**DATA SHEET**

# Type 2852

## 2-way proportional valve with pressure compensation

- Excellent span
- Very compact design for easy use in electronic devices
- Flange and plug-in connection for integration into valve manifolds
- Reduced power consumption
- Operating pressure up to 7 bar(g)

Product variants described in the data sheet may differ from the product presentation and description.

### Can be combined with

**Type 6724**
2/2 or 3/2-way Whisper Valve with media separation

**Type 7011**
Direct-acting 2/2-way plunger valve

**Type 6624**
2/2 and 3/2 way Bürkert TwinPower rocker solenoid valve with separating diaphragm

### Type description

The new proportional valve 2852 is pressure-compensated and therefore offers a high pressure level with low power consumption at the same time. The total dimensions of this valve were kept low with regards to integration in devices where compactness and low heating are required for each individual valve, while it still offers comparatively high flow rates. The valve is designed for installation in analytical and medical devices, but can also be used in similar applications in other markets. It possesses two kinds of mechanical integration and three different electrical connection types (wires, plug and soldered contacts) that support all good integration options in mechatronic systems.

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**Visit product website**

## Table of contents


**1. General technical data 3**

**2. Circuit functions 3**

**3. Approvals and conformities 4**

3.1. General notes ... 4
3.2. Conformity ... 4
3.3. Standards ... 4
3.4. Foods and beverages/Hygiene ... 4
3.5. Others ... 4
Oxygen ... 4
Fuel gases ... 4

**4. Materials 4**

4.1. Bürkert resistApp ... 4

**5. Dimensions 5**

5.1. Flange variant ... 5
5.2. Cartridge variant ... 6

**6. Product connections 7**

6.1. Port connection ... 7
Pin assignment flange variant ... 7
Pin assignment cartridge variant ... 7

**7. Performance specifications 8**

7.1. Flow characteristic ... 8
Flow characteristics as a function of the coil current ... 8
Maximum flow rate as a function of the operating pressure ... 8
Determination of the $K_v$ value ... 9

**8. Product operation 9**

8.1. Control unit ... 9

**9. Ordering information 10**

9.1. Bürkert eShop ... 10
9.2. Recommendation regarding product selection ... 10
9.3. Bürkert product filter ... 10
9.4. Bürkert Product Enquiry Form ... 10
9.5. Ordering chart ... 11
Standard variant ... 11
9.6. Ordering chart accessories ... 11
Manifolds ... 11
Further accessories ... 11


DTS 1000597988 EN Version: - Status: RL (released | freigegeben | valide) printed: 28.10.2026

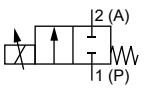
DTS 1000597988 EN Version: - Status: RL (released | freigegeben | valide) printed: 28.10.2026

## 1. General technical data

| | |
|---|---|
| **Product properties** | |
| Dimensions | Further information can be found in chapter "5. Dimensions" on page 5. |
| **Material** | |
| Seal | FKM |
| Wetted materials | Stainless steel 1.4113 / 1.4310 / 1.4305, PPS GF40 |
| Circuit functions | A<br>Further information can be found in chapter "2. Circuit functions" on page 3. |
| **Performance data** | |
| **Typical values of positioning behaviour** [1.] | |
| Hysteresis | < 15 % |
| Repeat accuracy | < 1 % FS [2.] |
| Response sensitivity | < 0.1 % FS [2.] |
| Setting range | > 1:500 |
| Actuating time (10...90 %) | < 10 ms [3.] |
| Pressure range [4.] | 0...7 bar |
| $K_{VS}$ value | 0.2 $m^3/h$ |
| Leakage | External: < 1 ml/min (air)<br>Internal: < 1 ml/min (air) |
| **Electrical data** | |
| Operating voltage | 12 V DC, 24 V DC |
| Power consumption | 2.8 W (max. 3.4 W) |
| Maximum coil current | 280 mA with 12 V coil<br>140 mA with 24 V coil |
| Valve control | PWM frequency [5.] > 2000 Hz or DC voltage with constant current control |
| **Medium data** | |
| Operating medium | Gases<br>Further information about checking the chemical resistance of the wetted materials can be found in chapter "4.1. Bürkert resistApp" on page 4. |
| Medium temperature | + 5 °C...+ 50 °C |
| **Product connections** | |
| Electrical connection | 300 mm flying leads, JST plug |
| Port connection | Flange, cartridge |
| **Approvals and conformities** | |
| Degree of protection | IP50 (flying leads variant), IP10 (JST plug) |
| Foods and beverages/Hygiene | Further information can be found in chapter "3.4. Foods and beverages/Hygiene" on page 4. |
| Others | Further information can be found in chapter "3.5. Others" on page 4. |
| **Environment and installation** | |
| Installation position | As required, preferably with actuator upright |
| Ambient temperature | + 5 °C...+ 50 °C |

