bürkert
FLUID CONTROL SYSTEMS

Direct-acting 2-way standard solenoid control valve

- Excellent range
- Very good response
- Compact valve design
- Orifice sizes 0.8 ... 6 mm
- Optional: Explosion-protected coil

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

Can be combined with

Type 8605 ▸
PWM control electronics for electromagnetic proportional valves

Type 2518 ▸
Cable Plug DIN EN 175301-803 - Form A

Type 8611 ▸
eCONTROL - Universal controller

Type description

The direct-acting solenoid control valve Type 2873 is used as the regulating unit in control loops. Due to an elastomeric seat seal the valve closes tight (integrated shut-off function), up to the DN specific nominal pressure. The plunger of the valve is assembled frictionless, which leads to an extraordinary adjustment characteristic. This valve is particularly suitable for demanding control tasks (high control range, dry gases, etc.).

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Visit product website ▸

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1. General Technical Data

Product properties	
Dimensions	Detailed information can be found in chapter "5. Dimensions" on page 5.
Material	
Body	Brass, stainless steel
Seal	FKM, EPDM
Performance data	
Typical values of positioning behaviour[1.]	
Hysteresis	< 5 %
Reproducibility	< 0.5 % of end value[2.]
Response sensitivity	< 0.25 % of end value[2.]
Setting range	1:200
Actuating time (10…90 %)	< 20 ms
Pressure range[3.]	0…16 bar
Nominal operating mode	100 % continuous operation
Electrical data	
Operating voltage	24 V DC (at 5 W and 24 V coil) (12 V on request)
Power consumption	Maximum 9 W
Maximum coil current[4.]	420 mA (at 9 W and 24 V coil)
PWM frequency[5.]	1200 Hz
Medium data	
Operating medium	Neutral gases, liquids on request
Medium temperature	-10 °C…+90 °C (with FKM) -30 °C…+90 °C (with EPDM)
Viscosity	Maximum 21 mm²/s (21 cSt)
Process/Port connection & communication	
Port connection size	Sub-base, G ⅛, G ¼, NPT ⅛, NPT ¼, others on request
Electrical connection	Cable plug Type 2518 acc. to DIN EN 175301-803 form A Detailed information can be found in chapter "Cable plug Type 2518, Form A according to DIN EN 175301-803" on page 13.
Approvals and certificates	
Degree of protection	IP65
Environment and installation	
Installation position	Any, preferably actuator face up
Ambient temperature	Maximum +55 °C

1.) Characteristic data of control behaviour depends on process conditions

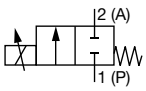
2.) By flow measurement

3.) Pressure data: Overpressure with respect to atmospheric pressure, depending on nominal diameter, tightness seal or nominal pressure

4.) Maximum value: value depends on operating pressure

5.) PWM: pulse width modulation

2. Circuit functions

Circuit functions	Description
	**Type: A, proportional control valve** 2/2 way Direct-acting Normally closed

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3. Approvals

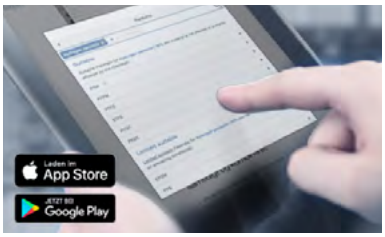
Note:

- The following approvals or conformity certificates must be mentioned in all enquiries. This is the only way to ensure that the product fulfils all the required specifications.
- Not all available device versions can be delivered with the below-mentioned approvals or conformities.

Approvals	Description
	UL recognized
	Conformity of all materials in contact with the medium USP Class VI chapter „87 in vitro“ and „88 in vivo, Implantation“
	Conformity of all materials in contact with the medium FDA – Code of Federal Regulations Title 21 Paragraph 177 (CFR 21 177.2600)
	Conformity of all materials in contact with the medium Regulation (EC) No. 1935/2004 on materials and articles intended to come into contact with food
	Explosion protection ATEX: II 2 G Ex mb IIC T4…T5 Gb II 2 D Ex mb IIIC T130 °C Db IECEx: Ex mb IIC T4…T5 Gb Ex mb IIIC T130 °C Db

