operating pressure	0 ... 10 bar
Type of actuation	Manual
Description	<ul style="list-style-type: none"> • 3/2-way manual on-off valve • The switching position is recognisable • Commercially available padlock for security
→ online	he-db


On-off and soft-start valves: individual devices

Type	 On-off valves PVEL	 Shut-off valves HE-LO
Pneumatic connection 1	SAE flange	G3/8, G1/2, G3/4, G1
Standard nominal flow rate		5200 ... 10,000 l/min
Operating pressure	0 ... 50 bar	1 ... 10 bar
Nominal size DN		54
Type of actuation	Manual, pneumatic	Manual
Description	<ul style="list-style-type: none"> • For use with food see www.festo.com/sp/pvel > tab "Certificates" • For high-pressure applications • Size: 124 mm 	<ul style="list-style-type: none"> • For shutting off the compressed air supply whilst simultaneously exhausting systems powered by compressed air • Can be locked in the closed position • Screwed into piping, through-holes for wall mounting • To OSHA 29 CFR 147
→ online	pvel	he-lo



Air dryers: MS series

	
Type	Membrane air dryers MS4-LDM1, MS6-LDM1
Pneumatic connection 1	G1/4, G1/2
Standard nominal flow rate	50 ... 400 l/min
Operating pressure	3 ... 12.5 bar
Pressure dew point reduction	20 K
Description	<ul style="list-style-type: none"> • Final dryer with excellent operational reliability • Suitable for use as an individual device or for integration into existing service unit combinations • Flow rate-dependent dew point reduction • Wear-free function requiring no external energy • Sizes: 4, 6
→ online	ms4-ldm1

Air dryers: individual devices

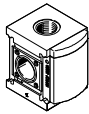
	
Type	Adsorption dryers PDAD
Pneumatic connection 1	G3/8, G1/2
Input pressure 1	4 ... 16 bar
Pressure dew point	-40°C
Description	<ul style="list-style-type: none"> • Ideal for decentralised compressed air drying • Integrated filtering of oil and particulates • Defined pressure dew point • Low purge air consumption
→ online	pdad

Compressed air distributors: MS series




		
Type	Branching modules MS4-FRM, MS6-FRM, MS9-FRM, MS12-FRM	Distributor blocks MS4-FRM-FRZ, MS6-FRM-FRZ
Pneumatic connection 1	G1, G1 1/2, G1 1/4, G1/2, G1/4, G1/8, G3/4, G3/8, manifold module	G1/4, G1/2
Standard nominal flow rate in main flow direction 1->2	1200 ... 50,000 l/min	4050 ... 14,600 l/min
Operating pressure	0 ... 20 bar	0 ... 20 bar
Description	<ul style="list-style-type: none"> • Optionally with integrated non-return function and pressure switch • Outlet at top and bottom • Can be used as an intermediate distributor for varying air qualities • Optionally with pressure sensor • Sizes: 4, 6, 9, 12 	<ul style="list-style-type: none"> • Slim pneumatic distributor • Outlet at top and bottom • Can be used as an intermediate distributor for varying air qualities • Can be used as an adapter between two pressure regulators with large rotary knob with pressure gauge on size MS4 • Sizes: 4, 6
→ online	ms4-frm	ms4-frm-frz

Product overview – Compressed air preparation


Compressed air distributors: individual devices

	
Type	Branching modules PMBL
Pneumatic connection 3	G1
Pneumatic connection 4	G1
Operating pressure	0 ... 50 bar
Description	<ul style="list-style-type: none"> • For high-pressure applications • For use with food see www.festo.com/sp/pmb1 > tab "Certificates" • Sizes: 90 mm, 186 mm
→ online	pmb1

Condensate drain

			
Type	Water separators MS6-LWS, MS9-LWS, MS12-LWS	Condensate drain PWEA	Condensate drain WA
Pneumatic connection		G1/2	M9
Pneumatic connection 1	G1/4, G3/8, G1/2		
Operating pressure	0.8 ... 16 bar	0.8 ... 16 bar	1.5 ... 16 bar
Description	<ul style="list-style-type: none"> • Replacement of filter cartridges not required • Constantly high condensate separation (99%) up to the maximum flow rate • Optionally with fully automatic or fully automatic, electrically actuated condensate drain • Sizes: 6, 9, 12 	<ul style="list-style-type: none"> • Fully automatic condensate drain with independent electrical controller • Interface for communicating with higher-order control device • Reliable thanks to non-contacting capacitive sensor • Can be used with service units or simply in piping systems • Ready status and switching status indicated via LEDs and electrical interface 	<ul style="list-style-type: none"> • For attachment to service units and compressed air networks/systems • Automatic emptying after the max. fill level has been reached • Automatic emptying after the operating pressure $p < 0.5$ bar is switched off • Manual actuation during operation is possible
→ online	ms6-lws	pwea	wa





Pressure boosters

	
Type	Pressure boosters DPA
Pneumatic connection 1	G1/4, G3/8, G1/2, QS-10, QS-12, QS-16
Output pressure 2	4 ... 16 bar
Input pressure 1	2 ... 10 bar
Description	<ul style="list-style-type: none"> • Pneumatic pressure increase up to the double input pressure • Optionally as pressure booster/air pressure reservoir combinations • Any mounting position • Short filling times • Long service life • Compact design • Optionally with sensing option
→ online	dpa




Other devices

Product overview – Compressed air preparation

Pressure indicators

Type	 Pressure gauges PAGN	 Pressure gauges MA	 Flanged pressure gauges FMA	 Flanged precision pressure gauges FMAP, MAP
Type of mounting	In-line installation	In-line installation	Front panel mounting	Front panel mounting, in-line installation
Indicating range	0 ... 16 bar	0 ... 25 bar	0 ... 16 bar	0 ... 16 bar
Pneumatic connection	Cartridge 10 mm, R1/8	G1/8, G1/4, M5, QS-4, QS-6, QS-8, R1/8, R1/4	G1/4	G1/4, R1/8
Operating pressure	0 ... 16 bar	0 ... 25 bar	0 ... 16 bar	0 ... 16 bar
Measurement accuracy class	1.6, 2.5, 4	1.6, 2.5, 4, 5	1.6, 2.5	1, 1.6
Description	<ul style="list-style-type: none"> Pneumatic connection via QSP-10 Mounting via retaining clamp Display units bar, psi 	<ul style="list-style-type: none"> Designs based on DIN EN 837-1, available with red-green range Pneumatic connection via R, metric or G thread, push-in connector Display units bar, psi, MPa 	<ul style="list-style-type: none"> Designs based on EN 837-1 Pneumatic connection via G thread Display units bar, psi 	<ul style="list-style-type: none"> Designs based on EN 837-1 Pneumatic connection via R or G thread Display units bar, psi
→ online	pagn	ma	fma	fmap

Pressure indicators

Type	 Pressure gauge kits DPA-MA-SET	 Vacuum gauges VAM, FVAM	 Pressure gauges PAGL
Type of mounting	Via male thread	Front panel mounting, screw-in	Front panel mounting, screw-in
Indicating range		-1 ... 9 bar	0 ... 60 bar
Pneumatic connection	G1/8, G1/4, R1/8	G1/8, G1/4, R1/8, R1/4	G1/4
Operating pressure	10 ... 16 bar	-1 ... 9 bar	0 ... 60 bar
Measurement accuracy class	2.5, 4	2.5	1.6
Description	<ul style="list-style-type: none"> For pressure booster DPA For monitoring the input and output pressure Pneumatic connection via R or G thread 	<ul style="list-style-type: none"> Designs based on DIN EN 837-1, available with red-green range Screw-in or front panel mounting Pneumatic connection via R or G thread Double or single scale Display units bar, in Hg, psi 	<ul style="list-style-type: none"> For high-pressure applications Display units bar, psi, MPa
→ online	dpa	vam	pagl

Product overview – Compressed air preparation

Customised components – for your specific requirements



Components for compressed air preparation with customised designs

Can't find the compressed air preparation components you need in our catalogue?

We can offer you customised components that are tailored to your specific requirements.

Common product modifications:



- Modified pressure range
- Rotary knob: in a special colour, with protection against rotation
- Fitting: integrated throttling port, special thread
- Tubing with special printing
- Pressure gauge with red-green range

Many additional variants are possible. Ask your Festo sales engineer, who will be happy to help.



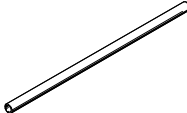

➔ www.festo.com/contact

Product overview – Pneumatic fittings system

Software tool




<p>Product Finder for tubing</p>		<p>Simply enter parameters such as working pressure, chemicals and required resistance to cleaning agents and have the program calculate the right tubing for your application.</p>	<p>This tool can be found</p> <ul style="list-style-type: none"> on the Internet at www.festo.com/catalogue by clicking on the blue "Product Finder" button
<p>Festo Design Tool 3D</p>		<p>The Festo Design Tool 3D is a 3D product configurator for generating specific CAD product combinations from Festo. The configurator makes your search for the right accessory easier, more reliable and faster.</p> <p>You can then order the module that has been created with a single order item – either completely pre-assembled or as individual parts in a single box. As a result, your bill of materials is considerably shortened and downstream processes such as product ordering, order picking and assembly are significantly simplified.</p>	<p>All ordering options are available in the following countries: AT, BE, CH, CZ, DE, DK, ES, EST, FI, FR, GB, GR, HU, IE, IT, NL, NO, PL, PT, RU, SE, SI, SK, TR, ZA.</p> <p>This tool can be found</p> <ul style="list-style-type: none"> via the address: www.festo.com/fdt-3d-online in the above listed countries

Standard O.D. tubing




Type	 Plastic tubing, DUO plastic tubing PUN, PUN-DUO ★	 Plastic tubing, DUO plastic tubing PUN-H, PUN-H-DUO ★	 Plastic tubing PTFEN	 Plastic tubing PUN-CM
O.D.	3 ... 16 mm	2 ... 16 mm	4 ... 16 mm	4 ... 12 mm
I.D.	2.1 ... 11 mm	1.2 ... 11 mm	2.9 ... 11 mm	2.5 ... 8 mm
Temperature-dependent operating pressure	-0.95 ... 10 bar	-0.95 ... 10 bar	-0.95 ... 15 bar	-0.95 ... 10 bar
Ambient temperature	-35 ... 60°C	-35 ... 60°C	-20 ... 150°C	-35 ... 60°C
Description	<ul style="list-style-type: none"> Polyurethane High resistance to stress cracks Suitable for energy chains Also available as DUO plastic tubing Operating media compressed air, vacuum 	<ul style="list-style-type: none"> Polyurethane High resistance to microbes and hydrolysis For use with food see www.festo.com/sp/pun-h > tab "Certificates" Suitable for energy chains Also available as DUO plastic tubing Operating media compressed air, vacuum, water 	<ul style="list-style-type: none"> Polytetrafluoroethylene For use with food see www.festo.com/sp/ptfen > tab "Certificates" High resistance to chemicals High temperature resistance Operating media compressed air, vacuum 	<ul style="list-style-type: none"> Polyurethane Plastic tubing, antistatic, electrically conductive Suitable for energy chains Operating media compressed air, vacuum
→ online	pun	pun-h	ptfen	pun-cm

Product overview – Pneumatic fittings system

Standard O.D. tubing




Type	 Plastic tubing PUN-V0	 Plastic tubing PEN	 Plastic tubing PAN
O.D.	4 ... 16 mm	4 ... 16 mm	4 ... 16 mm
I.D.	2 ... 11.8 mm	2.7 ... 10.8 mm	2.5 ... 12 mm
Temperature-dependent operating pressure	-0.95 ... 30 bar	-0.95 ... 10 bar	-0.95 ... 19 bar
Ambient temperature	-35 ... 60°C	-30 ... 60°C	-30 ... 80°C
Description	<ul style="list-style-type: none"> • Polyurethane • Flame retardant to UL 94 V0 ... V2 • For use in the immediate vicinity of welding applications • High resistance to microbes and hydrolysis • Suitable for energy chains • Operating media compressed air, vacuum, water 	<ul style="list-style-type: none"> • Polyethylene • High resistance to chemicals and very high resistance to hydrolysis • Resistant to most cleaning agents and lubricants • Suitable for energy chains • Operating media compressed air, vacuum, water 	<ul style="list-style-type: none"> • Polyamide • High thermal and mechanical load capacities • High resistance to microbes • Operating media compressed air, vacuum
→ online	pun-v0	pen	pan

Standard O.D. tubing


Type	 Plastic tubing PAN-MF	 Heavy-duty tubing PAN-R	 Plastic tubing PAN-V0
O.D.	4 ... 16 mm	4 ... 28 mm	6 ... 14 mm
I.D.	2.5 ... 12 mm	2.5 ... 23 mm	2.5 ... 9 mm
Temperature-dependent operating pressure	-0.95 ... 31 bar	-0.95 ... 35 bar	-0.95 ... 12 bar
Ambient temperature	-60 ... 100°C	-30 ... 80°C	-30 ... 90°C
Description	<ul style="list-style-type: none"> • Polyamide • High thermal and mechanical load capacities • Meets the requirements to DIN 73378 "Polyamide tubing for use in motor vehicles" • Operating media compressed air, mineral oil 	<ul style="list-style-type: none"> • Polyamide • For applications with a high pressure range • High resistance to microbes • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • PVC, polyamide • Flame retardant to UL 94 V0 • High resistance to microbes and UV radiation • Double-sheath tubing • Operating media compressed air, vacuum, water, mineral oil • Resistant to welding spatter
→ online	pan	pan-r	pan-v0

Product overview – Pneumatic fittings system




Standard O.D. tubing

Type	 Plastic tubing PLN	 Plastic tubing PFAN	 Customised tubing PAN, PEN, PLN, PUN
O.D.	4 ... 16 mm	3 ... 12 mm	3 ... 16 mm
I.D.	2.9 ... 12 mm	2.3 ... 8.4 mm	2.1 ... 12 mm
Temperature-dependent operating pressure	-0.95 ... 14 bar	-0.95 ... 16 bar	-0.95 ... 16 bar
Ambient temperature	-30 ... 80°C	-20 ... 150°C	-35 ... 80°C
Description	<ul style="list-style-type: none"> • Polyethylene • High resistance to chemicals, microbes and hydrolysis • For use with food see www.festo.com/sp/pln > tab "Certificates" • Resistant to most cleaning agents and lubricants • Operating media compressed air, vacuum, water 	<ul style="list-style-type: none"> • Perfluoroalkoxy alkane • Pneumatic tubing with resistance to high temperatures and chemicals • For use with food see www.festo.com/sp/pfan > tab "Certificates" • High resistance to chemicals, microbes, UV radiation, hydrolysis and stress cracks • Operating media compressed air, vacuum, water 	<ul style="list-style-type: none"> • Individual lengths: delivered in units of 25, 50, 100, 200 ... 500 m • Minimum quantity: 3000 m • Individual design: labelled with your company name and/or your part number • Easy to recognise and handle: individual colour selection • Choose from 9 basic colours; further colours available on request • Simple to order with the configurator
→ online	pln	pfan	tubing

Standard I.D. tubing





Type	 Plastic tubing PU
O.D.	11.6 ... 17,6 mm
I.D.	9 ... 13.1 mm
Temperature-dependent operating pressure	-0.95 ... 10 bar
Ambient temperature	-35 ... 60°C
Description	<ul style="list-style-type: none"> • Polyurethane with reinforcing fabric • High resistance to abrasion and kinks • Operating media compressed air, vacuum (PU-13)
→ online	pu

Spiral tubing

Type	 Spiral plastic tubing, DUO spiral plastic tubing PUN-S, PUN-S-DUO	 Spiral plastic tubing PUN-SG	 Spiral plastic tubing PPS
O.D.	4 ... 12 mm	9.5 ... 11.7 mm	6.3 ... 7.8 mm
I.D.	2.6 ... 8 mm	6.4 ... 7.9 mm	4.7 ... 6.2 mm
Working length	0.5 ... 6 m	2.4 ... 6 m	7.5 ... 15 m
Temperature-dependent operating pressure	-0.95 ... 10 bar	-0.95 ... 15 bar	-0.95 ... 21.2 bar
Ambient temperature	-35 ... 60°C	-40 ... 60°C	-30 ... 80°C
Description	<ul style="list-style-type: none"> • Polyurethane • Also available as DUO plastic tubing • Operating media compressed air, vacuum • High resistance to UV radiation and stress cracks 	<ul style="list-style-type: none"> • Polyurethane, nickel-plated brass, polyacetal • Pre-assembled with captive rotatable fittings • High resistance to microbes and hydrolysis • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • Polyamide, brass, galvanised steel • Pre-assembled with 2 rotatable connectors and captive sealing rings OL • High resistance to microbes • Operating media compressed air, vacuum
→ online	spiral	spiral	pps




Product overview – Pneumatic fittings system

Push-in fittings




Type	 Push-in fittings, mini series QSM, QSMC, QSMF, QSML, QSMS, QSMT, QSMX, QSMY	 Push-in fittings, standard series QS, QSF, QSS, QSC, QSH, QSL, QST, QSW, QSX, QSY	 Push-in fittings NPQH	 Push-in fittings/connectors, metal, standard series NPQM
Pneumatic connection 1	Male thread G1/8, M3, M5, M6, M6x0.75, M7, M8x0.75, R1/8, M8x1.25, female thread M3, M5, push-in sleeve QS-3, QS-4, QS-6, for tubing O.D. 2, 3, 4, 6 mm	Male thread G1/8, G1/4, G3/8, G1/2, G3/4, M5, R1/8, R1/4, R3/8, R1/2, female thread G1/8, G1/4, G3/8, G1/2, push-in sleeve QS-4, QS-6, QS-8, QS-10, QS-12, QS-16, for tubing O.D. 4, 6, 8, 10, 12, 16 mm	Male thread M5, M7, G1/8, G1/4, G3/8, G1/2, for tubing O.D. 4 mm, 6 mm, 8 mm, 10 mm, 12 mm, 14 mm, female thread G1/8, G1/4, push-in sleeve QS-10, QS-12, QS-14, QS-4, QS-6, QS-8	G1/8, G1/4, G3/8, G1/2, M5, M7, push-in sleeve QS-4, QS-6, QS-8, QS-10, QS-12, for tubing O.D. 4, 6, 8, 10, 12 mm
Pneumatic connection 2	For tubing O.D. 2, 3, 4, 6 mm	Female thread G1/8, G1/4, G3/8, G1/2, for tubing O.D. 4, 6, 8, 10, 12, 16 mm	For tubing O.D. 4 mm, 6 mm, 8 mm, 10 mm, 12 mm, 14 mm, push-in sleeve QS-10, QS-12, QS-14, QS-4, QS-6, QS-8	For tubing O.D. 3, 4, 6, 8, 10, 12 mm
Temperature-dependent operating pressure	-0.95 ... 14 bar	-0.95 ... 14 bar		
Operating pressure for entire temperature range	-0.95 ... 6 bar	-0.95 ... 6 bar	-0.95 ... 20 bar	-0.95 ... 16 bar
Ambient temperature	-10 ... 80°C	-10 ... 80°C	0 ... 150°C	-20 ... 70°C
Description	<ul style="list-style-type: none"> • Mini series • Compact for maximum component density in confined spaces • PBT and nickel-plated brass • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • Standard series • Wide range of variants: large selection for maximum flexibility in standard applications • PBT and nickel-plated brass • Operating media compressed air, vacuum, (water) 	<ul style="list-style-type: none"> • All-metal brass, chemically nickel-plated • High corrosion and chemical resistance • High resistance to temperatures and pressure • For use with food see www.festo.com/sp/npqh > tab "Certificates" • Operating media compressed air, vacuum, water 	<ul style="list-style-type: none"> • All-metal brass, nickel-plated • Attractively priced metal push-in fitting • Sturdy • Operating media compressed air, vacuum
→ online	qsm	qs	npqh	npqm