1.) Characteristic data of positioning behaviour depends on process conditions.
2.) With flow measurement
3.) Determined according to DIN ISO 12238
4.) Pressure data: overpressure to atmospheric pressure, tightness seal pressure or nominal pressure
5.) PWM: pulse-width modulation

## 2. Circuit functions

| Symbol | Description |
|---|---|
|  | **Circuit function A (CF A)**<br>2/2-way solenoid proportional control valve<br>Direct-acting<br>Normally closed |

# 3. Approvals and conformities

## 3.1. General notes

- The approvals and conformities listed below must be stated when making enquiries. This is the only way to ensure that the product complies with all required specifications.
- Not all available variants can be supplied with the below mentioned approvals or conformities.

## 3.2. Conformity

In accordance with the Declaration of Conformity, the product is compliant with the EU Directives.

## 3.3. Standards

The applied standards which are used to demonstrate compliance with the EU Directives are listed in the EU-Type Examination Certificate and/or the EU Declaration of Conformity.

## 3.4. Foods and beverages/Hygiene

| Conformity | Description |
|---|---|
| USP | **United States Pharmacopeial Convention (USP) (valid for the variable code PL04)**<br>All wetted materials are biocompatible according to the manufacturer's declaration. |

## 3.5. Others

**Oxygen**

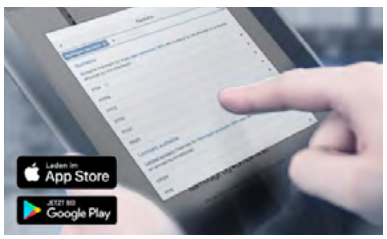
| Conformity | Description |
|---|---|
| $O_2$ | **Optional: Suitability for oxygen (valid for the variable code NL02)**<br>The products are suitable for use with gaseous oxygen, according to the manufacturer's declaration. |

**Fuel gases**

| Conformity | Description |
|---|---|
| DVGW | **Optional: DIN EN 549:2023 - 07 certification**<br>The wetted valve seals, which seal against the environment, are compliant with DIN EN 549:2023 - 07 (Rubber materials for seals and diaphragms for gas appliances and gas equipment) for medium temperatures of 0 °C...+ 125 °C. |

# 4. Materials

## 4.1. Bürkert resistApp




**Bürkert resistApp – Chemical resistance chart**

You want to ensure the reliability and durability of the materials in your individual application case? Verify your combination of media and materials on our website or in our resistApp.