4. Materials

4.1. Chemical Resistance Chart – 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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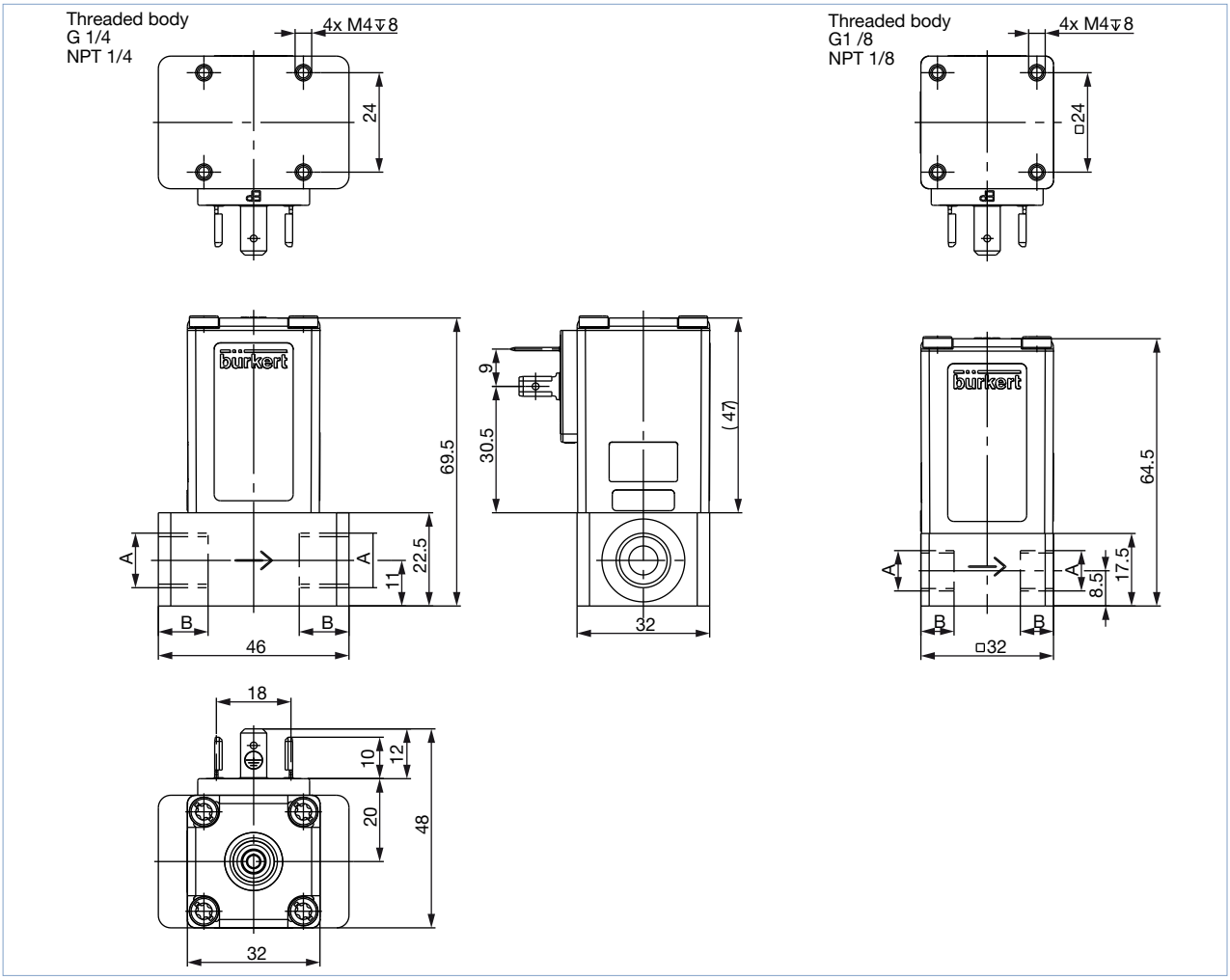
5. Dimensions