Product overview – Pneumatic fittings system

Push-in fittings

Type	 Push-in fittings/connectors, resistant to media NPQP	 Cartridges, polymer, black QSPK, QSPLK	 Cartridges, polymer, grey QSPKG, QSPLKG	 Push-in fittings, stainless steel CRQS, CRQSL, CRQSS, CRQST, CRQSY
Pneumatic connection 1	Male thread R1/8, R1/4, R3/8, R1/2, push-in sleeve QS-4, QS-6, QS-8, QS-10, QS-12, for tubing O.D. 4, 6, 8, 10, 12 mm	Cartridge 10 mm, 18 mm	Cartridge 10 mm, 14 mm, 18 mm, 20 mm	Male thread M5, R1/8, R1/4, R3/8, R1/2, for tubing O.D. 4, 6, 8, 10, 12, 16 mm
Pneumatic connection 2	For tubing O.D. 4, 6, 8, 10, 12 mm	For tubing O.D. 3, 4, 6, 8, 10 mm	For tubing O.D. 3, 4, 6, 8, 10, 12 mm	For tubing O.D. 4, 6, 8, 10, 12, 16 mm
Temperature-dependent operating pressure	-0.95 ... 10 bar			
Operating pressure for entire temperature range		-0.95 ... 10 bar	-0.95 ... 10 bar	-0.95 ... 10 bar
Ambient temperature	-20 ... 60°C	-5 ... 60°C	-5 ... 60°C	-15 ... 120°C
Description	<ul style="list-style-type: none"> • Polypropylene • Low-cost alternative to stainless steel: resistant to most cleaning agents in combination with tubing PLN • For use with extreme media influences • For use with food see www.festo.com/sp/npqp > tab "Certificates" • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • Compact fitting space • Threadless assembly 	<ul style="list-style-type: none"> • Compact fitting space • Threadless assembly 	<ul style="list-style-type: none"> • Maximum corrosion resistance (corrosion resistance class 4 to Festo standard 940 070) and chemical resistance • For use with food see www.festo.com/sp/crqs > tab "Certificates" • Operating media compressed air, vacuum, (water) • Stainless steel
→ online	npqp	qsp	qsp	crqs

Push-in fittings




Type	 Push-in fittings, resistant to welding spatter QS-V0, QSL-V0, QST-V0	 Self-sealing push-in fittings and connectors QSK, QSSK, QSKL	 Rotary push-in fittings QSR, QSRL	 Fluid separators CQA
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2, R1/8, R1/4, R3/8, R1/2, for tubing O.D. 4, 6, 8, 10, 12 mm	Male thread M5, G1/8, G1/4, G3/8, G1/2, R1/8, R1/4, R3/8, R1/2, for tubing O.D. 4, 6, 8, 10, 12 mm	Male thread M5, G1/8, G1/4, G3/8, G1/2, R1/8, R1/4, R3/8, R1/2	Push-in sleeve CQ-28, for pipe/tubing O.D. 22 mm
Pneumatic connection 2	For tubing O.D. 4, 6, 8, 10, 12 mm	For tubing O.D. 4, 6, 8, 10, 12 mm	For tubing O.D. 4, 6, 8, 10, 12 mm	Push-in sleeve CQ-28, for pipe/tubing O.D. 22 mm
Temperature-dependent operating pressure		-0.95 ... 14 bar	-0.95 ... 14 bar	-0.95 ... 15 bar
Operating pressure for entire temperature range	-0.95 ... 10 bar	-0.95 ... 6 bar	-0.95 ... 6 bar	-0.95 ... 7 bar
Ambient temperature	0 ... 60°C	-10 ... 80°C	0 ... 60°C	-25 ... 70°C
Description	<ul style="list-style-type: none"> • PBT-reinforced • Resistant to welding spatter • For use in all areas where there is a risk of fire • Reliable even for applications in close proximity to welding spatter • Operating media compressed air, vacuum, water 	<ul style="list-style-type: none"> • Standard series • Self-sealing push-in fitting blocks the air flow after the tubing is disconnected • PBT and nickel-plated brass • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • Rotatable push-in fitting with swivel connection: rotatable by 360° with max. 500 rpm • Compact fitting space 	<ul style="list-style-type: none"> • Assembly and disassembly without tools • Sturdy and leakproof connection
→ online	qs-v0	qsk	qsr	cqa

Product overview – Pneumatic fittings system

Barbed fittings

Type	 Fittings NPCK	 Barbed fittings CN, CRCN, FCN, L-PK, LCN, N, RTU, SCN, LCNH, T-PK, TCN, Y-PK	 Barbed hose fittings C-P, N-P, N-MS	 Quick connectors ACK, CK, QCK, SCK, CV-PK, GCK-KU, LCK, TCK, FCK-KU, MCK
Nominal width	2 ... 6.2 mm	1.3 ... 5.3 mm	4 ... 16.5 mm	2 ... 11.7 mm
Pneumatic connection 1	Male thread M5, G1/8, G1/4, G3/8	Male thread G1/4, G1/8, G3/8, M3, M5, for tubing O.D. 3 mm, 4 mm, 6 mm, 8 mm	Male thread G1, G1/2, G1/4, G1/8, G3/4, G3/8, female thread G1/2, G1/4, G1/8, G3/8, NPT1-11 1/2, NPT3/4-14	Male thread G1/2, G1/4, G1/8, G3/8, M5, R1/4, R1/8, R3/8, female thread G1/2, G1/4, G1/8, G3/8, M5, for barbed connector I.D. 3 mm with union nut, 4 mm, 6 mm, 9 mm with union nut
Pneumatic connection 2	For tubing O.D. 10 mm, 4 mm, 6 mm, 8 mm	For tubing O.D. 3 mm, 4 mm, 6 mm, 8 mm	For tubing O.D. 8 mm, for tubing I.D. 6 mm, 9 mm, 19 mm, 13 mm	For tubing O.D. 4 mm, 6 mm, 8 mm, for tubing I.D. 13 mm, 9 mm, for barbed fitting I.D. 13 mm with union nut, 3 mm, 4 mm, 6 mm, 9 mm with union nut
Operating pressure	-0.95 ... 12 bar	-0.95 ... 10 bar	-0.95 ... 16 bar	-0 ... 16 bar
Ambient temperature	-20 ... 120°C	0 ... 60°C		-10 ... 80°C
Description	<ul style="list-style-type: none"> Stainless steel design For use with food see www.festo.com/sp/npck > tab "Certificates" Fulfils all Clean Design requirements Straight shape Operating media compressed air, vacuum, water 	<ul style="list-style-type: none"> Straight shape, T-shape, L-shape, Y-shape Operating media compressed air, vacuum Brass, POM, aluminium or stainless steel 	<ul style="list-style-type: none"> Female hose connector with or without sealing ring Tubing clip to DIN 3017 Operating media compressed air, vacuum Brass or aluminium, steel 	<ul style="list-style-type: none"> Bulkhead quick connector Sealing cap for plastic tube fittings and barbed connectors Multiple distributor Union nut for CK tube fitting Operating media compressed air, vacuum, (water) Aluminium, steel, POM or zinc
→ online	npck	n_070302f	n_cnp	ck

Threaded fittings



Type	 Threaded fittings NPFC	 Blanking plugs B	 Adapters NPFV
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2, G3/4, G1, M5, M7, R1/8, R1/4, R3/8, R1/2, R3/4, R1	Male thread G1, G1/2, G1/4, G1/8, G3/4, G3/8, M3, M5, M7	G1/4, NPT1/4-18
Pneumatic connection 2	G1/8, G1/4, G3/8, G1/2, G3/4, M5, R1/8, R1/4, R3/8, R1/2, R3/4, R1		G1/4, NPT1/4-18
Operating pressure	-0.95 ... 50 bar		2 ... 8 bar
Operating pressure for entire temperature range			
Ambient temperature	-20 ... 150°C		
Nominal width			6 mm
Description	<ul style="list-style-type: none"> Nickel-plated brass Sleeve Reducing sleeve Extension Double nipple Reducing nipple L-, T-, Y- or X-fitting Operating media compressed air, vacuum 	<ul style="list-style-type: none"> Aluminium, stainless steel With sealing ring 	<ul style="list-style-type: none"> Aluminium Adapter with filter From G1/4 to NPT1/4 or G1/4 Operating media compressed air, vacuum
→ online	npfc	b-1	npfv

Other devices


11

Product overview – Pneumatic fittings system

Threaded fittings




		
Type	Reducers, sleeves, double nipples D, ESK, FR, G, LJK, QM, QSP10, TJK	Ring pieces, hollow bolts LK, TK, VT
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2, G3/4, G1, M3, M5, M7, R1/8, R1/4, R3/8, R1/2	Male thread G1/4, G1/8, G3/8, M5
Pneumatic connection 2	G1/8, G1/4, G3/8, G1/2, G3/4, G1, M3, M5, M7, R1/8, R1/4, R3/8, R1/2	For barbed connector I.D. 3 mm with union nut, 4 mm with union nut, 6 mm with union nut
Operating pressure		
Operating pressure for entire temperature range		0 ... 10 bar
Nominal width		
Ambient temperature	2.6 ... 10.7 mm	
Description	<ul style="list-style-type: none"> • Brass or aluminium • Reducing nipple • Double nipple • Distributor block • Sleeve • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • Multiple distributor consisting of hollow bolt VT and ring piece LK or TK • With two to six outlets and one common air feed • Operating media compressed air, vacuum • Galvanised steel
→ online	esk	lk

Click fittings


	
Type	Click fittings NPKA
Pneumatic connection 1	Male thread G1/8
Pneumatic connection 2	For tubing O.D. 6 mm
Temperature-dependent operating pressure	-0.95 ... 10 bar
Nominal width	4 mm
Ambient temperature	-10 ... 60°C
Description	<ul style="list-style-type: none"> • POM, polyamide 66 • Quick and simple tube installation using one hand • Completely plastic • For use with food see www.festo.com/sp/npka -> tab "Certificates" • Operating media compressed air, vacuum, water • Free from copper, fluorine and silicone • Cleanroom-compatible • Easy-to-clean design with few corners and edges
→ online	npka

Product overview – Pneumatic fittings system

Pipes





Type	 Plastic pipes PQ-PA	 Pipes PQ-AL	 Plastic-coated metal tubes PM
O.D.	12 ... 28 mm	12 ... 28 mm	6 ... 8 mm
Information on materials - tubing	PA	Wrought aluminium alloy	Wrought aluminium alloy, PE
Temperature-dependent operating pressure	-0.95 ... 15 bar	-0.95 ... 15 bar	-0.95 ... 30 bar
Ambient temperature	-25 ... 75°C	-30 ... 75°C	-29 ... 65°C
Description	<ul style="list-style-type: none"> • Rigid pipe made from high-quality polyamide • Smooth inside wall ensures optimum flow conditions • Operating media compressed air, vacuum, liquid media 	<ul style="list-style-type: none"> • Rigid aluminium pipe • Smooth inside wall ensures optimum flow conditions • Operating media compressed air, vacuum, liquid media 	<ul style="list-style-type: none"> • Polyethylene, aluminium • Can be bent straight and reshaped several times without a pipe-bending device and without being damaged • Resistant to deformation • Operating media compressed air, vacuum
→ online	pq-pa	pq-al	pm

Push-in fittings for piping PQ




Type	 Push-in fittings CQ, CQC, CQH, CQL, CQT
Pneumatic connection 1	Male thread G3/8, G1/2, G3/4, G1, female thread G1/2, push-in sleeve CQ-12, CQ-15, CQ-18, CQ-22, CQ-28, push-in sleeve QS-16, for pipe/tube O.D. 12, 15, 18, 22, 28 mm
Pneumatic connection 2	Female thread G1/2, push-in sleeve CQ-12, CQ-15, CQ-18, CQ-22, CQ-28, QS-12, QS-16, for pipe/tubing O.D. 12 mm, 15 mm, 18 mm, 22 mm, 28 mm
Nominal width	8 ... 24.9 mm
Temperature-dependent operating pressure	-0.95 ... 15 bar
Ambient temperature	-25 ... 75°C
Description	<ul style="list-style-type: none"> • For pipes PQ-PA, PQ-AL and tubing PAN and PUN • Operating media compressed air, vacuum, liquid media • POM
→ online	cq

Product overview – Pneumatic fittings system

Couplings



				
Type	Quick coupling sockets, quick coupling plugs NPHS-D6, NPHS-S6	Quick coupling sockets, quick coupling plugs KD1, KD2, KD3, KD4, KS1, KS2, KS3, KS4	Multiple connectors KSV, KDVF, KDV	Multi-tube connectors KM
Pneumatic connection			PK-2, PK-3, PK-4, PK-6, for tubing O.D. 3 mm, 4 mm, 6 mm	PK-2, PK-3, PK-4
Pneumatic connection 1	Male thread G1/2, G1/4, G3/8, female thread G1/2, G1/4, G3/8, for plug-in nipple I.D. 9 mm	Male thread M3, M5, G1/8, G1/4, G1/2, G3/8, female thread G1/4, G3/8, G1/2, CK-3, CK-4, CK-6, CK-9, CK13, N6, N-9		
Standard nominal flow rate	875 ... 2083 l/min	44 ... 1350 l/min		
Operating pressure			-0.95 ... 16 bar	-0.95 ... 8 bar
Ambient temperature	-20 ... 80°C	-10 ... 80°C	-10 ... 60°C	-10 ... 60°C
Description	<ul style="list-style-type: none"> • Safety coupling • Shut-off on one side • Metal or plastic releasing sleeve • Exhausting of the air on the plug side without having to undo the coupling • Combination of coupling and hand slide valve • Can be used as an on-off valve 	<ul style="list-style-type: none"> • Quick connection coupling for standard applications without safety function • Shut off at one or both ends • With male or female thread or with barbed fitting or quick connector • Nickel-plated brass • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • POM, aluminium, brass • Multi-plug, multi-socket • Terminal plug and terminal socket • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • Polymer, brass • For max. 22 lines • Used as control cabinet outlets • Operating media compressed air, vacuum
→ online	nphs	kd1	ksv	km

Distributors



			
Type	Multiple distributors QSLV, QSQ, QST3	Multiple distributors QSYTF	Distributor blocks FR
Pneumatic connection 1	Male thread G1/8, G1/4, G3/8, G1/2, R1/8, R1/4, R3/8, R1/2, for tubing O.D. 6, 8, 10 mm	Male thread G1/8, G1/4, G3/8, G1/2, R1/8, R1/4, R3/8, R1/2	Female thread G1/4, G3/8, G1/2, G3/4
Pneumatic connection 2	For tubing O.D. 4, 6, 8, 10, 12 mm	Female thread G1/8, G1/4, G3/8, G1/2, for tubing O.D. 6, 8, 10, 12 mm	Female thread M3, M5, G1/8, G3/8, G1/2, for tubing O.D. 4 mm, 6 mm
No. of supply lines	1	1	1
No. of outlets	2, 3, 4, 6	3	3, 8, 9, 12
Max. rotational speed			
Description	<ul style="list-style-type: none"> • PBT and nickel-plated brass • L-shape, T-shape • Rotatable 360° • Reducing design • Operating media compressed air, vacuum, (water) 	<ul style="list-style-type: none"> • PBT and nickel-plated brass • Y-shape • Rotatable 360° • Operating media compressed air, vacuum, (water) 	<ul style="list-style-type: none"> • Aluminium • 4, 8, 9 or 12 connections • Operating media compressed air, vacuum
→ online	qslv	qsytf	fr

Product overview – Pneumatic fittings system





Distributors

		
Type	Distributors CQD	Rotary distributors GF
Pneumatic connection 1	Female thread G1/2	Male thread G1/8, G1/4, G3/8, G1/2
Pneumatic connection 2	Female thread G1/2	Female thread M5, G1/8, G1/4, G3/8, G1/2
No. of supply lines	1	1
No. of outlets	4	2, 4
Max. rotational speed		300 ... 3000 rpm
Description	<ul style="list-style-type: none"> • POM • Operating media compressed air, vacuum 	<ul style="list-style-type: none"> • 4 outlets or 2 axial and radial outlets • Single or multiple rotary distributor • Operating media compressed air, vacuum • Brass, hardened steel
→ online	cq	gf

Protective conduit systems

		
Type	Protective conduits MK, MKG, MKR, MKV	Protective conduit fittings HMZAS, HMZV, MKA, MKGV, MKM, MKRL, MKRS, MKRT, MKRV, MKVM, MKVV, MKY
I.D.	7.5 ... 48 mm	
O.D.	10 ... 56 mm	
Connecting thread		Pg 9, Pg 11, Pg 13.5, Pg 16, Pg 21, Pg 29, Pg 36, Pg 48
Design	Strip-wound metal conduit, internally and externally corrugated all-plastic conduit, separable	
Ambient temperature	-20 ... 100°C	-40 ... 200°C
Description	<ul style="list-style-type: none"> • For protecting pneumatic tubing and electrical cables • Galvanised steel, PA, PP, PVC spring steel • Metal or plastic design • High alternate bending strength 	<ul style="list-style-type: none"> • Installation kit • Junction box • Reducing connector • Protective conduit fitting • Lock nut • Protective conduit connector • Y-distributor • Polymer, polyamide, nickel-plated brass
→ online	mkg	mka

Accessories

				
Type	Sealing material CRO, GWB, O, OK, OL	Pipe and tubing cutters PAN-V0S, ZDS, ZMS, ZR, ZRS	Pipe clamps PQ	Tubing accessories KK, NPAW, PB, PKB, PKS, QSO, SK
Description	<ul style="list-style-type: none"> • Sealing ring • Sealing ring assortment • Thread sealing tape 	<ul style="list-style-type: none"> • Tubing cutter • Disconnecting pliers • Connecting pliers • Pipe cutter • Pipe and tubing cutter 	<ul style="list-style-type: none"> • For pipes with an O.D. of 12 ... 28 mm 	<ul style="list-style-type: none"> • Tubing strap • Spiral wrap for tubing • Tubing support • Multi-tube holder
→ online	cro	zds	pq	npaw