Start chemical resistance check

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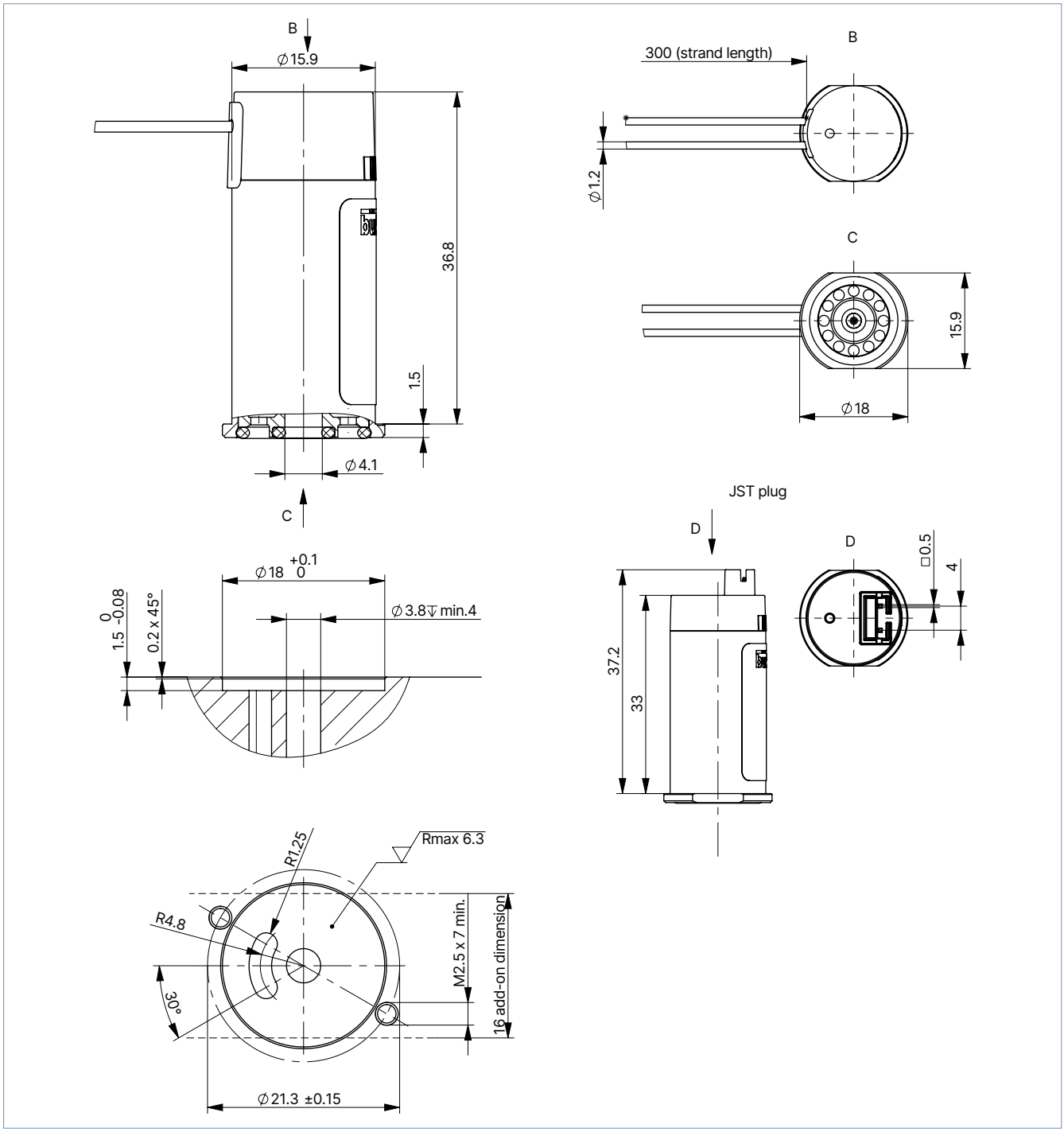
# 5. Dimensions

## 5.1. Flange variant

**Note:**
Dimensions in mm

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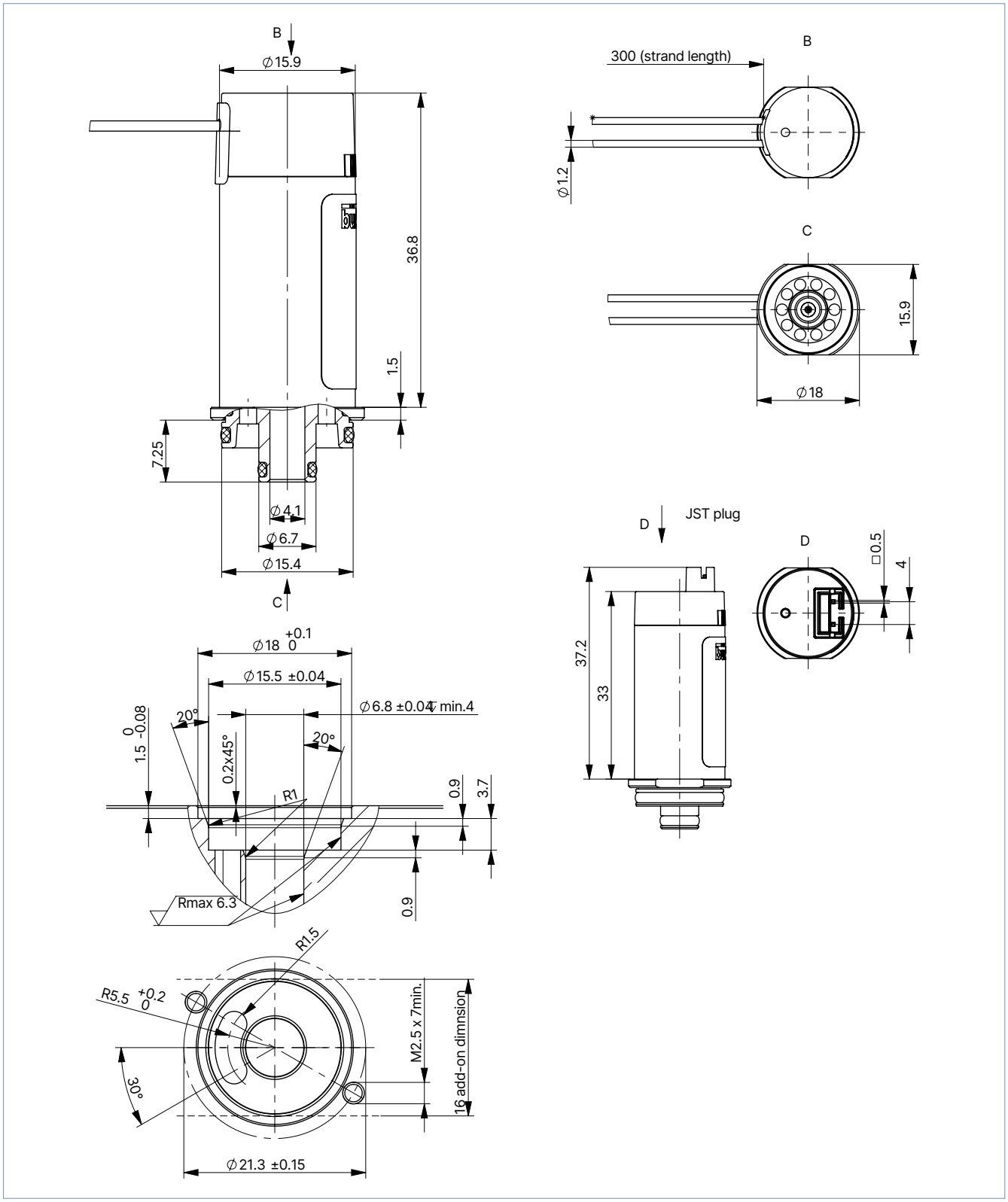
## 5.2. Cartridge variant

**Note:**
Dimensions in mm

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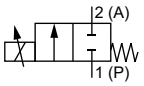
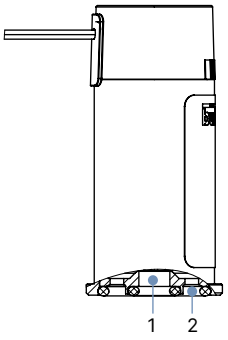
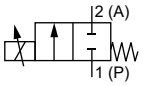
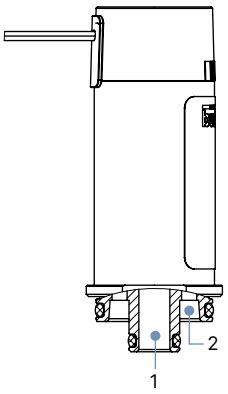
# 6. Product connections

## 6.1. Port connection

**Pin assignment flange variant**

| Circuit functions | Port 1 | Port 2 | 2-way |
|---|---|---|---|
| **CF A**<br>2/2-way solenoid proportional control valve<br>Direct-acting<br>Normally closed<br>  | Pressure port 1 (P) | Working port 2 (A) |  |

**Pin assignment cartridge variant**

| Circuit functions | Port 1 | Port 2 | 2-way |
|---|---|---|---|
| **CF A**<br>2/2-way solenoid proportional control valve<br>Direct-acting<br>Normally closed<br>  | Pressure port 1 (P) | Working port 2 (A) |  |

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# 7. Performance specifications