Product overview – Electrical connector technology

Software tool

Configurator		<p>Design a product with numerous features reliably and quickly with the help of the configurator.</p> <p>Select all the relevant product features step-by-step.</p> <p>The use of logic checks ensures that only correct configurations are available for selection.</p>	<p>The configurator is part of the electronic catalogue and is not available as a separate software program.</p>
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Connecting cables, universal



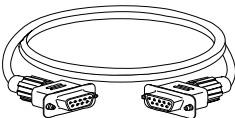

Type	Connecting cables NEBU ★	Connecting cables/plug sockets with cable SIM	Connecting cables KM12
Electrical connection	Socket: straight, angled, rotatable, plug: straight, angled, M8x1, M12x1, 3-pin, 4-pin, 5-pin, 8-pin, rotatable thread, open end	Straight, angled socket, angled socket/open end, straight socket/open end, M12x1, M8x1, clip-on, 3-pin, 4-pin, 5-pin, 3-wire, 4-wire, 5-wire,	8-pin/8-pin, M12x1/M12x1, plug: straight/socket: straight
Cable length	0.1 ... 30 m	2 ... 10 m	2 m
Description	<ul style="list-style-type: none"> • Designs for static, standard, energy chain and robot applications • Designs with switching status indication • Designs for connecting sensors and actuators 	<ul style="list-style-type: none"> • Pre-assembled at both ends 	<ul style="list-style-type: none"> • For connecting inputs and outputs • Type of mounting: union nut, threaded connector
→ online	nebu	sim	km12

Connecting cables for controllers




Type	Connecting cables NEBC	Connecting cables NEBP	Connecting cables, diagnostic cables SBOA	Cables FEC-KBG
Electrical connection	Straight plug, socket, M12.x, Sub-D, 5-pin, 9-pin, 25-pin, square design/angled, Sub-D/Sub-D	Angled socket, M16x0.75, 6-pin; angled plug, M9x0.5, 5-pin	Straight plug/straight socket/straight socket	Open end, for RS232 interface
Cable length	0.25 ... 20 m	2 m	2 m	2.5 ... 5 m
Description	<ul style="list-style-type: none"> • For I/O interface • For connecting motor controller CMMS-ST to any controllers 	<ul style="list-style-type: none"> • Connection between displacement encoder MME and measuring module CPX-CMIX 	<ul style="list-style-type: none"> • Used as Ethernet diagnostic cable, for integration in a CPI system, for I/O extension, for compact vision system type SBOC-Q, SBOI-Q 	<ul style="list-style-type: none"> • For connecting to control block CPX-FEC • Connection between displacement encoder MME and measuring module CPX-CMIX
→ online	nebc	nebp	sboa	fec-kbg

Product overview – Electrical connector technology


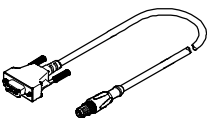
Connecting cables for control systems

				
Type	Control cables KES	Programming cables KDI	Programming cables PS1-ZK11	Connecting cables KV-M12
Electrical connection	15-pin, straight socket, Sub-D, cable, open end, 15-pin, 18-pin	4-pin, 9-pin, straight socket, straight plug, M8x1, Sub-D	Sub-D, 9-pin	Socket, plug, straight, round, M12x1 A-coded to EN 61076-2-101
Cable length	2.5 ... 10 m	3 m	2 m	1.5 ... 3.5 m
Description	<ul style="list-style-type: none"> For I/O interface for connecting motor controller SFC-DC to any controller 	<ul style="list-style-type: none"> Pre-assembled at both ends For diagnostic interface 	<ul style="list-style-type: none"> The null modem cable ZK11 is intended exclusively as a programming cable for direct connection to a PC Among other things for motor controller CMMS-ST 	<ul style="list-style-type: none"> Plug socket with cable for diagnostic interface (to CPX terminal) Pre-assembled at both ends 5-pin/4-wire Round plug Mounting via union nut M12
→ online	kes	kdi	cmms-st	kv-m12

Connecting cables for motors



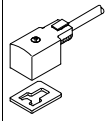
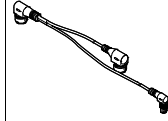
			
Type	Motor, encoder, resolver cables NEBM	Control cables KES	Motor cables KMTR
Electrical connection	Socket, cable, plug, straight, angled, connection pattern L4, connection pattern L5, RJ45, ITT M3, Sub-D, M12x1 A-coded to EN 61076-2-101, M16x0.75, open end, M23x1, M40x1.5	15-pin, straight socket, Sub-D, cable, open end, 15-pin, 18-pin	11-pin, 12-pin, straight socket, M12x1, A-coded to EN 61076-2-101, 11-pin, 15-pin, straight plug, Sub-D
Cable length	1 ... 25 m	2.5 ... 10 m	2.5 ... 10 m
Description	<ul style="list-style-type: none"> For servo motor EMMS-AS and stepper motor EMMS-ST Suitable for energy chains 	<ul style="list-style-type: none"> For I/O interface for connecting motor controller SFC-DC to any controller 	<ul style="list-style-type: none"> For motor controller SFC-DC
→ online	nebm	kes	kmtr

Connecting cables for motors



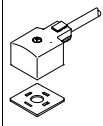
		
Type	Power supply cables KPWR	Fieldbus adapters fba
Electrical connection	6-pin, 7-pin, straight socket, Sub-D mixed, 6-pin, cable, open end	9-pin Sub-D plug to 5-pin round plug/socket M12, plus round plug M12 for logic voltage supply
Cable length	2.5 ... 10 m	0.1 m
Description	<ul style="list-style-type: none"> For motor controller SFC-DC for connecting load and logic supply 	<ul style="list-style-type: none"> 9-pin Sub-D plug to 5-pin round plug/socket M12
→ online	kpwr	fba

Product overview – Electrical connector technology

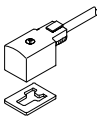


Connecting cables for valves

Type	 Connecting cables NEBV ★	 Plug sockets with cable KMEB-1, KMEB-2, KMEB-3 ★	 Plug sockets with cable KMF ★	 Connecting cables NEDV
Electrical connection	M8x1, socket, straight socket, M12, 8-pin, straight plug, M12, 4-pin, 2-pin, angled socket/straight plug, angled socket/cable, straight socket/straight plug, M8x1/M8x1, M12x1/M12x1, 4-pin/3-pin, 8-pin/4-pin, 4-pin/2-wire, socket/plug/plug, M12x1/M12x1/M12x1, 8-pin/4-pin/4-pin	2-pin, 3-pin, 4-pin, 5-pin, angled socket, type C, to DIN EN 175301-803	Socket	M12, 3-pin, 2x angled socket, 1x angled plug, M8, 4-pin
Cable length	0.2 ... 30 m	0.5 ... 10 m	2.5 ... 10 m	0.2 m
Description	<ul style="list-style-type: none"> For valves with ZC solenoid coil Pre-assembled at both ends 	<ul style="list-style-type: none"> For valves with EB solenoid coil Mounting via central screw Polyvinyl chloride cable Ambient temperature -20 ... +80 °C 	<ul style="list-style-type: none"> For valves with F solenoid coil Mounting via central screw Polyvinyl chloride cable Temperature range -20 ... +80 °C 	<ul style="list-style-type: none"> For proportional valves VPWP For connecting to sub-base VAPV-S3 Pre-assembled
→ online	nebv	kmeb-1	kmf	nedv

Connecting cables for valves




Type	 Plug sockets with cable KMYZ-2, KMYZ-4	 Plug sockets with cable KME	 Plug sockets with cable KMC
Electrical connection	Angled socket/straight plug, angled socket/cable, square design/M8x1, square design/open end, 2-pin/3-pin, 2-pin/2-wire Cable, angled socket, square design MSZB/MSZC	Angled socket, square design, 3-pin, type C	Socket, type A
Cable length	0.5 ... 10 m	2.5 ... 10 m	2.5 ... 10 m
Description	<ul style="list-style-type: none"> For valves with ZB solenoid coil For valves with ZC solenoid coil Mounting via central screw 	<ul style="list-style-type: none"> For valves with E solenoid coil Mounting via central screw Polyvinyl chloride cable Ambient temperature -20 ... +80 °C 	<ul style="list-style-type: none"> For valves with D solenoid coil For valves with N1 solenoid coil Polyvinyl chloride cable Mounting via central screw Ambient temperature -20 ... +80 °C
→ online	kmyz-2	kme	kmc

Connecting cables for valves




Type	 Plug sockets with cable KMV	 Connecting cables KRP	 Electrical plug-in bases MHAP-PI
Electrical connection	Socket, type B	2-pin, angled socket	2-pin, 3-pin, socket
Cable length	2.5 ... 10 m	2.5 ... 5 m	0.5 ... 1 m
Description	<ul style="list-style-type: none"> For valves with V solenoid coil Mounting via central screw M3 Polyvinyl chloride cable Ambient temperature -20 ... +80 °C 	<ul style="list-style-type: none"> Plug socket with cable for connecting relay plates (valve terminal CPV10 and CPV14) Pre-assembled Mounting via self-tapping central screw 	<ul style="list-style-type: none"> Plug base with cable for connecting individual valves Pre-assembled Mounting via clip
→ online	kmv	krp	mhap

Product overview – Electrical connector technology




Connecting cables for valves

			
Type	Plug sockets with cable KMPPE	Connecting cables KMPYE-AIF, KMPYE-5, KMPYE-...	Connecting cables MHJ9-KMH
Electrical connection	8-pin		2-pin/2-pin/4-wire, straight socket/straight socket/cable
Cable length	2.5 ... 5 m	0.3 ... 5 m	0.5 ... 2.5 m
Description	<ul style="list-style-type: none"> For proportional pressure regulators MPPE and MPPEs Mounting via union nut M16x0.75 Polyvinyl chloride cable Ambient temperature -30 ... +80 °C 	<ul style="list-style-type: none"> Plug socket with cable, screened, for proportional directional control valves MPYE 	<ul style="list-style-type: none"> For valves MHJ9 With plug sockets KMH With control electronics for two valves
→ online	kmppe	kmpye	mhj9-kmh

Connecting cables for valve terminals




			
Type	Connecting cables/plug sockets with cable NEBV-S1W37	Flat cables KASI	Addressing cables KASI-ADR
Electrical connection	Socket, cable, Sub-D, open end	2-pin, open cable end	4-pin/4-pin/2-pin, straight socket/angled plug/straight socket
Cable length	2.5 ... 10 m	100 m	2.5 m
Description	<ul style="list-style-type: none"> For multi-pin plug connection to valve terminal VTSA and VTSA-F Pre-assembled at one end 	<ul style="list-style-type: none"> For AS-Interface® Reverse polarity protected Contact using insulation displacement technology No need to strip cable and wire insulation Two different colours: yellow (preferred for the AS-Interface® network) and black (for auxiliary power supply) 	<ul style="list-style-type: none"> For AS-Interface® For any slaves such as individual valve interface, valve terminal with AS-Interface® connection Reverse polarity protected
→ online	nebv	kasi	kasi-adr

Connecting cables for valve terminals



			
Type	Connecting cables KMP3, KMP4, KMP6	Connecting cables KV-M12	Plug sockets with cable KMPV
Electrical connection	15-pin, 25-pin, 26-pin, 9-pin, socket, Sub-D	Straight socket, M12, 5-pin, A-coded, straight plug, M12x1, 5-pin, A-coded	Cable with socket, Sub-D, 15-pin
Cable length	2.5 ... 10 m	1.5 ... 3.5 m	5 m ... 10 m
Description	<ul style="list-style-type: none"> Plug socket with cable for multi-pin plug connection Pre-assembled Mounting via union nut, with 2 screws 	<ul style="list-style-type: none"> Plug socket with cable for diagnostic interface (to CPX terminal) Pre-assembled at both ends 5-pin/4-wire Round plug Mounting via union nut M12 	<ul style="list-style-type: none"> Connecting cable for multi-pin plug connection Pre-assembled
→ online	kmp	kv-m12	nebv

Product overview – Electrical connector technology



Connecting cables for valve terminals

			
Type	Connecting cables KVI	Connecting cables KVIA	Connecting cables VMPA-KMS1, VMPA-KMS2, VMPAL-KM, VMPAL-KMSK
Electrical connection	M9, plug, socket, 5-pin, straight socket/straight plug	Straight plug, straight plug/straight socket, straight plug/angled socket	Cable with plug
Cable length	0.25 ... 8 m	5 ... 10 m	2.5 ... 10 m
Description	<ul style="list-style-type: none"> For fieldbus connection (for valve terminal CPV and installation system CPI) Pre-assembled at both ends Suitable for energy chains 	<ul style="list-style-type: none"> For inputs/outputs (analogue connections) Pre-assembled at both ends 4-pin/5-pin round plug Suitable for energy chains 	<ul style="list-style-type: none"> Plug socket with cable for multi-pin connection (to valve terminal MPA) Variant suitable for use with energy chains Cable outlet straight or to side Pre-assembled at one end Polyvinyl chloride or polyurethane cable
→ online	kvi	kvia	vmpa-kms

Connecting cables for sensors



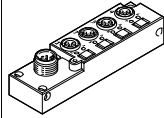
		
Type	Connecting cables NEBB	Connecting cables NEBS
Electrical connection	Straight socket, angled socket, M8x1 A-coded to EN 61076-2-104, M12x1 A-coded to EN 61076-2-101, cable, open end	Straight socket, M12x1, 12-pin, A-coded, straight socket, M12x1, 5-pin, A-coded, socket, square design L1, 4-pin, open end, 12-wire, open end, 4-wire, open end, 5-wire
Cable length	2.5 ... 10 m	0.3 ... 10 m
Description	<ul style="list-style-type: none"> Degree of protection IP65, IP68, IP69K, in mounted condition 	<ul style="list-style-type: none"> Degree of protection IP40
→ online	nebs	nebs

Universal plug connectors




		
Type	Sensor/actuator distributors NEDY	Cable sockets NEFU
Electrical connection	<p>Controller side: plug M8x1, A-coded, EN 61076-2-104, plug M12x1, A-coded, EN 61076-2-101, open end</p> <p>Field device side: socket M8x1, A-coded, EN 61076-2-104, socket type A, EN 175301-803, socket type B, EN 175301-803, socket type B, industry standard 11 mm, socket type C, EN 175301-803, socket type C, industry standard 9.4 mm, socket connection pattern H, socket connection pattern ZB, self-tapping screw, socket connection pattern ZC, self-tapping screw, socket connection pattern ZC, metric screw, open end</p>	Angled socket, RJ45, 4-pin, straight socket, M12x1, 4-pin, D-coded
Connection cross section		
Degree of protection	IP65, IP67, IP68, IP69K	IP20, IP65, IP67, in mounted condition, to IEC 60529
Description	<ul style="list-style-type: none"> Collecting signals between field devices (sensors) and double-assigned controller inputs Distributing signals between double-assigned controller outputs and field devices (actuators, e.g. valves) 	<ul style="list-style-type: none"> Cable socket for branching the AS-Interface® network at any required point Reconnecting AS-Interface® flat cable to 5-pin M12 socket Reverse polarity protected
→ online	nedy	nefu

Product overview – Electrical connector technology

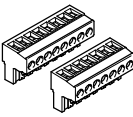

Universal plug connectors

		
Type Plugs NECU, NECU-HX	Type Push-in T-connectors NEDU	Type Multi-pin plug distributors NEDU
Electrical connection	3-pin, 4-pin, 5-pin, 8-pin, 9-pin, Sub-D, straight socket, straight plug, spring-loaded terminal, screw terminal, insulation displacement connector, 7/8", AIDA push-pull, M8x1, M12x1, for self-assembly, can be screened, square design	Socket/socket/plug, M12x1/M12x1/M12x1, 4-pin/4-pin/4-pin, A-coded/A-coded/A-coded
Electrical connection	3-pin, 4-pin, 5-pin, 8-pin, 9-pin, Sub-D, straight socket, straight plug, spring-loaded terminal, screw terminal, insulation displacement connector, 7/8", AIDA push-pull, M8x1, M12x1, for self-assembly, can be screened, square design	Straight socket, M8, 3-pin, Straight plug, M12x1, 8-pin
Connection cross section	0.08 ... 2.5 mm ²	
Degree of protection	IP20, IP40, IP65, IP67	IP65, IP67
Description	<ul style="list-style-type: none"> Power supply socket for fieldbus connection Plug and socket for power supply Can be assembled with any cable lengths NECU-HX: reconnectable M8 and M12 round plug connectors with Harax® quick connection technology for low-voltage applications 	<ul style="list-style-type: none"> For fieldbus connection Branch line for connecting and disconnecting fieldbus components
Description	<ul style="list-style-type: none"> Power supply socket for fieldbus connection Plug and socket for power supply Can be assembled with any cable lengths NECU-HX: reconnectable M8 and M12 round plug connectors with Harax® quick connection technology for low-voltage applications 	<ul style="list-style-type: none"> Particularly compact
→ online	necu	nedu

Universal plug connectors

		
Type Plugs SEA	Type Cable distributors ASI-KVT	Type Cable sockets ASI-SD
Electrical connection	3-pin, 4-pin, 5-pin, angled socket, straight plug, screw terminal, insulation displacement connector, solder connection, type A, M8x1, M12x1, M12x1 round plug connector	Insulation displacement technology
Electrical connection	3-pin, 4-pin, 5-pin, angled socket, straight plug, screw terminal, insulation displacement connector, solder connection, type A, M8x1, M12x1, M12x1 round plug connector	2-pin, 4-pin, straight socket, screw terminal
Connection cross section	0.08 ... 0.75 mm ²	1.5 mm ²
Degree of protection	IP65, IP67	IP65
Description	<ul style="list-style-type: none"> Sensor plug and socket for inputs/outputs Can be assembled with any cable lengths 	<ul style="list-style-type: none"> Flat cable distributor for branching or for re-connecting AS-Interface® flat cables Reverse polarity protected
Description	<ul style="list-style-type: none"> Sensor plug and socket for inputs/outputs Can be assembled with any cable lengths 	<ul style="list-style-type: none"> For AS-Interface® Flat-cable socket for connecting AS-Interface® stations to the AS-Interface® bus system M12 connection Reverse polarity protected Detachable connection
→ online	sea	asi-kvt

Plug connectors for controllers




	
Type Plug assortments NEKM	Type Plugs NECC
Electrical connection	2 ... 9-pin, screw connector
Electrical connection	11-pin, 9-pin/9-pin, plug, Sub-D/screw terminal
Connection cross section	0.2 ... 2.5 mm ²
Connection cross section	0.2 ... 2.5 mm ²
Degree of protection	IP40
Description	<ul style="list-style-type: none"> For motor controller CMMS-ST, CMMO-ST, CMMP-AS
Description	<ul style="list-style-type: none"> Encoder plug for motor controller CMMS-ST Plug for multi-axis controller CMXR for interface housing CAMI-C, 11-pin Plug for multi-axis controller CMXR and for modular controller CECX for peripheral modules 2-pin, 4-pin, 6-pin, 8-pin, 11-pin, 18-pin
→ online	nekm