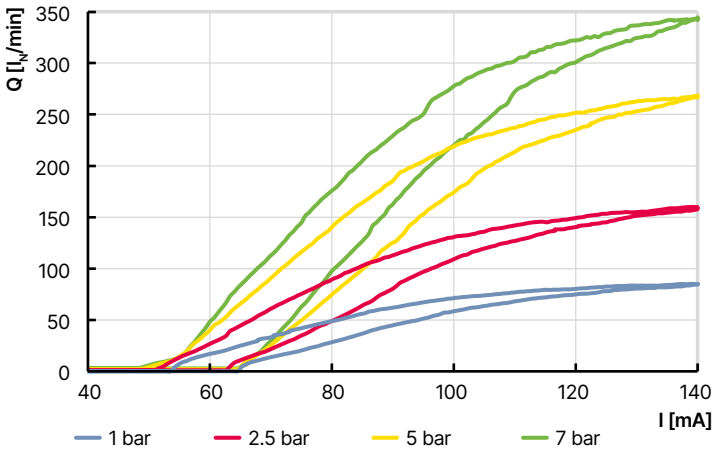
## 7.1. Flow characteristic

**Note:**
The design of the nominal size of proportional valves is very important for the correct functioning within the application. The nominal size must be selected so that, on the one hand, the desired flow range is achieved and that, on the other hand, a sufficient part of the total pressure drop occurs via the valve when the valve is fully open. This means that the flow range in the controlled system is completely determined by the proportional valve.

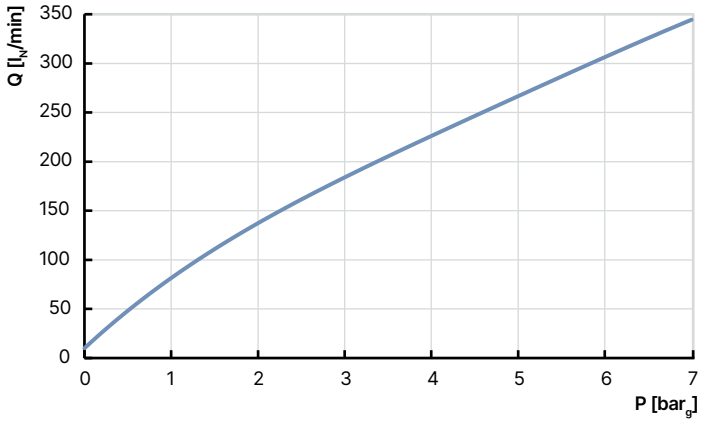
The flow characteristics shown below have been recorded without back pressure and are purely exemplary. The flow characteristics may vary due to specific installation situations and operating conditions.
The valve Type 2852 is suitable for applications with back pressure. With a high inlet pressure in conjunction with a high back pressure, it should be noted that the flow characteristic curve has an increasingly high gradient in some areas and that discontinuities may occur. High thermal load combined with high inlet pressure may have an impact on the flow characteristic in the lower flow range. This can have a negative effect on the control behaviour.

For further information and support with the design, please contact your local Bürkert partner.

**Flow characteristics as a function of the coil current**




**Maximum flow rate as a function of the operating pressure**




DTS 1000597988 EN Version: - Status: RL (released | freigegeben | valide) printed: 28.10.2026

**Determination of the $K_V$ value**

| Pressure drop | $K_V$ value for liquids [$m^3/h$] | $K_V$ value for gases [$m^3/h$] |
|---|---|---|
| **Sub-critical** $p_2 > \frac{p_1}{2}$ | $= Q\sqrt{\frac{\rho}{1000\,\Delta p}}$ | $= \frac{Q_N}{514}\sqrt{\frac{T_1\,\rho_N}{p_2\,\Delta p}}$ |
| **Supercritical** $p_2 < \frac{p_1}{2}$ | $= Q\sqrt{\frac{\rho}{1000\,\Delta p}}$ | $= \frac{Q_N}{257\,p_1}\sqrt{T_1\,\rho_N}$ |

| Value | Description | Unit |
|---|---|---|
| $K_V$ | Flow coefficient | [$m^3/h$] 1.) |
| $Q_N$ | Standard flow rate | [$m_N{}^3/h$] 2.) |
| $p_1$ | Inlet pressure | [bar] 3.) |
| $p_2$ | Outlet pressure | [bar] 3.) |
| $\Delta p$ | Differential pressure $p_1$...$p_2$ | [bar] |
| $\rho$ | Density | [$kg/m^3$] |
| $\rho_N$ | Standard density | [$kg/m^3$] |
| $T_1$ | Medium temperature | [(273+t)K] |

1.) Measured for water, Δp = 1 bar, over the value
2.) At reference conditions 1.013 bar and 0 °C (273 K)
3.) Absolute pressure

# 8. Product operation

## 8.1. Control unit

Valve control takes place through a PWM signal (pulse-width modulation) or constant current control. The duty cycle of the PWM signal determines the coil current and hence the position of the plunger.
The control signal has an influence on the hysteresis of the flow curve. Higher PWM frequencies lead to hysteresis reduction.