Other devices


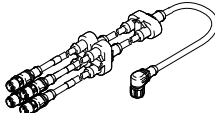


11

Product overview – Electrical connector technology





Plug connectors for control systems

Type	 Plugs PS1-SAC, PS1-ZC	 Plugs FBS-SUB-9-WS	 Plugs FBS-RJ45
Electrical connection	10-pin/10-pin/10-pin, 30-pin, socket/terminal strip	5-pin, type A, M12x1, straight plug/screw terminal	5-pin, type A, M12x1, straight plug/screw terminal
Connection cross section	0.08 ... 0.75 mm ²	0.75 mm ²	0.75 mm ²
Degree of protection		IP40	IP65, IP67, to IEC 60529
Description	<ul style="list-style-type: none"> For power supply Cable connection using clamping technology Individually or as a set 	<ul style="list-style-type: none"> Plug connector for bus connection CAN bus and PROFIBUS Cable connection 2x horizontal or 2x vertical Printed circuit terminal block with screw connector 	<ul style="list-style-type: none"> Ethernet plug with 8-pin RJ45 connection High transmission quality Detachable connection
→ online	ps1	fbs-sub-9-ws	fbs-rj

Plug connectors for valves




Type	 Plug sockets MSSD	 Adapters NEFV	 Soldering bases PCBC	 Multi-pin plug sockets NECA
Electrical connection	3-pin, 4-pin, angled socket, type A, type B, type C, to DIN EN 175301-803, to DIN EN 61984, square design	Socket, round, angled, M12x1, A-coded to EN 61076-2-101, 8-pin	2-pin	Socket, Sub-D, 9-pin
Connection cross section	0.25 ... 1.5 mm ²			0.34 ... 1 mm ²
Degree of protection	IP50, IP65, IP67, in mounted state, to IEC 60529	IP65, IP67	IP40	IP65, to IEC 60529
Description	<ul style="list-style-type: none"> For valves with F, D, N1, V, E, EB, N2, Y, Z, ZB, ZC, MD-2 and MH-2 solenoid coils For connecting individual valves Cable connection using clamping screws, insulation displacement technology or push-in connector Optionally with LED display 	<ul style="list-style-type: none"> Adapter for connecting a proportional valve to the controller 	<ul style="list-style-type: none"> For mounting miniature valves MHA1 and MHP1 on a PCB with plug connection underneath (-PI) 	<ul style="list-style-type: none"> For soft-start/quick exhaust valves MS6-SV, MS series Electrical connection via 9-pin Sub-D, 9-pin screw terminal
→ online	mssd	nefv	pcb	ms6-sv

Plug connectors for valves




Type	 Angled plug sockets MPPE-3-B	 Time delay adapters MFZ	 Illuminating seals MF-LD, MC-LD, MV-LD, ME-LD, MEB-LD	 Indicating inserts MCL, MCLZ, MFL, MFLZ
Electrical connection	8-pin, angled socket, solderable	For connector socket or device plug, type F	Type A, B, C, to DIN EN 175301-803, square design, MSC/MSE/MSEB/MSF/MSV	Plug, to DIN 43650
Connection cross section	0.75 mm ²			
Degree of protection	IP67	IP64	IP65	IP65
Description	<ul style="list-style-type: none"> For proportional pressure regulators MPPE and MPPEs Mounting via union nut 	<ul style="list-style-type: none"> Electronic timer with adjustable time delay of between 0 ... 10 s For mounting between the solenoid coil and connector socket and plug 	<ul style="list-style-type: none"> The seal is illuminated yellow when the power is switched on For mounting between the plug socket and solenoid coil For F, D, N1, V, E and EB solenoid coils 	<ul style="list-style-type: none"> Variant with integrated protective circuit For mounting between the solenoid coil and plug connection With yellow LED display
→ online	mppe-3-b	mfz	mc-ld	mcl

Product overview – Electrical connector technology




Plug connectors for valve terminals

			
Type	Plug sockets FBSD-GD, FBSD-WD	Plug sockets NTSD-GD, NTSD-WD	T-adapters FB-TA
Electrical connection	4-pin, 5-pin, socket: straight, angled, screw terminal, type A, M12x1	4-pin, 5-pin, socket: straight, angled, plug: straight, screw terminal	Plug/socket, M12x1/M12x1, 5-pin/5-pin
Connection cross section	0.75 mm ²	0.75 ... 2.5 mm ²	
Degree of protection	IP20, IP67	IP67	IP67
Description	<ul style="list-style-type: none"> • For fieldbus connection • Straight or angled design • Can be assembled with any cable lengths 	<ul style="list-style-type: none"> • Straight or angled design • For power supply • Can be assembled with any cable lengths 	<ul style="list-style-type: none"> • Branch line for connecting and disconnecting fieldbus components
→ online	fbs	ntsd	fb-ta

Plug connectors for valve terminals

			
Type	Bus connections FBA-1, FBA-2	Plugs FBS-SUB, FBS-SCRJ, FBS-M12	Sensor sockets SIE-GD, SIE-WD
Electrical connection	9-pin/5-pin, straight socket/straight plug, straight socket/plug and socket, Sub-D/-, Sub-D/M12x1	5-pin, type A, M12x1, straight plug/screw terminal	4-pin, straight socket, angled socket, M12x1
Connection cross section		0.75 mm ²	0.25 ... 0.75 mm ²
Degree of protection	IP40, IP65, to IEC 60529	IP65, IP67, in mounted condition, to IEC 60529	IP67
Description	<ul style="list-style-type: none"> • Can be assembled with any cable lengths 	<ul style="list-style-type: none"> • Variants for PROFIBUS DP, INTERBUS® nodes CPX and CPV, CC-LINK® CPX and CPV, CPX-FEC • Position of DIL switches can be read externally • Easy assembly 	<ul style="list-style-type: none"> • For customised fabrication of cables • Pin adapter for fieldbus connection • With screw terminals • Straight or angled design
→ online	fba-1	fbs-sub	sie-gd



Plug connectors for valve terminals

			
Type	Cover caps ISK	Plug sockets, plugs SD-SUB	Bus connections FBSD-KL
Electrical connection		25-pin, plug, Sub-D	Angled socket, screw terminal
Connection cross section			0.2 ... 2.5 mm ²
Degree of protection	IP65	IP65	IP20
Description	<ul style="list-style-type: none"> • For sealing unused ports/openings • Thread M8, M12 	<ul style="list-style-type: none"> • Socket for multi-pin plug connection • Plug for inputs/outputs • Can be assembled with any cable lengths 	<ul style="list-style-type: none"> • 5-pin angled socket, 5-pin screw terminal
→ online	isk	sd-sub	fbbsd-kl

Other devices




Product overview – Electrical connector technology

Plug connectors for sensors


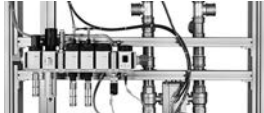

Type	 Angled plug sockets PEV-WD	 Plug sockets SD-4-WD
Electrical connection	4-pin, angled socket	4-pin, plug, Sub-D
Connection cross section		
Degree of protection	IP65	IP65, to IEC 60529
Description	<ul style="list-style-type: none"> • For pressure switch PEV • 15 ... 30, 180 V DC, 230 V AC • Optionally with LED display • Angled design 	<ul style="list-style-type: none"> • For swivel module DSMI • Angled design
→ online	pev*wd	sd-4-wd

Product overview – Control cabinets

Control cabinets




Type	 Factory automation	 Process automation	 Control cabinets for handling systems
Technical data	<ul style="list-style-type: none"> • Simple to complex control cabinet designs • Application-specific combination of components • Fully tested, with test certificate • Ready to install • Complete documentation • Design conforms to: <ul style="list-style-type: none"> – EN 60204-1 – ATEX zone 1 and 21 (pneumatic only), ATEX zone 2 and 22 (electric and electro-pneumatic) – UL-508A • Implementation of safety functions • Different bus technologies 	<ul style="list-style-type: none"> • Simple to complex control cabinet designs • Application-specific combination of components • Different operating voltages possible • Fully tested, with test certificate • Ready to install • Complete documentation • Design conforms to: <ul style="list-style-type: none"> – EN 60204-1 – ATEX zone 1 and 21 (pneumatic only), ATEX zone 2 and 22 (electric and electro-pneumatic) – UL-508A • Implementation of safety functions • Wide range of bus technologies • Compliance with special cleanliness and hygiene requirements • Special materials • Protected against the ingress of liquids and foreign matter • Heating or cooling elements • Intrinsically safe valve terminal technology • Hot swap inspection window 	<ul style="list-style-type: none"> • Simple to complex control cabinet designs • Control of motion sequences with up to 6 axes • Application-specific combination of components • Use of the latest innovations and technologies • Fully tested, with test certificate • Ready to install • Complete documentation • Design conforms to: <ul style="list-style-type: none"> – EN 60204-1 – ATEX zone 1 and 21 (pneumatic only), ATEX zone 2 and 22 (electric and electro-pneumatic) – UL-508A • Implementation of safety functions • Wide range of bus technologies • Function modules for motion applications • Host modules for easy connection to the customer's control environment
Description	<ul style="list-style-type: none"> • Made-to-measure control cabinets • Pneumatic, electric, combined • Individually configured • Adapted to requirements in industrial automation • Design and sizing included 	<ul style="list-style-type: none"> • Made-to-measure control cabinets • Pneumatic, electric, combined • Individually configured • Adapted to requirements in process automation • Design and sizing included 	<ul style="list-style-type: none"> • Made-to-measure control cabinets for handling systems • Software package for third-party devices included • Individually configurable • Adapted to requirements for handling solutions → www.festo.com/handling
→ online	CMCZ	CMCZ	CMCZ

Mounting and installation plates



	 <p>Mounting plates</p>	 <p>Hall installation plates (HIP) for body assembly</p>	 <p>Robot installation plates (RIP) for body assembly</p>
<p>Technical data</p>	<ul style="list-style-type: none"> • Customised support plate shape • Support plate in different materials • Application-specific combination of components • Fully assembled, connected and wired • Defined interfaces • Ready to install • Fully tested, with test certificate • Complete documentation • Design conforms to: <ul style="list-style-type: none"> – EN 60204-1 – ATEX zone 1 and 21 (pneumatic only), ATEX zone 2 and 22 (electric and electro-pneumatic) – UL-508A • Implementation of safety functions 	<ul style="list-style-type: none"> • Media supply for compressed air and cooling water for welding cells • Made to measure: profile as support element, design perfectly adapted to the installation space, for installation within safety barriers • Labelling: customised labelling for safe operation • Fast installation: thanks to assembly according to the customer's specification • Medium water: fittings for liquid media 	<ul style="list-style-type: none"> • Media supply for compressed air and cooling water for welding robots • Protection against ambient conditions through the use of special materials, such as hoses and fittings resistant to welding spatter • Protection against environmental influences to prevent damage to the installation • Made to measure: profile as support element, design perfectly adapted to the installation space • Cooling water suction cylinder for drawing in cooling water when changing welding caps • Water flow sensor: measures flow rate, volume and cooling water temperature – to monitor the welding process • Easy to maintain thanks to removable fittings
<p>Description</p>	<ul style="list-style-type: none"> • Machine-specific pre-assembly of pneumatic and electric components on support plate • Tubing and wiring included • Defined interfaces for simple installation directly in the system 	<ul style="list-style-type: none"> • Controls and monitors the compressed air and cooling water supply for whole welding cells 	<ul style="list-style-type: none"> • Controls and monitors the compressed air and cooling water supply for individual welding guns
<p>→ online</p>	<p>cmz</p>	<p>www.festo.com/sp/hip</p>	<p>www.festo.com/sp/rip</p>

Product overview – Control cabinets

Assemblies

Type	 Assemblies	 Cartridge solutions	 Sheet-metal structures and special housings
Technical data	<ul style="list-style-type: none"> • Combination of a wide range of pneumatic and/or electric components into one unit • Application-specific combination of components • Accessories mounted on the sub-assemblies • Use of the latest innovations and technologies • Ready to install • Fully tested, with test certificate • Complete documentation • Design conforms to: <ul style="list-style-type: none"> – EN 60204-1 – ATEX zone 1 and 21 (pneumatic only), ATEX zone 2 and 22 (electric and electro-pneumatic) – UL-508A • Implementation of safety functions 	<ul style="list-style-type: none"> • Space saving thanks to extremely compact design • Pneumatic functions integrated in a single compact housing • Housing available in different materials • No tubing required • Minimal cabling required • Significant design freedom • Flexible integration options on and within the machine • Sturdy design • Fully tested • Ready to install • Complete documentation 	<ul style="list-style-type: none"> • Sheet-metal structures <ul style="list-style-type: none"> – Customised shape and size – Reduced weight and number of assembly parts • Special housing <ul style="list-style-type: none"> – Customised shape – Customised dimensions – Different materials – Compact, space-saving format – Protection against environmental influences and unauthorised access • In combination <ul style="list-style-type: none"> – Alternative to conventional control cabinets – Variable integration options on and within the machine – Short tubing and cable lengths – Attractive design
Description	<ul style="list-style-type: none"> • Pneumatic and electric components pre-assembled to create a function unit • Can be combined from around 30,000 catalogue components • Connections included • For integration in machines 	<ul style="list-style-type: none"> • Integration of various pneumatic functions in one component • No need for individual housings • Ideal for applications that require a highly compact design 	<ul style="list-style-type: none"> • Reduced weight thanks to optimal use of materials with sheet-metal structures • Protection against environmental influences and unauthorised access in the special housing • Ideally combined as a control cabinet directly in the system
→ online	CMCZ	CMCZ	CMCZ

Assemblies

Type	 Function blocks	 Profile solutions
Technical data	<ul style="list-style-type: none"> • No tubing required thanks to drilled ducts • Housing available in different materials • Customised design of the pneumatic interfaces for the system • Ideal for a small number of components and variable connection options • Extremely economical, even for small quantities 	<ul style="list-style-type: none"> • Profiles in customised cross sections and lengths • Integrated ducts for straight-line routing of the compressed air • Common air supply for multiple valves or valve terminals via a single duct • Combination of exhaust air and supply air without tubing, even over long distances • Supply of compressed air at different locations • No tubing required • Significantly reduced cabling • Modular structure easy to achieve • Optional: profile as mechanical mounting element for other components or as a supporting part of the machine frame
Description	<ul style="list-style-type: none"> • Compressed air supply for pneumatic components via drilled ducts • Ideal for small number of pneumatic components and variable connection options • Compact and easy to service 	<ul style="list-style-type: none"> • Extruded profiles in combination with valves as a valve terminal • For the distribution of compressed air in the machine concept • Customised profile cross sections available
→ online	CMCZ	CMCZ

12 Services



- + After Sales Services:
from commissioning through to maintenance and repair
- + Energy Saving Services:
energy efficiency as a modular service. PreAudit and Audit to suit your specific requirements
- + Technical Support Services:
technical advice and technical customer support



Commissioning service

- + Configuration and parameterisation on site
- + Fast, reliable, optimised

→ page 840



Maintenance

- + Inspection and preventive maintenance measures
- + Corrective maintenance

→ page 841



PreAudit – Energy Saving Services

- + Comprehensive report on your compressed air system
- + Determine savings potential for compressed air and define measures

→ page 844

Contents

Commissioning service	840
Maintenance	841
Repair service	842
Technical support	843
PreAudit	844
Analysis of compressed air generation	845
Compressed air quality analysis	846
Pressure drop measurement	847
Compressed air consumption analysis	848
Leakage detection and elimination	849
Maintenance Machine analysis for energy efficiency	850

Commissioning service



- Professional commissioning of Festo automation solutions
- Competent briefing of staff responsible for the machine
- Fast – reliable – optimised

Objectives

- Professional commissioning of Festo components and solutions in your plant
- Competent briefing of staff responsible for the machine

Services

- Mechanical, pneumatic and electrical integration and configuration of Festo automation solutions
- Configuration and parameterisation
- Optimisation with test run
- Data backup and documentation
- Technical guidance and briefing of staff responsible for the machine

Requirements and prerequisites

- Optimum prerequisites
- Use of Festo components
 - Access to the machine or system
 - Mechanical, pneumatic and electrical work is complete
 - Qualified personnel responsible for the machine present on the agreed date

The benefits to you

- Optimum configuration and parameterisation
- Time saving
- Maximum system availability

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/services



- Preventive and corrective maintenance
- Directly at your system
- For high system availability and rapid assistance should the worst happen

Objectives

- Optimal preventive maintenance of pneumatic and electrical automation components and systems
- Prevention of unplanned production downtime
- Fast and effective support in the event of malfunctions or production downtime
- Reduced energy consumption

Services

Implementation of the following preventive maintenance measures to DIN 31051:

- Inspections
 - Checking for damage and wear characteristics
 - Checking mechanical, pneumatic and electrical connections and connectors
 - Checking lubrication
 - Checking compressed air preparation
 - Carrying out component-specific inspections
- Maintenance
 - Lubrication/relubrication of guides
 - Tightening of connectors
 - Replacement of air filters
 - Replacement of silencers
 - Carrying out component-specific preventive maintenance tasks
- Repair
 - Troubleshooting
 - Solution finding
 - Error elimination
 - Elimination of leakages
 - Replacement or repair of components

The benefits to you

- Professional implementation of preventive maintenance measures for optimum machine operation by specialists from Festo
- The entire compressed air system is always in a good condition
- High system availability and prevention of unplanned downtimes
- Reduced workload for your maintenance personnel
- Individual services available on request

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/services

Repair service



- Extended service life
- Reduced costs

Objectives

- Cost-effective extension of the service life of high-quality components and assemblies

Services

- Inspection
- Analysis of economic efficiency
- Repair or replacement of faulty components or wearing parts
- Leakage testing
- Functional testing

Please send the faulty component and a detailed error description to your Festo national company. Detailed spare parts lists can be found on the Festo website.

The benefits to you

- Extension of the service life of components and assemblies through replacement or repair of defective or worn parts
- Also available in some countries as an Express Repair Service (e.g. repair within 2 hours) and at a fixed price

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/services

Technical support



- Your technical questions answered
- Technical support on site

Services

- Technical advice:
answering technical questions or solving technical problems using Festo automation solutions
 - Online support
 - Hotline support
- Technical customer support:
technical support on site
 - Remote support
 - On-site support

The benefits to you

- Worldwide availability of technical support services
- Time saving when answering technical questions and solving problems
- Optimum sizing and increased availability of your system

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/services

PreAudit



- Implementation of the Festo Energy Saving Services to DIN ISO 11011
- Analysis of your compressed air system by experts on site
- Important advice and recommendations on the topic of energy efficiency – immediate identification of worthwhile measures

Objectives

- Determine a detailed picture of the energy situation in your compressed air system
- Demonstrate potential improvements and possible weaknesses

Services

Implementation of the Festo Energy Saving Services to DIN ISO 11011:

- Analysis of compressed air generation – assessment
 - Assessment of the compressors – utilisation
 - Documentation of compressor-specific performance data and all relevant maintenance data
- Compressed air quality analysis
 - Page 846 "Compressed air quality analysis"
- Pressure drop measurement
 - Page 847 "Pressure drop measurement"
- Compressed air consumption analysis
 - Page 848 "Compressed air consumption analysis"
- Leakage detection – quick check
 - Systematic identification of leaks in the compressed air system
 - Leakage detection and documentation on one machine by way of example
- Machine analysis for energy efficiency – quick check
 - Review of one machine's pneumatic energy efficiency by way of example
 - Documentation of the analysed compressed air applications
 - Comprehensive report on the analysis with weighted recommendations on what to do next

General technical conditions

- Duration approx. 1 to 1 ½ days on site, 1 day for evaluation and report, ½ day for presentation of the results
- Access required to the compressor station, the systems and the plant. Accompanied by one of the customer's employees, provision of the data requested in advance.
- See Energy Saving Services for further general requirements

The benefits to you

- Important advice and recommendations on how to improve energy efficiency
- Immediate identification of weaknesses and worthwhile measures

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/energysaving

Analysis of compressed air generation



The Festo Energy Saving Services offer a tailored range of services for identifying and exploiting potential compressed air savings. Part of this is the analysis of compressed air generation:

- Determination of a clear consumption profile
- Information about the output reserves of the compressed air system
- Measurement during operation

Objectives

- Determine a clear consumption profile for compressed air requirements including fluctuations in consumption at different operating times
- Identify potential savings

Services

- Measurement of compressor operating times as well as load/idling times
- Power consumption measurement
- Flow measurement/consumption measurement
- Pressure measurement (level and band width)
- If possible, estimation of leakage volume
- Comparison of energy consumption and compressed air volume supplied

General technical conditions

- Simultaneous power consumption measurement on up to 6 compressors
- Simultaneous power consumption measurement on 6 to 12 compressors on request
- Pressure measurement up to 16 bar
- Volumetric flow rate measurement in main line up to DN 300 (approx. 39,500 Nm³/h)
- Flow sensor can be installed during operation and under pressure
- Measurement duration 1 week (different measurement duration on request)
- Documentation of results as a PDF file and printout in colour

The benefits to you

- Information about compressed air costs and potential savings
- Transparent energy consumption of the entire system
- Information about the output reserves of the compressed air system
- Manufacturer-independent measurement
- Installation of the measuring devices during operation

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/energysaving

Compressed air quality analysis



The Festo Energy Saving Services offer a tailored range of services for identifying and exploiting potential compressed air savings. Part of this is the compressed air quality analysis:

- Assurance of optimum compressed air quality
- Increased service life of components
- Minimisation of unexpected production downtimes

Objectives

- Optimise the current compressed air quality of the compressed air system
- Increase machine availability and process reliability
- Reduce maintenance costs

Services

- Inspection of decentralised air preparation at point of usage
- Measurement of residual oil content
- Measurement of pressure dew point
- Analysis of measurement results and if applicable recommendation of improvement measures
- Documentation of all measurement results
- 3 hours on-site service (max. 3 measurements; additional time on request)
- General technical requirements: sampling ideally using standard push-pull fittings or standard O.D. tubing
- Brief interruption of the compressed air supply necessary to install the measurement technology
- Pressure range up to 10 bar
- Measurement of the residual oil content up to class 2 (ISO 8573-1:2010)
- Measurement of the pressure dew point up to class 2 (ISO 8573-1:2010)
- Measurement of pressure dew points and residual oil class 1 (ISO 8573-1:2010) on request and in accordance with individual quotation

The benefits to you

- Assurance of optimum compressed air quality
- Targeted adaptation of compressed air preparation to requirements
- Minimisation of unexpected production downtimes
- Increased service life of pneumatic components and process reliability
- Analysis and documentation of measurement results by compressed air specialists

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/energysaving

Pressure drop measurement



The Festo Energy Saving Services offer a tailored range of services for identifying and exploiting potential compressed air savings. Part of this is the pressure drop measurement:

- Record the pressure drop in the system
- Up to 8% energy saving in generated compressed air through pressure reduction

Objectives

- Record the pressure drop in the system
- Reduce pressure

Services

- Measurement of the pressure in the compressor room (input), in production (draw off) and storage of the results
- Recording of the pressure drop using multiple pressure sensors with data loggers
- Evaluation and comparison of the pressure profiles
- Controlled pressure reduction following evaluation
- Demonstration of pressure fluctuations in production

The benefits to you

- Process reliability thanks to constant pressure level
- Potential savings from pressure reduction: up to 8% of the energy for generated compressed air

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/energysaving

Compressed air consumption analysis



The Festo Energy Saving Services offer a tailored range of services for identifying and exploiting potential compressed air savings. Part of this is the compressed air consumption analysis:

- Determination of exact compressed air consumption
- Optimal configuration of compressed air supply
- No pressure drop due to undersupply
- No unnecessary energy costs due to oversupply

Objectives

- Determine and analyse compressed air consumption and leakage of machines and machine lines
- Identify inappropriate compressed air usage and of improvement potential

Services

- Installation and removal of the measuring equipment with standard components (fittings, tubing, etc.)
- Measurement of flow rate, consumption and pressure with machine running and idle
- Determination and analysis of different characteristics
 - Consumption per machine cycle
 - Average consumption per minute
 - Average pressure
 - Max./min. pressure
 - Max./min. rate of air flow
- Documentation of measurement results including graphical representation of measurement results, optionally available as a PDF file or colour printout
- 3 hours on-site service (additional time on request)

General technical conditions

- Measurement of flow rates from 6 l/min ... 5000 l/min (higher flow rates on request)
- Accuracy of flow rate measurements: +/-4.5%
- Flow measurements in 1" ... 12" lines on request
- Applied measuring principles: usually calorimetric, sometimes differential pressure method
- Pressure range 1 ... 10 bar
- Pressure range up to 50 bar on request
- Sensor installation in supply line or bypass as special solution
- Brief interruption of the compressed air supply line necessary to install/remove the measurement technology
- Compressed air quality min. class 7:4:2 (to ISO 8573-1:2010)
- Provision of measurement results as a CSV file and as a colour printout
- Parallel measurement of multiple flow rates and pressures, including documentation, on request

The benefits to you

- Information about potential compressed air savings
- Use of state-of-the-art, highly accurate pressure and flow measurement technology
- All relevant measuring ranges are covered
- Analysis of measurement results by compressed air specialists

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/energysaving

Leakage detection and elimination



The Festo Energy Saving Services offer a tailored range of services for identifying and exploiting potential compressed air savings. Part of this is leakage detection and elimination:

- Detection and repair of leakages in production plants
- Immediate energy and operating cost savings

Objectives

- Transparency of energy and money losses as well as CO₂ emissions
- Assess and classify the individual leaks
- Lower compressed air requirements and thus lower operating costs

Services

- Detection of compressed air leakages using highly sensitive ultrasound detectors during operation
- Checking the complete compressed air system from the compressor to the pneumatic application
- Classification of the leakages according to size and cost
- Documentation of defective components
- Leakage report
 - Recommended measures
 - Required spare parts
 - Estimate of repair time
 - Prioritisation of measures
 - Assessment as to whether repair can be carried out while machine is in operation
- Information on optimisation options
- Documentation of measures carried out
- Online access to all results and repair data via the Energy Saving Assessment Portal

General technical conditions

- Contactless ultrasound detection and classification of compressed air leakages (other gases on request)
- Detection while the machines are running, usually no or only short production downtimes required
- Max. detection distance: 20 m
- Documentation of the results in the Energy Saving Assessment Portal

The benefits to you

- No production downtime required
- Fast and professional checking of your entire plant for compressed air leakages
- Detailed documentation of required measures, including spare parts
- Online access to the prepared data via the Energy Saving Assessment Portal
- Software tools for optimum planning of leakage rectification
- No investment in measurement technology for leakage detection needed
- Experience from many major projects

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/energysaving

Machine analysis for energy efficiency



The Festo Energy Saving Services offer a tailored range of services for identifying and exploiting potential compressed air savings. Part of this is the machine analysis for energy efficiency:

- Reviewing of systems with respect to possible energy optimisation potential
- Documentation of the analysed compressed air applications

Objectives

- Analyse and establish recommendations for optimising the energy consumption of your compressed air applications
- Determine and analyse compressed air consumption and of leakage of applications and machines
- Identify inappropriate compressed air usage and of improvement potential

Services

- Identification and analysis of the pneumatic applications of relevance to energy consumption
- Measurement of flow rate, consumption and pressure of the relevant compressed air applications
- Ascertain and recommendation of optimisation measures
- Estimation of the costs and savings, including the predicted amortisation time
- Installation and removal of the measuring equipment with standard components (fittings, tubing, etc.)
- Measurement of flow rate, consumption and pressure with machine running and idle
- Documentation of the measurement results including graphical representation

General technical conditions

- Sensor installation in supply line or bypass as special solution
- Brief interruption of the compressed air supply line necessary to install/remove the measurement technology
- Compressed air quality min. class 7:4:2 (to ISO 8573-1:2010)
- Parallel measurement of multiple flow rates and pressures, including documentation, on request
- On request: installation and commissioning of the developed solutions

The benefits to you

- Systematic review by experienced pneumatic specialists
- Rapid identification of measures that are economically sensible and technically feasible
- Certification of the energy efficiency of pneumatic solutions

Are you interested in this service?

Ask your Festo sales engineer or visit our website → www.festo.com/energysaving

© Appendix





Contents

Technical information	854
Sales and service network – international	879
Registered trademarks	881

Conditions for using, storing and transporting Festo products

What must be taken into account when using Festo products?

The limit values specified in the technical data and any specific safety instructions must be adhered to by the user in order to ensure correct functioning.

The pneumatic components must be supplied with correctly prepared compressed air free of aggressive media
→ page 856 ff.

Take the ambient conditions at the place of use into consideration. Corrosive, abrasive and dusty environments (e.g. water, ozone, grinding dust) will reduce the service life of the product.

Check the resistance of the materials of Festo products with respect to the media used and surrounding media
→ page 872.

When Festo products are used in safety-oriented applications, all national and international laws and regulations, for example the Machinery Directive, together with the relevant references to standards, trade association rules and the applicable international regulations must be observed and complied with.

Unauthorised conversions or modifications to products and systems from Festo constitute a safety risk and are thus not permitted. Festo does not accept any liability for the resulting damages.

You should contact Festo's advisors if one of the following applies to your application:

- The ambient conditions and conditions of use or the operating medium differ from the specified technical data.
- The product is to perform a safety function.
- A risk or safety analysis is required.
- You are unsure about the product's suitability for use in the planned application.
- You are unsure about the product's suitability for use in safety-oriented applications.

All technical data is correct at the time of going to print.

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All technical data is subject to change according to technical updates.

Storage conditions

Temperature

The temperature range in storage areas must be between 10 °C and 40 °C all year round. Rapid changes of temperature in the storage area should be avoided. Heat sources such as heating elements, heating pipes and the like should be shielded to ensure the stored goods are not directly subject to radiant heat.

UV radiation

No direct sunlight (skylights, vent flaps, etc.) and no high-UV artificial lighting. Use fluorescent tubes with UV protection.

Ambient air

Air circulation and permanently feeding (proportionally) ambient air to the storage room is absolutely essential. You must prevent any media that may affect the materials, e.g. solvents and the like arising from production processes, from entering the storage areas. The storage location should not contain any equipment that generates ozone such as indoor air ionisers or high-voltage equipment. The relative humidity should not exceed 75%. Condensation must be avoided in all cases.

Dust

The parts must be stored in suitable containers. The storage room must as far as possible be free of dust. Attention should be paid in particular to using abrasion-resistant, non-porous floor coverings, and ingress of dust particles from external sources (ambient air) should be prevented. When repairs are being made to the building technology systems in the warehouse (welding, grinding etc.), the stored goods should be protected from welding spatter, chips etc.

Adding to/removing from storage

The parts should not be exposed to any extreme fluctuations in temperature.

Mechanical effect

All products, including packs of spare parts/wearing parts for example, should be stored in such a way that they are not mechanically deformed or damaged, i.e. no buckling or sagging, no point loads. Direct contact between elastomer products and copper or manganese for an extended period should also be avoided because of possible reciprocal effects.

Stock management

To avoid storing parts for long periods of time, the first-in first-out principle should be followed. The total storage duration should be kept as short as possible. In principle, the specified guarantee periods apply.

Transport conditions

In principle, there are no restrictions in terms of operating conditions during land/sea or air transport, provided

the products are sufficiently protected in accordance with the specifications in the product data sheet by using ap-

propriate product and shipping packaging. If necessary, special transport such as temperature-controlled trans-

port can be organised. However, this should be agreed contractually and as a separate financial matter.

Standards in pneumatics

Standards are also of great importance in pneumatics. Standards mean harmonisation. Standardisation is also the basis for the free trade of goods and services between companies

nationally as well as internationally. Standards in industry describe the latest state of technology. They provide a common basis for the evaluation of technical aspects. Standards

relevant for pneumatics deal with dimensions, safety and quality. Festo has for many years been actively working with the relevant national and international standards organisations.

Pneumatic drives

- Standards-based cylinders to ISO 6432
- Standards-based cylinders to ISO 21287

- Standards-based cylinders to ISO 15552 (ISO 6431, DIN ISO 6431, VDMA 24 562), NFE 49003.1 and UNI 10290.

- Rod clevises to ISO 8140 and DIN 71752

- Rod eyes to ISO 12240-4, dimension series K

Valves/valve terminals

- Valve terminals for standard valves
- Solenoid and pneumatic valves with port pattern to ISO 15407-1
- Valve sub-bases to ISO 15407-1
- Valve terminals with port pattern to ISO 15407-2

- Solenoid and pneumatic valves with port pattern to ISO 5599-1
- Valve terminals with port pattern to DIN ISO 5599-2

- Valve sub-bases with port pattern to ISO 5599-1 and external dimensions to VDMA 24345

- Solenoid valves with port pattern to VDI/VDE 3845 (NAMUR)

Compressed air preparation

- Compressed air quality according to ISO 8573-1 (2010)
- Bourdon tube pressure gauge to EN 837-1
- Capsule pressure gauge to EN 837-3

- Reservoirs to directive 2014/68/EU, 2014/29/EU or EN 286-1.

Compressed air preparation

Why compressed air preparation?

Properly prepared compressed air helps to prevent faults in pneumatic components. It increases the service life of the components and reduces machine failures and downtime, thereby increasing process reliability. Compressed air contains contaminants in the form of

- particles,
- water and
- oil.

Water and oil can be in liquid or gaseous form and change from one state to another within the compressed air system.

An actual compressed air system will not have any of these contaminants in their pure form; they will occur in a mixture. The composition of this mixture can vary greatly at different times in different places in the system. For example, water can collect in branch lines or particles can become deposited in empty spaces over time, and then suddenly be propelled along by a pressure surge.

Particles

Particles in the compressed air usually occur in the form of dust (carbon black, abraded and corrosion particles). Metal chips (e.g. from conversion work) and residues of sealants such as PTFE tape can also occasion-

ally get into the compressed air via the compressed air system. The particles are classified as fine dust: size $0.1 \dots 5 \mu\text{m}$ and coarse dust: size $> 5 \mu\text{m}$ in accordance with ISO 8573-1:2010.

Poorly prepared compressed air causes faults such as:

- Accelerated wearing of seals
- Oil-fouled valves in the control section
- Dirty silencers

Possible effects for the user and machine:

- Reduced machine availability
- Higher energy costs due to leakages
- Higher maintenance costs
- Shorter component and system service life

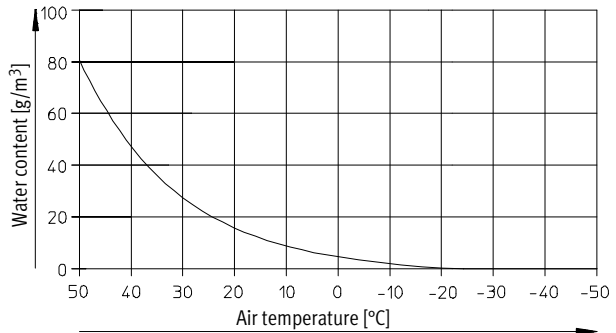


Water content in air

The maximum water content in air (100% relative air humidity) is dependent on temperature. Air can only absorb a certain amount of water (in g per volumetric unit (in m^3), irrespective of pressure.

The warmer the air, the more water it can absorb. Excessive humidity manifests itself as condensation. If the air

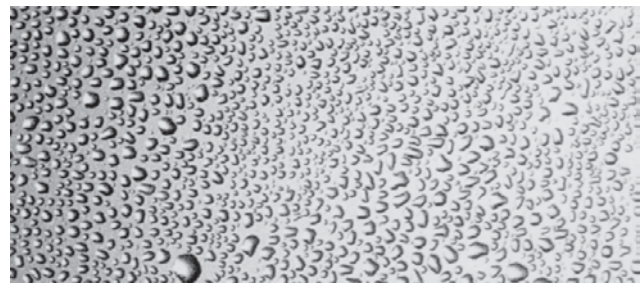
temperature drops, for example from $20 \text{ }^\circ\text{C}$ to $3 \text{ }^\circ\text{C}$, the maximum water content of compressed air is reduced from $18 \text{ g}/\text{m}^3$ to $6 \text{ g}/\text{m}^3$. The compressed air can therefore only absorb approx. $1/3$ as much water as before. The rest ($12 \text{ g}/\text{m}^3$) is precipitated as drops (dew) and must be drawn off so that it cannot cause any malfunctions.



Water condensation

Water is always present in the air in the form of humidity. When compressed air is cooled, water is released in large quantities. Drying

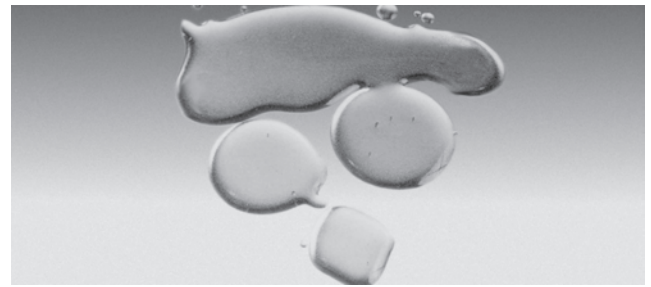
helps to prevent corrosion damage in compressed air systems and prevents malfunctions in the connected consuming devices.



Oil contamination

Similarly, in the case of compressors that operate without oil, oil aerosols present in the drawn-in air also lead to a residue of oil pollutants. However,

this oil is not suitable for the lubrication of drives and can even lead to the clogging of sensitive parts.



How clean should compressed air be?

The compressed air quality is determined by the requirements

The answer is quite simple: compressed air must be so clean that it cannot cause any malfunctions or damage.