Observe the PWM frequency and the operating voltage which are specified in chapter "1. General technical data" on page 3.

The valve is suitable for 100 % continuous duty cycle, as long as a medium is flowing. However, the specified nominal voltage must not be exceeded. With a constantly high duty cycle and high ambient temperature at the same time, the achievable valve current is reduced since the valve heats up.

Please note the design comments for such a control valve in chapter "7.1. Flow characteristic" on page 8.

DTS 1000597988 EN Version: - Status: RL (released | freigegeben | valide) printed: 28.10.2026

# 9. Ordering information

## 9.1. Bürkert eShop

**Bürkert eShop – Easy ordering and quick delivery**

You want to find your desired Bürkert product or spare part quickly and order directly? Our online shop is available for you 24/7. Sign up and enjoy all the benefits.

Order online now

## 9.2. Recommendation regarding product selection

**Note:**

- Use the Product Enquiry Form (see "9.4. Bürkert Product Enquiry Form" on page 10) for information about the device layout and send it to us after completion.
- Please note the chapter "7.1. Flow characteristic" on page 8 on product selection.

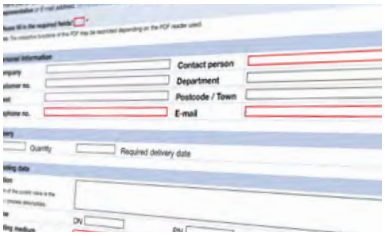
## 9.3. Bürkert product filter

**Bürkert product filter – Get quickly to the right product**

You want to select products comfortably based on your technical requirements?
Use the Bürkert product filter and find suitable articles for your application quickly and easily.

Try out our product filter

## 9.4. Bürkert Product Enquiry Form



**Bürkert Product Enquiry Form – Your enquiry quickly and compactly**

Would you like to make a specific product enquiry based on your technical requirements? Use our Product Enquiry Form for this purpose. There you will find all the relevant information for your Bürkert contact. This will enable us to provide you with the best possible advice.

Fill out the form now

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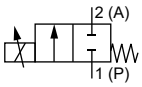
## 9.5. Ordering chart

**Standard variant**

| Circuit function | Port connection | $K_{VS}$ value water [1.] | Nominal pressure | Electrical connection | Article no. | Article no. |
|---|---|---|---|---|---|---|
| | | [m³/h] | [bar] | | 012/DC | 024/DC |
| **CF A**<br>2/2-way solenoid proportional control valve<br>Direct-acting<br>Normally closed<br>  | Flange (FK16) | 0.2 | 7 | 300 mm flying leads | 20072813 | 20072815 |
| | | | | JST connector | 20076851 | 20076852 |
| | Cartridge (FC18) | 0.2 | 7 | 300 mm flying leads | 20059148 | 20059147 |
| | | | | JST connector | 20076847 | 20076850 |

1.) Measured with air, without back pressure

| Further variants on request | | | |
|---|---|---|---|
| **Material**<br>Seal material EPDM | | **Analytical**<br>Oxygen variant, oil-, fat- and silicone-free parts | |
| **Coil**<br>Variant with plug contacts | | **Approval**<br>Further information can be found in chapter "3. Approvals and conformities" on page 4. | |

## 9.6. Ordering chart accessories

**Manifolds**

**Note:**
Special custom-built manifolds are available on request.

**Further accessories**

| Description | Article no. |
|---|---|
| Cable plug with 300 mm flying leads AWG 24 | 20081791 |
| Terminal block G ⅛ for cartridge variant (FC18), stainless steel | 20081629 |
| Terminal block G ⅛ for flange variant (FK16), stainless steel | 20081790 |
| Pan head screw M 2.5 × 6, TORX T8 - A2 for valve mounting on terminal block, 10 pieces | 20057873 |

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