As each filter also creates a flow resistance, compressed air should be as clean as possible for economic reasons.

The wide application range of compressed air places many different requirements on compressed air quality.

If high quality is required, several filtration stages are necessary

→ page 860.

If just a single "fine" filter were used, it would quickly become ineffective.

Sizing



Note

Equipment at an air branching/air distribution input should have a high flow rate as it must supply the total demand for air.

More information

→ www.festo.com/catalogue
> Compressed air preparation

The size of the service unit depends on the system's air consumption. Undersizing leads to pressure fluctuations and to reduced filter service life. For cost reasons, high quality com-

pressed air should only be used where it is absolutely necessary. Branching modules between the individual filter stages enable the user to tap off compressed air of various qualities.

Service unit functions

Compressed air filters remove particles and moisture droplets from the air. Particles > 40 ... 5 µm (depending on the grade of filtration) are retained by a sintered filter. Liquids are separated by centrifugal force. The condensate which accumulates in the filter bowl must be emptied from time to time, because it would otherwise be drawn in by the air flow.

Several industries often require finely filtered air. Fine and micro filters are used for this. Fine filters are used for prefiltering down to a particle size of 1 µm.

Micro filters further purify pilot air, removing practically all remaining water and oil droplets and contamination particles. The degree of compressed air filtration is 99.999% relative to a particle size of 0.01 µm.

The pressure regulator maintains a constant working pressure (secondary side), regardless of the pressure variations in the system (primary side) and the air consumption. Inlet pressure must always be greater than working pressure.

The compressed air lubricator provides pneumatic components with adequate lubricant if required. Oil is drawn from a reservoir and atomised when it comes into contact with the air stream. The lubricator is only functional when the air flow is sufficiently strong.

Compressed air preparation

Lubricated compressed air

The following notes must be observed when lubricated compressed air is used:

- Use Festo special oil OFSW-32 or the alternatives listed in the Festo catalogue (as specified in DIN 51524-HLP 32, viscosity 32 cSt

at 40 °C).

- If lubricated compressed air is used, additional lubrication must not exceed 25 mg/m³ (ISO 8573-1:2010). The quality of compressed air downstream of the compressor must correspond to that of unlubricated compressed air.

Oil content

A differentiation must be made between residual oil for operation with unlubricated air and additional oil for operation with lubricated air.

Unlubricated operation:

Examinations involving residual oil content have revealed that the various types of oil have entirely different effects. A distinction must therefore be made between the following oil types when analysing the residual oil con-

- The lifetime lubrication required for unlubricated operation can be "flushed out" when products are operated using lubricated compressed air. This can result in malfunctions if a system is switched back to unlubricated operation after lubricated operation.
- The lubricators should, where possible, always be installed directly upstream of the cylinders used in order to prevent operating the entire system with lubricated air.
- Never over-lubricate the system. To determine the correct lubricator settings, the following "oil form test"

tent:

- Bio-oils: oils based on synthetic or natural ester (e.g. rapeseed oil methyl ester). In this case, residual oil content must not exceed 0.1 mg/m³. This corresponds to ISO 8573-1:2010 class 2 → www.festo.com/catalogue > Compressed air preparation. Larger amounts of oil result in damage to O-rings,

can be implemented: hold a piece of white card approx. 10 cm away from the exhaust port (without silencer) of a working valve of the cylinder furthest away.

Allow the system to work for some time; the card should only show a pale yellow coloration. If oil droplets appear, this is an indication that too much oil has been used.

- The colour and condition of the exhaust silencer provide further evidence of over-lubrication. Marked yellow coloration and dripping oil indicate that the lubrication setting is too high.

seals and other component parts (e.g. filter bowls) in pneumatic systems, and may result in premature product failure.

- Mineral oils (e.g. HLP oils to DIN 51524, part 2) or similar oils based on polyalphaolefins (PAO). In this case, residual oil content must not exceed 5 mg/m³. This corresponds to ISO 8573-1:2010 class 4 → www.festo.com/catalogue > Compressed air

- Dirty or incorrectly lubricated compressed air will reduce the service life of the pneumatic components.
- Service units must be inspected at least twice a week for condensate and correct lubrication settings. These inspections should be included in the machine maintenance plan.
- To protect the environment, as little lubrication as possible should be used. Festo pneumatic valves and cylinders have been designed in such a manner that, under permitted operating conditions, additional lubrication is not required and yet a long service life is guaranteed.

preparation. A higher residual oil content is not permitted, regardless of the compressor oil, because permanent lubrication would otherwise be flushed out over a period of time.

This can lead to malfunctions.

Humidity

Max. pressure dew point 3 °C.

Corresponds to ISO 8573-1:2010, at least class 4 → www.festo.com/catalogue > Compressed air preparation.

 Note


The pressure dew point must be at least 10 K lower than the temperature of the medium, since ice would otherwise form in the expanded compressed air.

Solids

Permissible particle load max. 10 mg/m³, particle size max. 40 µm. Corresponds to ISO 8573-1:2010 class 7 → www.festo.com/catalogue > Compressed air preparation.

Suitable oils

Special oil in 1 litre containers:
Order code OFSW-32

 Note

Optimum compressed air preparation means fewer machine failures and greater process reliability. See **Compressed air quality analysis** → page 846

Purity classes for particles to ISO 8573-1:2010

Class	Maximum number of particles per m ³ as a function of particle size d		
	0.1 μm < d ≤ 0.5 μm	0.5 μm < d ≤ 1.0 μm	1.0 μm < d ≤ 5.0 μm
0	As stipulated by the user or supplier of the equipment, stricter requirements than class 1		
1	≤ 20,000	≤ 400	≤ 10
2	≤ 400,000	≤ 6,000	≤ 100
3	Not specified	≤ 90,000	≤ 1,000
4	Not specified	Not specified	≤ 10,000
5	Not specified	Not specified	≤ 100,000

Class	Mass concentration C _p [mg/m ³]
6 ¹⁾	0 < C _p ≤ 5
7 ¹⁾	5 < C _p ≤ 10
X	C _p > 10

- 1) Air cleaned using universal filters designed for particle sizes of 5 μm (class 6) and 40 μm (class 7) is normally used for the compressed air supply to industrial tools and pneumatic machines. These designs have been used for many years, before the latest systems for measuring particle sizes were developed, and have enabled satisfactory operation while minimising pressure (and therefore performance) losses. These filters are not 100% efficient; they offer an efficiency of at least 95% based on the specified particle size, i.e. for class 6, 95% of all particles of size 5 μm are filtered; for class 7, 95% of all particles of size 40 μm are filtered (measured as per ISO 12500-3).

Purity classes for humidity and liquid water to ISO 8573-1:2010

Class	Pressure dew point [°C]
0	As stipulated by the user or supplier of the equipment, stricter requirements than class 1
1	≤ -70
2	≤ -40
3	≤ -20
4	≤ +3
5	≤ +7
6	≤ +10

Class	Concentration of liquid water C _w [g/m ³]
7	C _w ≤ 0.5
8	0.5 < C _w ≤ 5
9	5 < C _w ≤ 10
X	C _w > 10

Purity classes for total oil content to ISO 8573-1:2010

Class	Total concentration of oil (liquid, aerosol and vapour) [mg/m ³]
0	As stipulated by the user or supplier of the equipment, stricter requirements than class 1
1	≤ 0.01
2	≤ 0.1
3	≤ 1
4	≤ 5
X	> 5

Compressed air preparation

Compressed air quality in use

Designation to ISO 8573-1:2010
[particle:water:oil]

The class that can be achieved with compressed air preparation depends on the quality of the compressed air

downstream of the compressor. The specifications apply to typical com-

pressed air systems (this list is not exhaustive).

Central air preparation		Air distribu- tion	Decentralised air preparation		Typical applications
Component	Class	Class	Component	Class ³⁾	
Compressor	[-:--:-]	[-:--:-]	Water separator	[-:7:4]	All applications requiring virtually condensate-free compressed air. No defined particle filtering.
Compressor + pre-filter + air dryer	[7:4:4] ¹⁾	[-:4:-] ²⁾	Filter 40 µm	[7:4:4]	Operating medium for valves, cylinders, secondary packaging (standard)
			Filter 5 µm	[6:4:4]	Servo-pneumatic positioning with proportional directional control valves, compressed air tools
			Filter 5 + 1 µm	[5:4:3]	Applications with a residual oil content < 0.5 mg/m ³ , textile industry, pneumatic spinning machines, paper industry
			Filter 5 + 1 + 0.01 µm	[1:4:2]	Applications with a residual oil content < 0.01 mg/m ³ , e.g. air bearings, painting, powder coating
			Filter 5 + 1 + 0.01 µm + activated carbon filter	[1:4:1]	Applications with a residual oil content < 0.003 mg/m ³ , reduction of oil vapours and odours, optical instruments, sealing air for precision glass scales/lasers, primary packaging
			Filter 5 + 1 + 0.01 µm + activated carbon filter + membrane air dryer	[1:3:1]	Semiconductor industry, pharmaceutical products
			Filter 5 + 1 µm + adsorption dryer	[2:2:2]	Applications in the low-temperature range, dry process air, powder transportation, food production [1:2:1]

- Much higher classes are possible with suitable air preparation downstream of the compressor.
- Pipe systems can increase the particle content of the compressed air (chips, rust, etc.), liquid oil can accumulate in some lines of the compressed air distribution system. Specifications apply at normal room temperature.
If parts in the compressed air system are subject to lower temperatures, the humidity class must be chosen so that the pressure dew point is 10 K below the minimum expected temperature.
- Class to ISO 8573-1:2010 at room temperature (20°C).

Definition of the compressed air purity class to ISO 8573-1:2010

The quality of the compressed air is determined by

- solid contaminants (particles),
- humidity and water, and
- oil content.

The air purity class is specified as follows:

- A = Particles
- B = Humidity
- C = Oil content

Example:

ISO 8573-1:2010 [-:7:-]

- Particles: Not defined
- Humidity: ≤ 0.5 g/m³
- Oil content: Not defined

Medium

Under normal working conditions, pneumatic valves from Festo can be operated with lubricated or unlubricated compressed air. If any particular product requires a different quality of compressed air, this is indicated in the technical data for the relevant product.

Nominal size

The nominal width provides information about the smallest cross section in the main flow of the valve. It specifies the diameter of the orifice and

Standard nominal flow rate

The standard nominal flow rate q_N is the flow rate characteristic used by Festo for a device or component expressed in l/min.

The standard nominal flow rate q_N is the flow rate based on standard conditions (to DIN 1343) under the following measurement conditions:

- Test medium air
- Temperature 20 ± 3 °C (temperature of medium)

Pressure and pressure ranges**Pressure**

Force per area. There is a difference between differential pressure with respect to atmosphere and absolute pressure. Pressure specifications for pneumatic devices must normally be assumed to be the differential pressure with respect to atmosphere, unless expressly indicated otherwise.

Pilot pressure range

The range between the lowest required and highest permissible pilot pressure for correct operation of a valve or system.

The following pressures, for example, have been standardised to ISO 4399: 2.5, 6.3, 10, 16, 40 and 100 bar.

Operation with unlubricated compressed air is made possible by the selection of the material combination, the shape of the dynamic seals and the basic lubrication applied elsewhere. Operation with unlubricated compressed air is not possible under the following working conditions:

Once the valves have been operated with lubricated compressed air, it is essential that lubricated compressed air is always used subsequently since the oil in the lubricated air will have flushed away the basic lubrication.

- In all cases, a grade of filtration is required that removes contaminants up to $40 \mu\text{m}$ (standard filter cartridge version). Micro compressed air filtration may be required for special applications.

is expressed in mm. This is a measurement that only provides a limited comparison between different components. To compare products, the stand-

ard nominal flow rate must also be considered.

- Test specimen at ambient temperature
- The pressures to be set are for components with constant cross section (e.g. directional control valves):
Input pressure $p_1 = 6$ bar
Output pressure $p_2 = 5$ bar

Standard conditions to DIN 1343:

- $t_n = 0$ °C (standard temperature)
- $p_n = 1.013$ bar (standard pressure)

Exception 1:
Silencers
Input pressure $p_1 = 6$ bar
Output pressure $p_2 = p_{amb}$
 $p_{amb} =$ atmospheric pressure

Exception 2:
Low-pressure components
Input pressure $p_1 = 0.1$ bar
Output pressure $p_2 = p_{amb}$

Exception 3:
For pressure regulators:
Input pressure $p_1 = 10$ bar (constant) and output pressure $p_2 = 6$ bar at $q = 0$ l/min are set for the test specimen. Subsequently, the flow rate is slowly and constantly increased using the flow control valve until the output pressure reaches a value of $p_2 = 5$ bar. The resulting flow rate is measured.

Operating pressure

Data quoted as "max." or "max. permissible" values refer to the maximum safe pressure at which a component or system can be operated.

Absolute pressure

Zero pressure occurs in a completely air-free space (100% vacuum). Pressure that is calculated from this theoretical zero point is absolute pressure.

Operating pressure range

This is the range between the lowest required and highest permissible operating pressure for safe operation of a component or system. In pneumatics, this pressure range is also referred to as the working pressure range.

Response pressure

Pressure at which a directional control valve is actuated. Catalogue specifications for response pressure signify that the indicated minimum pressure must be present at the signal input to safely switch the valve.

Symbols
Differential pressure with respect to atmosphere p
Absolute pressure p_{abs}
Unit: bar, Pa (pascal)
1 bar = 100000 Pa

Drop-off pressure

Pressure which, if no longer maintained, causes a monostable directional control valve to return to the normal position by its spring.

Port designations of pneumatic components to ISO 5599

Port designations	Using ISO 5599 numbers (5/2-way and 5/3-way valves)	Using letters ¹⁾
	Supply port	1
Working ports	2	B
	4	A
		C
Exhaust ports	3	S
	5	R
		T
Pilot ports (signal)	10 ²⁾	Z ²⁾
	12	Y
	14	Z
Pilot air ports (power supply)	81 (12)	
	81 (14)	
Pilot exhaust ports	83 (82)	
	83 (84)	
Leakage lines		L

- 1) Still frequently used.
- 2) Clears the output signal.

Medium

Under normal working conditions, pneumatic drives from Festo can be operated with lubricated or unlubricated dried compressed air. If any particular product requires a different quality of compressed air, this is indicated in the technical data for the relevant product.

Operation with unlubricated com-

pressed air is made possible by the choice of materials used, the material combinations, the shape of the dynamic seals and the basic lubrication applied ex works. Operation with unlubricated compressed air is not possible under the following working conditions:

Once the drives have been operated with lubricated compressed air, it is essential that lubricated compressed air is always used subsequently since the oil in the lubricated air will have flushed away the basic lubrication.

Ambient conditions

Take the ambient conditions at the place of use into consideration. Corrosive, abrasive and dusty environments (e.g. water, ozone, grinding dust) will reduce the service life of the product.

Check the resistance of the materials of Festo products with respect to the media used and surrounding media
➔ page 872.

Intended use

Pneumatic drives are intended to convert pressure energy into motion energy; this process involves the transmission and transfer of forces. "Inten-

ded use" does not include use as a spring or cushioning component, since this would involve additional loads.

Frequency

If pneumatic drives are operated at maximum possible speed, a pause

time must be taken into account between the stroke movements.

Assembly position

In general, drives from Festo can be installed in any position. Any limitations or special measures are indicated in the technical data for the relevant product.

Operating pressure

"Max." or "max. permissible" values refer to the maximum safe pressure at which a drive or system can be operated.

Operating pressure range

This is the range between the lowest required and highest permissible operating pressure for safe operation of a component or system. In pneumat-

ics, this pressure range is also referred to as the working pressure range.

Effective force with single-acting cylinders

Permissible deviation of spring forces in accordance with DIN 2095, quality class 2, must be taken into consideration for the cylinders' effective force.

The effective force is also reduced by the value of prevailing frictional forces.

The degree of friction depends on the

mounting position and the type of load involved. Lateral forces increase friction.

Frictional force must be lower than the

spring return force. Single-acting cylinders should as far as possible be operated without lateral forces.

Permissible stroke deviations for standard cylinders

ISO 15552 (corresponds to the withdrawn standards ISO 6431, DIN ISO 6431, VDMA 24562, NFE 49003.1, UNI 10290), ISO 6432

and ISO 21287 permit a certain amount of stroke length deviation from the nominal value due to manufacturing tolerances. These tolerances

are always positive. Refer to the table for details regarding precise permissible deviations.

Standard	Piston Ø [mm]	Stroke length [mm]	Permissible stroke deviation [mm]
ISO 6432	8, 10, 12, 16, 20, 25	0 ... 500	+1.5
ISO 15552	32	0 ... 500	+2
	40, 50	500 ... 12,500	+3.2
	63	0 ... 500	+2
	80, 100	500 ... 12,500	+4
	125, 160	0 ... 500	+4
ISO 21287	200, 250, 320	500 ... 2,000	+5
	20, 25	0 ... 500	+1.5
	32, 40, 50	0 ... 500	+2
	63, 80, 100	0 ... 500	+2.5

 Note

In the case of stroke lengths larger than those shown in the table, the tolerances must be agreed upon between the manufacturer and the user.

Contactless position sensing

Pneumatic drives from Festo with contactless position sensing are fitted with a permanent magnet on the cylinder piston, the magnetic field of which is used to actuate proximity sensors.

Proximity sensors can be used to detect end or intermediate positions of cylinders. One or more proximity sensors can be clamped to a cylinder, either directly or using mounting kits.

**Piston diameter**



This pictogram is used to indicate the piston diameter. This is just represented by Ø in the dimensions table.

Pressure/force table

Piston force [N]								
∅	Operating pressure [bar]							
	1	2	3	4	5	6	7	8
2.5	0.4	0.9	1.3	1.8	2.2	2.7	3.1	3.5
3.5	0.9	1.7	3.8	3.5	4.3	5.2	6.1	6.9
5.35	2	4	6.1	8.1	10.1	12.1	14.2	16.2
6	2.5	5.1	7.6	10.2	12.7	15.3	17.8	20.4
8	4.5	9	13.6	18.1	22.6	27.1	31.7	36.2
10	7.1	14.1	21.2	28.3	35.3	42.4	49.5	56.5
12	10.2	20.4	30.5	40.7	50.9	61.0	71.3	81.4
16	18.1	36.5	54.3	72.4	90.5	109	127	145
20	28.3	56.5	84.8	113	141	170	198	226
25	44.2	88.4	133	177	221	265	309	353
32	72.4	145	217	290	362	434	507	579
40	113	226	339	452	565	679	792	905
50	177	353	530	707	884	1,060	1,240	1,410
63	281	561	842	1,120	1,400	1,680	1,960	2,240
80	452	905	1,360	1,810	2,260	2,710	3,170	3,620
100	707	1,410	2,120	2,830	3,530	4,240	4,950	5,650
125	1,100	2,210	3,310	4,420	5,520	6,630	7,730	8,840
160	1,810	3,620	5,430	7,240	9,050	10,900	12,700	14,500
200	2,830	5,650	8,480	11,300	14,100	17,000	19,800	22,600
250	4,420	8,840	13,300	17,700	22,100	26,500	30,900	35,300
320	7,240	14,500	21,700	29,000	36,200	43,400	50,700	57,900

Piston force [N]							
∅	Operating pressure [bar]						
	9	10	11	12	13	14	15
2.5	4	4.4	4.9	5.3	5.7	6.2	6.6
3.5	7.8	8.7	9.5	10.4	11.3	12.1	13
5.35	18.2	20.2	22.2	24.3	26.3	28.3	30.3
6	22.9	25.4	28	30.5	33.1	35.6	38.2
8	40.7	45.2	49.8	54.3	58.8	63.3	67.9
10	63.6	70.7	77.8	84.8	91.9	99	106
12	91.6	101	112	122	132	143	153
16	163	181	199	217	235	253	271
20	254	283	311	339	368	396	424
25	398	442	486	530	574	619	663
32	651	724	796	869	941	1,010	1,090
40	1,020	1,130	1,240	1,360	1,470	1,580	1,700
50	1,590	1,770	1,940	2,120	2,300	2,470	2,650
63	2,520	2,810	3,090	3,370	3,650	3,930	4,210
80	4,070	4,520	4,980	5,430	5,880	6,330	6,790
100	6,360	7,070	7,780	8,480	9,190	9,900	10,600
125	9,940	11,000	12,100	13,300	14,400	15,500	16,600
160	16,300	18,100	19,900	21,700	23,500	25,300	27,100
200	25,400	28,300	31,100	33,900	36,800	39,600	42,400
250	39,800	44,200	48,600	53,000	57,400	61,900	66,300
320	65,100	72,400	79,600	86,900	94,100	101,000	109,000

The piston force F can be calculated from the piston area A, the operating pressure p and the friction R using the following formulae:

Piston force (final pressure)

$$F = p \cdot A - R$$

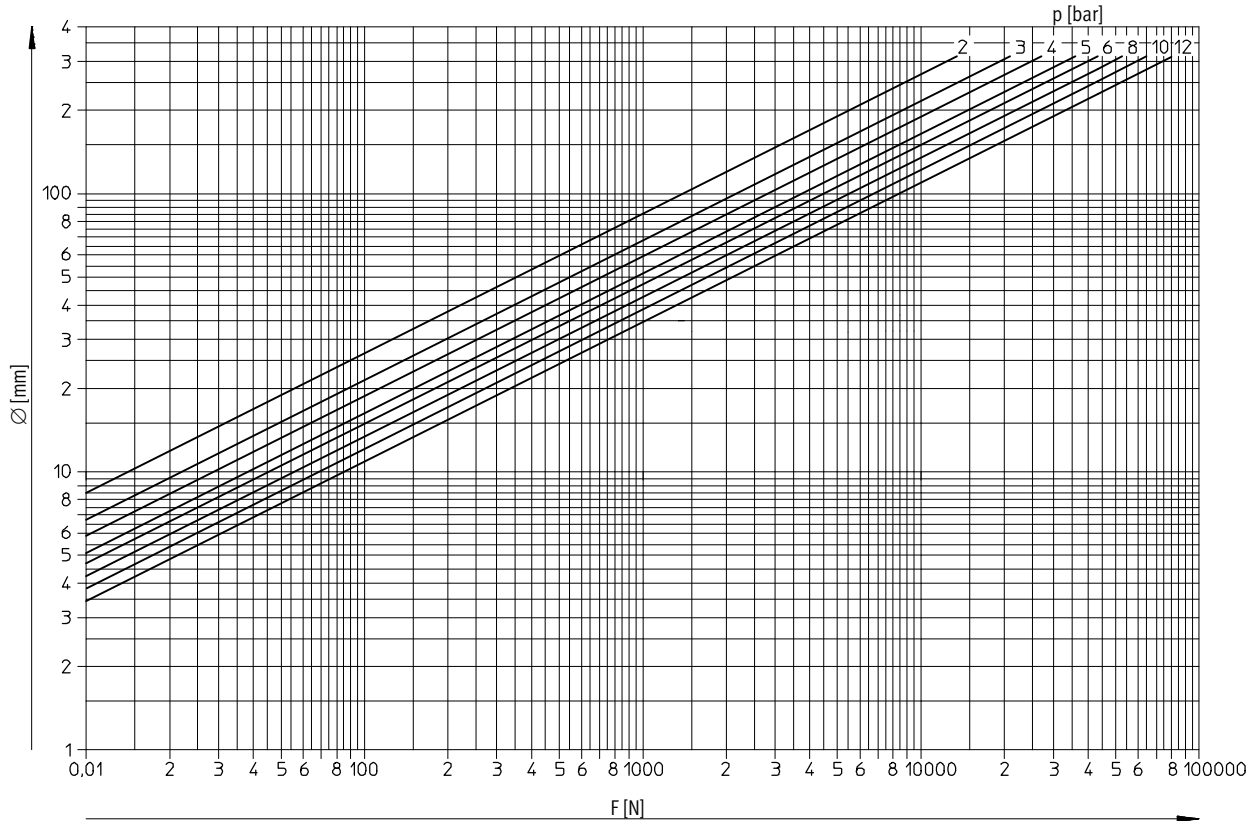
$$F = p \cdot 10 \cdot \frac{d^2 \cdot \pi}{4} - R$$

- p = Operating pressure [bar]
- d = Piston diameter [cm]
- R = Friction ~10% [N]
- A = Piston area [cm²]
- F = Effective piston force [N]

ProPneu software tool for sizing can be found at www.festo.com

Operating pressure p as a function of piston diameter and force F

An allowance of 10% has been included for frictional force



Given:

Load: 800 N

Available system pressure: 6 bar

To be calculated:

Required piston diameter

Operating pressure to be set

Procedure:

From $F = 800$ N go straight up where it intersects the 6 bar line. The next largest piston diameter, 50 mm, lies between the lines for 4 and 5 bar, which means that the operating pressure should be set to approx. 4.5 bar.

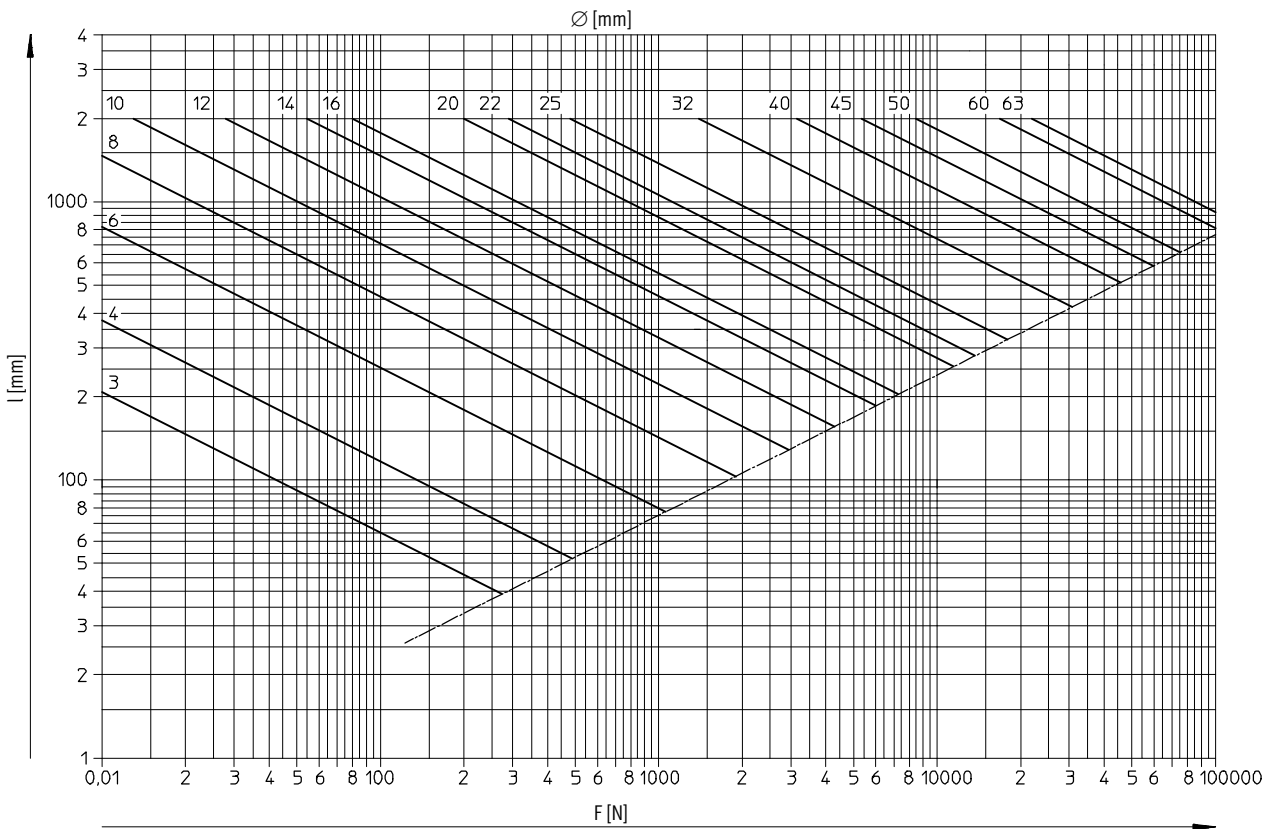
The selection of pneumatic drives is determined primarily by the forces to be overcome and the distances to be travelled. A small percentage of the piston force is used to overcome friction, the remainder is used to drive the load.

Only approximate values can be given, since friction force depends on numer-

ous factors (lubrication, operating pressure, back pressure, seal design, etc.). Back pressure generates a force which acts in the opposite direction and partially cancels out the effective force. Back pressure occurs in particular when exhaust air flow controls are used or the exhaust port is constricted.

Buckling load graph

Piston rod diameter as a function of stroke length l and force F



Given:

- Load: 800 N
- Stroke length: 500 mm
- Piston diameter: 50 mm

To be calculated:

- Piston rod diameter
- Cylinder type: Standard cylinder

Procedure:

From $F = 800 \text{ N}$ go straight up where it intersects the horizontal line through $l = 500 \text{ mm}$. The next largest piston rod diameter in the graph is 16 mm. The standard cylinder DNC-50-500 with a piston rod diameter of 20 mm is suitable for this stroke length.

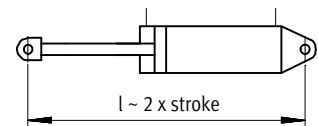
Due to buckling stress, the maximum permissible load for a piston rod with a long stroke length is lower than the value suggested by the maximum permissible operating pressure and piston area.

This load must not exceed certain maximum values. These depend on stroke length and piston rod diameter.

The graph shows this relationship based on the following formula:

$$F_k = \frac{\pi^2 \cdot E \cdot J}{l^2 \cdot S}$$

- F_k = Permissible buckling force [N]
- E = Modulus of elasticity [N/mm²]
- J = Moment of inertia [cm⁴]
- l = Buckling length = 2x stroke length [cm]
- S = Safety factor (selected value: 5)



Note
The least satisfactory type of mounting for this kind of stress is a swivel mounting. The permissible load is higher for other types of mounting.

Air Consumption engineering software

The "Air Consumption" engineering software determines the air consumption of a cylinder (approximate value), taking into consideration the following parameters:

- Mode of operation of the cylinder
- Piston diameter
- Number of cycles
- Stroke length
- Operating pressure

This tool can be found online under Support in the Engineering design area.

Calculating air consumption using the engineering software

Given:


Cylinder: DNC-32-500
 Piston diameter: 32 mm
 Piston rod diameter: 12 mm
 Stroke length: 500 mm
 Operating pressure: 6 bar
 Number of cycles per minute: 60 1/min

To be calculated:
 Air consumption

Result:

Once the parameters have been entered, the following values are returned for the air consumption:
 Per cycle: 5.23 l
 Per minute: 314.03 l

Cylinder Air Consumption

Operating mode: single acting, pulling  Number of cycles: 60 1/min
 Size: 32 mm Stroke/Length: 100 mm
 NOTE: Using estimated piston rod diameter of 12 mm.
 Energy Saving Turn on energy saving to differentiate between working stroke and return stroke

Clear table Add

Selected cylinders and their air consumption

Op. Mode	Size [mm]	Stroke/Length [mm]	Pressure	Number of cycles [1/min]	Air Consumption [per Cycle]	Air Consumption [per Minute]

Utilization Working pressure: 6 bar Working hours per day: 8 h

Air Consumption per Minute: 0 l per day: 0 m³ per Year: 0 l

Energy Costs Currency: € Price: 0.04 €/m³ per day: €

NOTE: The air consumption values determined in this way are only guide values. Particularly with high cycle speeds, pressurized chambers are not fully exhausted, which means that actual air consumption may be significantly lower.

Calculating air consumption using the formula

$$Q = \frac{\pi}{4} \cdot (d_1^2 - d_2^2) \cdot h \cdot (p + 1) \cdot 10^{-6}$$

Q = Air consumption per cm stroke [l]

d1 = Piston diameter [mm]

d2 = Piston rod diameter [mm]

h = Stroke [mm]

p = Operating pressure, relative [bar]

Forward stroke:

$$Q = \frac{\pi}{4} \cdot (32\text{mm})^2 \cdot 500\text{mm} \cdot (6\text{bar} + 1\text{bar}) \cdot 10^{-6}$$

$$Q = 2,815\text{l}$$

Return stroke:

$$Q = \frac{\pi}{4} \cdot ((32\text{mm})^2 - (12\text{mm})^2) \cdot 500\text{mm} \cdot (6\text{bar} + 1\text{bar}) \cdot 10^{-6}$$

$$Q = 2,419\text{l}$$

Air consumption per cycle:

$$Q = 2,815\text{l} + 2,419\text{l} = 5,234\text{l}$$

Pneumatics and explosion protection – ATEX

What does ATEX mean?

Explosive atmospheres are a constant hazard in the chemical and petrochemical industries because of the processing techniques used. These explosive atmospheres are caused by es-

caping gas, vapours and mist, for example. Explosive atmospheres can also occur in mills, silos and sugar and feed processing plants because of

the dust/oxygen mixtures there. Electrical equipment in potentially explosive areas is therefore subject to a special directive, 2014/34/EU. This direct-

ive was also extended to non-electrical equipment on 1 July 2003.



ATEX - Directive 2014/34/EU

ATEX is an acronym of the French expression "Atmosphère explosible".

- Directive 2014/34/EU stipulates the minimum safety requirements for equipment and protective systems that are to be operated in explosive atmospheres and that have their own ignition sources.
- It applies to the sale of equipment and protective systems within the European Economic Area.
- It relates to both electrical and non-electrical devices, if they have their own potential ignition source.

Dual responsibility

When equipment for explosion protection areas is being produced, system manufacturers and component suppliers must work closely together to ensure that the correct category and explosion protection zone are chosen.

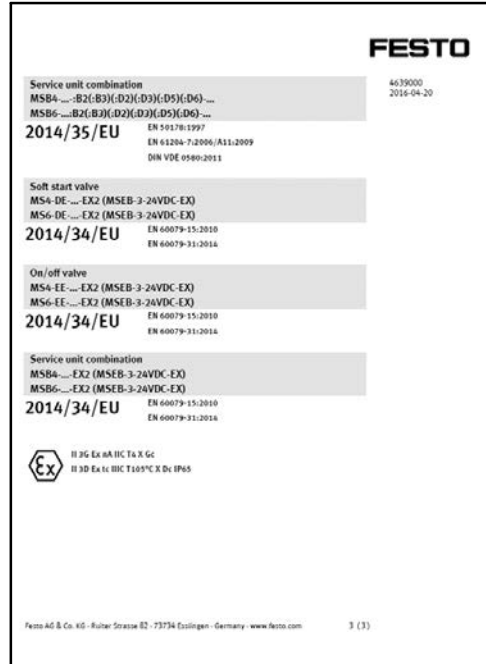
Explosion protection documentation from system manufacturer	Festo/equipment supplier
System rating Directive 1999/92/EC 	Equipment rating Directive 2014/34/EU 
Result: • Zone classification • Temperature classes • Explosion groups • Ambient temperature	Result: • Equipment categories • Temperature classes • Explosion groups • Ambient temperature
Zone	Category

Explosion protection classes					
Zone Gas	Zone Dust	Frequency	Equipment group	Equipment category	Area of application
–	–	–	I	M M1 M2	Mining
			II	–	All non-mining areas of application
0	–	Constant, frequent, long-term	II	1G	Gas, mist, vapour
–	20		II	1D	Dust
1	–	Occasional	II	2G	Gas, mist, vapour
–	21		II	2D	Dust
2	–	Seldom, short-term in the event of a fault	II	3G	Gas, mist, vapour
–	22		II	3D	Dust

ATEX at Festo

Products requiring approval

Products requiring approval are those that have their own potential ignition risk. They are labelled with the CE marking and the explosion protection hexagon; operating instructions and the EU declaration of conformity are provided.



➔ www.festo.com/atex

Products not requiring approval

Products not requiring approval are those that do not have their own potential ignition source. These products can be used in specific explosion zones in compliance with our manufacturer's instructions:

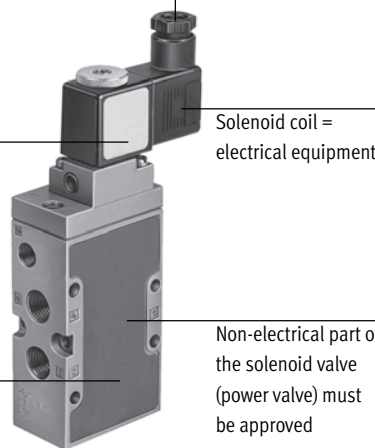
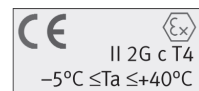
- Pneumatic accessories
- Tubing
- Fittings
- Pneumatic sub-bases
- Flow control and shut-off valves
- Non-electrical service units
- Mechanical accessories

Festo's product range for explosion protection includes products for equipment category II



According to Directive 2014/34/EU, both the solenoid coil and the power valve require approval. At Festo, each has a separate rating plate so that it is possible to tell at a glance where the valve may be used.

Important: The equipment with the lowest equipment category defines the category for the module.



For the module in this example:
II 3G T4

Note
The permissible technical catalogue data for the equipment in question as well as the warning notices and safety information in the special documentation provided (including operating instructions or, if applicable, device documentation) must be observed.

EC directives/approvals

EC directives (CE marking)



As a fundamental principle, Festo AG & Co. KG adheres to all applicable regulations and standards. All information is based on the current level of knowledge and is subject to change. We carefully follow any amendments/additions to these regulations and will produce our products accordingly. This guarantees that products from Festo AG & Co. KG always comply with the currently valid requirements.

Most pneumatic products are not subject to any EC directive and must therefore not be given a CE marking. Currently, products from the sales range of Festo AG & Co. KG that are labelled with the CE marking are subject to one or more of the following six EC directives in Europe.

2. EU Electromagnetic Compatibility Directive (2014/30/EU), including amendments.

The directive must be applied to our electronic and electronic/pneumatic products. The corresponding products have the CE marking and the corresponding declaration of conformity is available. For you, this means a guarantee that this equipment complies with the fundamental requirements in industrial areas. The use of this equipment in residential areas is restricted if no additional measures are taken to guarantee compliance with the fundamental requirements of the directive for residential areas. Solenoid coils are not affected by the EMC Directive.

3. EU Low Voltage Directive (2014/35/EU), including amendments.

Electrical and electronic products from Festo designated for use within specific voltage limits (50 ... 1,000 V AC and 75 ... 1,500 V DC) must be labelled with the CE marking. The corresponding declarations of conformity are available.

4. EU Directive on Simple Pressure Vessels (2014/29/EU), including amendments.

The simple pressure vessels made from non-alloyed steel offered by Festo AG & Co. KG comply with the requirements of this directive. These air reservoirs require CE marking above a certain volume.

1. EC Machinery Directive 2006/42/EC, including amendments: 2006/42/EC:2007-03-16 and 2009/127/EC:2009-10-21

Pneumatic products from Festo AG & Co. KG are designed in accordance with the standard for pneumatic systems EN ISO 4414 "Pneumatic fluid power – General rules and safety requirements for systems and their components". Our pneumatic products do not fall within the scope of application specified in the Machinery Directive.

These products are labelled with the CE marking. The declaration of conformity is available.

5. EU Directive on Pressure Equipment (2014/68/EU), including amendments.

The pressure vessels offered by Festo AG & Co. KG comply with the requirements of this directive. These pressure vessels require CE marking above a certain pressure/volume product or pressure/diameter product.

These products are labelled with the CE marking. The declaration of conformity is available.

Reservoirs made from stainless steel are subject to the Directive on Pressure Equipment rather than the Directive on Simple Pressure Vessels.

They must therefore not be labelled with the CE marking in accordance with the Machinery Directive. Exceptions to this are safety devices. As of 29 December 2009, incomplete machines also fall under the scope of the Machinery Directive. These include handling systems intended for installation in machines, for example. Incomplete machines are not labelled with the CE marking. A declaration of incorporation is enclosed with the machines instead of a declaration of conformity.

6. EU Directive on Equipment and Protective Systems for Use in Explosive Atmospheres - ATEX (2014/34/EC).

The products offered by Festo AG & Co. KG which are intended for use in potentially explosive atmospheres and which have their own potential ignition hazards comply with the requirements of this directive. Products that are subject to this directive are correspondingly labelled with the CE marking and identified in compliance with the directive. The corresponding declaration of conformity and the operating instructions are available.

Product markings

	See above
	To EU Directive 2014/34/EU (ATEX) Additional marking for equipment and protective systems for use in accordance with regulations in a potentially explosive atmosphere.
	UL certification for use in Canada and the USA. Recognized Product intended for installation, for example MPA-S valve terminal.
	UL certification for use in Canada and the USA. Listed Product, a ready-to-use device, for example limit switch with cable and plug.
	CSA certification for Canada and the USA.

Design awards



**product
design
award**



reddot

Festo products appear regularly on the winners' podium in major design competitions. There is much more to good design than being "pleasing to the eye". The design emphasises and symbolises the cutting-edge technology and long-standing value of Festo products.

Cleanroom suitability

→ www.festo.com/sp > enter search term "cleanroom"

Cost-effective series for cleanroom class 7

At Festo, cost-effective standard pneumatic components take the place of complex special designs because the quality concept applies to virtually all series-produced products. These standard pneumatic components are suitable for use in a class 7 cleanroom to ISO 14644-1.

Close-to-standard products for cleanrooms to class 4

Stringent requirements but still an optimum cost/benefit ratio. At Festo, class 4 also means standard products – with just one restriction: they are not available ex-stock. However, they can be delivered to you within the shortest possible time.

Individuality made to measure

If you need to go as far as class 1, the products will be manufactured according to your specific requirements. Festo integrates these application-oriented solutions in close-to-standard production, which means they will be available the next time you need them.

The reliability to meet the highest requirements

Festo works with the Fraunhofer Institute for Production Technology and Automation (IPA) and the renowned Nanyang Technological University in Singapore to ensure that its products meet the high requirements for use in cleanrooms.

A dedicated Competence Centre for Cleanroom Technology at Festo Singapore offers the necessary infrastructure for the production of pneumatic cleanroom products.

Paint-wetting impairment substances and resistance to media

PWIS-free products

	PW	I	S
Paint-wetting			
Impairment			
Substances			

PWIS are substances that cause small concave indentations at various points in the paint layer when surfaces are painted. Silicone, fluoric materials, certain oils and greases may contain substances of this kind.

Components used in the automotive industry, and especially in painting equipment, must be free of paint-wetting impairment substances. Because it is impossible to determine the level of paint-wetting impairment substances contained in substances

and components with the naked eye, Volkswagen developed the testing standard PV 3.10.7. All products from Festo and the lubricants used in them undergo this test. Products from Festo are free of paint-

wetting impairment substances as standard. However, grease containing paint-wetting impairment substances needs to be used for some products for functional and other reasons.

The following are PWIS-free

- Individual parts and modules that are manufactured without using materials, consumables or sundries containing paint-wetting impairment substances. Tests carried out during the sampling

- procedure as well as random sample tests of incoming goods by extracting them must not cause any paint-wetting impairment effects.
- Liquid or paste-like sundry materials (e.g. lubricating greases) that do not cause any paint-wetting impairment effects through application as a result of the test.

- Products that consist of PWIS-free parts and contain PWIS-free lubricants.

Media resistance database

It is well known that the resistance of materials depends on many parameters such as concentration of contact medium, temperature, pressure, duration of contact, stroke speed and switching frequency, surface finish in the case of mating frictional parts, flow velocity and stress as well as ageing.

This applies in particular to the compatibility of elastomers with special chemical compounds.

The Festo resistance database shows you the suitable material and its resistance to chemical substances.

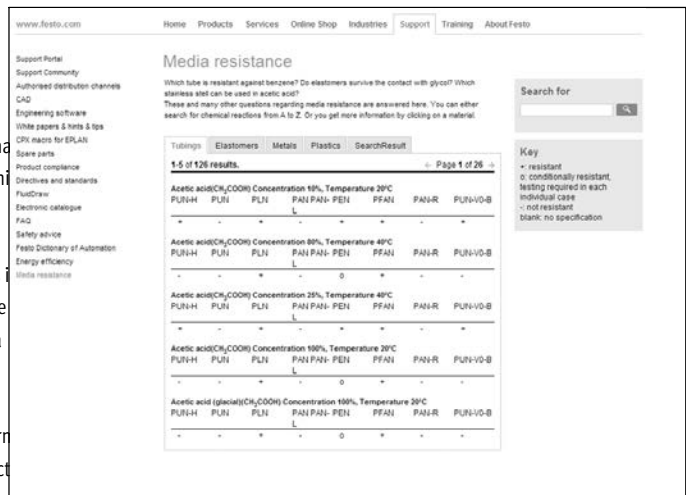
The information contained in this database is based on lab tests from raw material manufacturers, material tables

from semi-finished product and seal suppliers and practical experience. The information is evaluated and the tables are created based on the knowledge available. Although every effort has been made to ensure the accuracy of this database, its contents should only be used for reference purposes.

Please note that the recommendations in this resistance database can neither be guaranteed nor serve as the basis for a warranty claim.

Wherever possible and especially in cases of doubt, it is advisable to perform a practical test with the desired product under actual working conditions.

➔ www.festo.com > Services > Conceptualise > Directives and standards > Media resistance



Corrosion resistance class CRC

Corrosion resistance class CRC to Festo standard FN 940070		
CRC	Corrosion resistance	Description
0	No corrosion stress	Applies to small, visually irrelevant standard 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.
1	Low corrosion stress	Dry indoor applications or transport and storage protection. Also applies to parts behind covers, in non-visible interior areas, and parts which are covered in the application (e.g. drive trunnions).
2	Moderate corrosion stress	Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.
3	High corrosion stress	Outdoor exposure under moderate corrosive conditions. External visible parts in direct contact with the ambient atmosphere typical for industrial applications, with primarily functional requirements for the surface.
4	Particularly high corrosion stress	Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be safeguarded by special testing (→ also FN 940082) using appropriate media.

Protection classes to IEC/EN 60529

Protection of electrical equipment

The term "IP" (International Protection) is defined by IEC/EN 60529 "Degree of Protection Provided by Enclosures (IP Code)" and DIN 40050 "IP Protection Classes" (standard for electrical equipment in road vehicles). These standards describe the classification of the protection classes provided by enclosures for electrical equipment with rated voltages of up to and including 72.5 kV. They set forth the following:


- Protection of individuals against contact with live or moving components within enclosures (protection against accidental contact).
- Protection of equipment inside the enclosure against ingress of solid foreign matter, including dust (protection against foreign matter).
- Protection of electrical equipment against damage that would result if water were to enter the enclosure (protection against water).

The IP code to IEC/EN 60529

The degree of protection provided by an enclosure is established using standardised testing methods. The IP code is used for classifying this degree of protection. The IP code is made up of the letters IP and a two-digit code number. The definition of both digits is explained in the table below → page 875.

Meaning of digit 1:
Digit 1 denotes firstly the protection of individuals. It specifies the extent to which the enclosure prevents individuals from coming into contact with dangerous parts. The enclosure prevents or restricts the entry of body parts or of objects held by an individual. Secondly, digit 1 specifies the extent to which the equipment is protected against the ingress of solid foreign objects.

Meaning of digit 2:
Digit 2 refers to the protection of equipment. It rates the protection class of the enclosure with respect to the harmful effects on the equipment due to water entering the enclosure.

 **Note**
The food industry generally uses components with degree of protection IP65 (dustproof and water-jet proof) or IP67 (dustproof and capable of brief submersion). The use of IP65 or IP67 depends on the specific application, as each is governed by completely different test criteria. IP67 is not necessarily better than IP65. A component that fulfils the IP67 criteria does not therefore automatically meet the criteria for IP65.

IP codes

Code letters		IP	6	5
IP	International Protection			
Digit 1	Brief description	Definition		
0	Not protected	–		
1	Protected against solid foreign objects, 50 mm and larger	A probing object, a ball of 50 mm in diameter, must not enter or penetrate the enclosure.		
2	Protected against solid foreign objects, 12.5 mm and larger	A probing object, a ball of 12.5 mm in diameter, must not enter or penetrate the enclosure.		
3	Protected against solid foreign objects, 2.5 mm and larger	A probing object, a ball of 2.5 mm in diameter, must not penetrate at all.		
4	Protected against solid foreign objects, 1.0 mm and larger	A probing object, a ball of 1 mm in diameter, must not penetrate at all.		
5	Protected against dust	The ingress of dust is not completely prevented. The quantity of dust that enters must not impair the safety or satisfactory operation of the equipment.		
6	Dustproof	No ingress of dust		
Digit 2	Brief description	Definition		
0	Not protected	–		
1	Protected against water droplets	Vertically falling droplets must not have any harmful effect.		
2	Protected against water droplets	Vertically falling droplets must not have any harmful effect when the enclosure is at an angle of 15° either side of the vertical.		
3	Protected against spraying water	Water sprayed at any angle of up to 60° either side of the vertical must not have any harmful effect.		
4	Protected against splash-water	Water splashing against the enclosure from any angle must not have any harmful effect.		
5	Protected against hose water	Water jets directed at the enclosure from any angle must not have any harmful effect.		
6	Protected against powerful water jets	Powerful water jets directed against the enclosure from any angle must not have any harmful effect.		
7	Protected against the effect of brief submersion in water	Water must not enter the equipment in amounts that can have a harmful effect if the enclosure is briefly submerged in water under standardised pressure and time conditions.		
8	Protected against the effect of continuous submersion in water	Water must not enter the equipment in amounts that can have a harmful effect if the enclosure is continuously submerged in water. The conditions must be agreed on between the manufacturer and the user. The conditions must, however, be more stringent than code 7.		
9K	Protected against water from high-pressure and steam jet cleaning	Water directed at the enclosure from any angle under high pressure must not have any harmful effect.		

Functional earth – protective earth – PELV

Concepts for ensuring protection against electric shock to IEC 60364-4-41/VDE 0100 Part 410

Definitions

Protection against electric shock means protection against indirect and direct contact.

Protection against direct contact implies that under normal operating conditions, live parts which are not insulated are protected against accidental contact.

Protection against indirect contact implies that in the event of an insulation fault between live parts and bodies or enclosures, contact voltages outside of the permissible range cannot occur or are disconnected promptly.

The three best-known and most widely used concepts for ensuring protection against electric shock are also referred to as protection class I to III in specialist literature and standardisation documentation.

Protection class I – Protective earth conductor

In the case of electrical equipment in protection class I, protection against direct contact is ensured by basic insulation.

Protection against indirect contact is provided by prompt disconnection of the fault voltage. This disconnection is ensured by the contact with the protective earth conductor on the equipment enclosure via protective earth. If an insulation fault occurs in the

equipment, the fault current flows via the protective circuit against the earth potential, thereby triggering the upstream fuse element (e.g. residual current device protection or circuit-breaker).

Equipment in protection class I includes lights, white goods (washing machines, dryers, etc.) and industrial machinery. Symbol:



Protection class II – Protective insulation

In the case of equipment in protection class II, the protection refers to direct and indirect contact with the improved enclosure insulation. The enclosure insulation is reinforced or doubled so that it

is not possible to come into contact with contact voltages outside of the permissible range either in the event of a fault or during operation.

Equipment in protection class II is connected to the protective circuit. Therefore the equipment does not require protective contact on the plug.

Equipment in protection class II includes hi-fi components, electric power tools and household appliances and is identified with the following symbol:



Protection class III – Protective extra-low voltage

In the case of equipment in protection class III, protection against direct and indirect contact is ensured both by a sufficiently high IP degree of protec-

tion (protection against direct contact with live parts) and electrical supply of the component with PELV (protective extra-low voltage) or SELV (safety

extra-low voltage) (protection against indirect contact in the event of a fault).

Equipment in protection class III is frequently identified (no mandatory identification) with the following symbol:



Special protection class for components from Festo**Protection class III**

On the basis of the information currently available, all 24 V DC valve terminals (e.g. CPV, MPA), position controllers (e.g. PLCs), sensors (proximity sensors, pressure switches, pressure sensors) and proportional valves from Festo belong to protection class III.

This means that, in the case of the 24 V DC components from Festo, protection against direct and indirect contact is ensured by a sufficiently high IP degree of protection as well as a protective extra-low voltage supply to the component: PELV "Protective Extra-Low Voltage".

The use of a PELV supply ensures that no contact voltages outside of the permissible range can occur in the event of a fault due to the high dielectric strength (4 kV) from the primary to the secondary side.

The earth terminal therefore is a functional earthing (discharge of electromagnetic disturbances) rather than a protective earth function and must always make contact.

**Why does Festo use protection class III?**

Due to the increasingly compact designs of modern automation components, protection class I is no longer the optimum solution with respect to design size. This is because

the standards specify minimum distances for the air and leakage paths, which means that further minimising the size of the components is no longer possible.

It is for this reason that protection class III (no protective earth conductor, as protection against electric shock is provided by protective extra-low voltage) is used in modern auto-

mation components.

What do customers need to know about installing equipment in protection class III?

The electrical supply to the equipment must only be provided by PELV circuits to IEC/EN 60204-1. The general requirements for PELV circuits to IEC/EN 60204-1 must be taken into account. Power sources are permitted

if reliable electrical isolation of the operating voltage to IEC/EN 60204-1 is guaranteed. The earth terminals on the components, where available, are used for discharging electromagnetic disturb-

ances, equipotential bonding and thus ensuring proper functioning. They must be connected to the earth potential with low resistance (short cables with large cross section).

Spark arresting

Spark arresting of switch contacts in circuits with solenoid coils

The inductance of solenoid coils stores electromagnetic energy when the circuit is switched on and this is discharged when switched off. De-

pending on the switch used, this energy is either converted to a voltage peak (switch-off overvoltage), which can cause a breakdown in the insula-

tion, or an arc which can burn away the contacts (material creep). Various types of components can be used to avoid these effects by slowly and con-

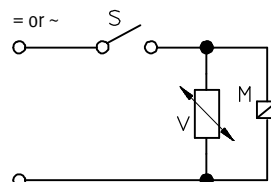
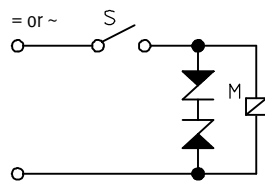
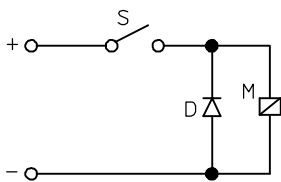
stantly discharging the electromagnetic energy.

Electronic arc arrestors

If the polarity in DC circuits is clearly defined, a simple diode can be used, wired parallel to the coil. It must be noted that this considerably increases the solenoid switch-off time.

A more suitable arrangement consists of two breakdown diodes, wired with opposing polarity parallel to the coil, which can be used for DC and AC. This prevents switch-off delay. However, several breakdown diodes must be wired in series for voltages over 150 V.

Varistors are ideal elements for reducing switch-off overvoltage; their leakage current only rises if the rated voltage is exceeded. They are suitable for DC and AC.



100% duty cycle

Within DIN VDE 0580, the 100% duty cycle test covers only the electrical part of the solenoid coil. Festo also includes the pneumatic part in this test.

The worst-case scenario is reviewed in the test. The test constitutes a functional test of the solenoid. If the solenoid is also used on valve terminals,

the 100% duty cycle test is performed on the individual device and on equipment in a manifold assembly.

Conditions

- The solenoids are operated with the maximum permissible voltage (continuous operation S1 to DIN VDE 0580).
- The solenoids are subjected to the maximum permissible ambient temperature in a temperature cabinet (non-convecting).
- The solenoids are supplied with the maximum permissible operating pressure with sealed working ports.

Procedure

The solenoids are operated for at least 72 hours under the above conditions. At the end of this period, the following tests are carried out:

- Drop-off current measurement: drop-off behaviour when switched to de-energised state.
- Starting behaviour when immediately energised with the minimum operating voltage and with the least favourable pressure ratios for excitation.

- Leakage measurements.
- Once the results have been recorded, this process is repeated again until the units being tested have reached a total duty cycle of at least 1,000 hours or a termination criterion has been fulfilled.
- Following completion of the 100% duty cycle test, the sealing nipples are inspected visually for damage.

Termination criterion

The drop-off behaviour, starting behaviour or leakage exceeds or falls below the following limit values:

- Drop-off current: > 1.0 mA
- Starting voltage: > UN+10%
- Leakage: > 10 l/h

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