5.1. Threaded body

Note:
Dimensions in mm



Body version	Threaded body			
A	G ¼	NPT ¼	G ⅛	NPT ⅛
B	12	10	8	7

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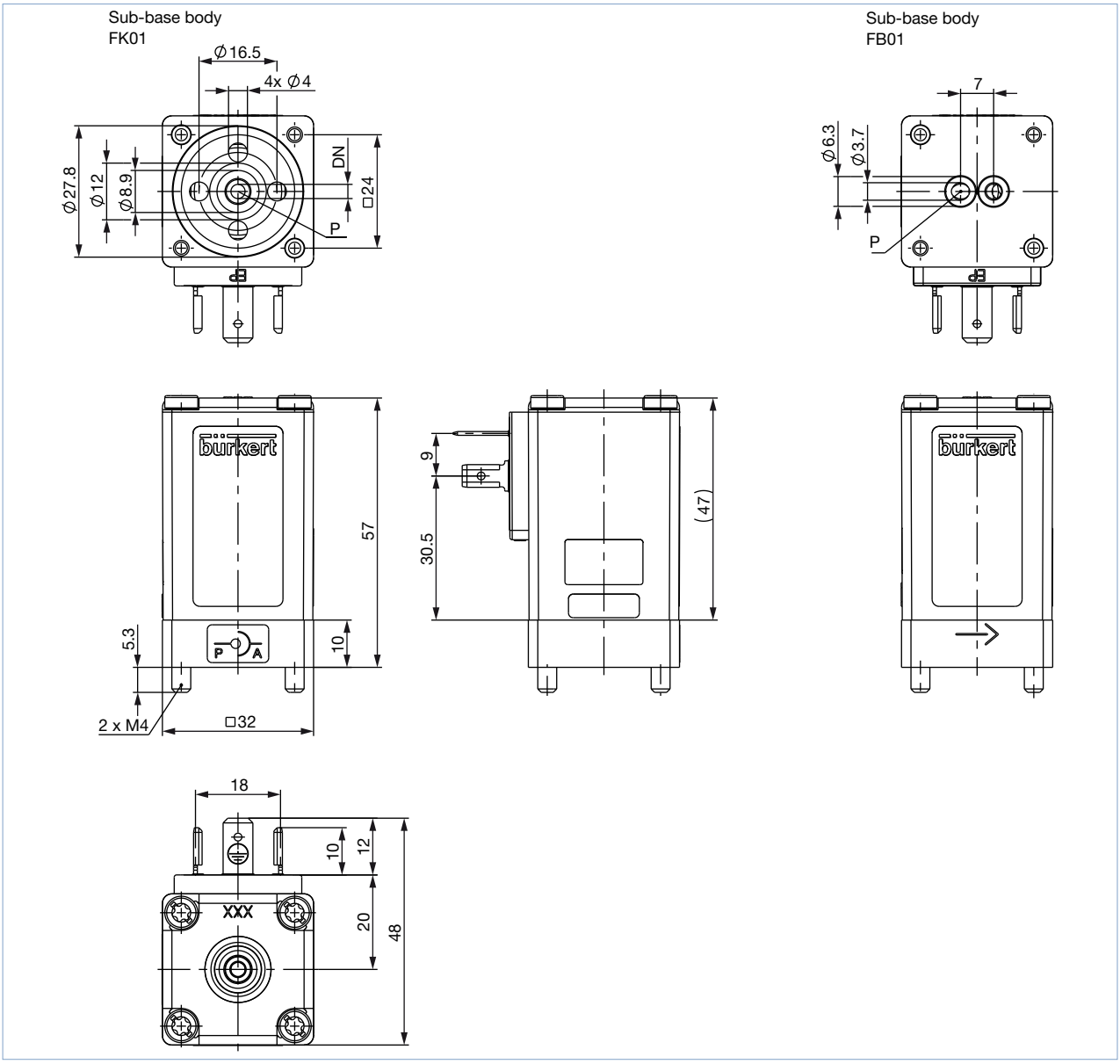
5.2. Sub-base body

Note:
Dimensions in mm



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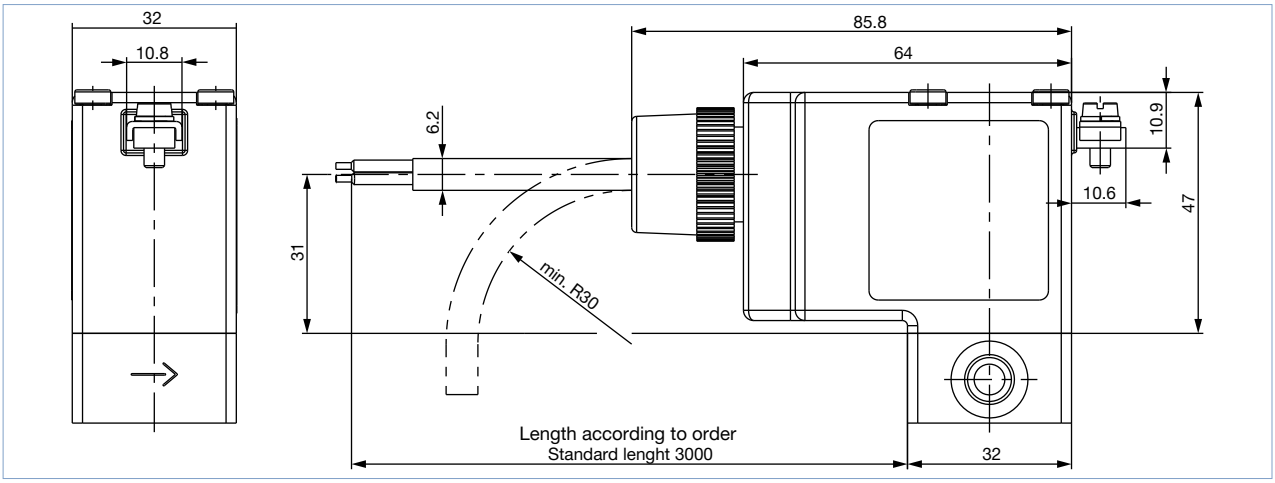
5.3. ATEX version

Note:
Dimensions in mm



6. Performance specifications

6.1. Flow characteristic

Determination of the K_V value

Pressure drop	K_V value for liquids [m³/h]	K_V value for gases [m³/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 $p_2 < \frac{p_1}{2}$	$= Q\sqrt{\frac{\rho}{1000\,\Delta p}}$	$= \frac{Q_N}{257\,p_1}\sqrt{T_1\,\rho_N}$

K_V	Flow coefficient	[m³/h][1.)]
Q_N	Standard flow rate	[m_N^3/h][2.)]
p_1	Inlet pressure	[bar][3.)]
p_2	Outlet pressure	[bar][3.)]
Δp	Differential pressure p_1...p_2	[bar]
ρ	Density	[kg/m³]
ρ_N	Standard density	[kg/m³]
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

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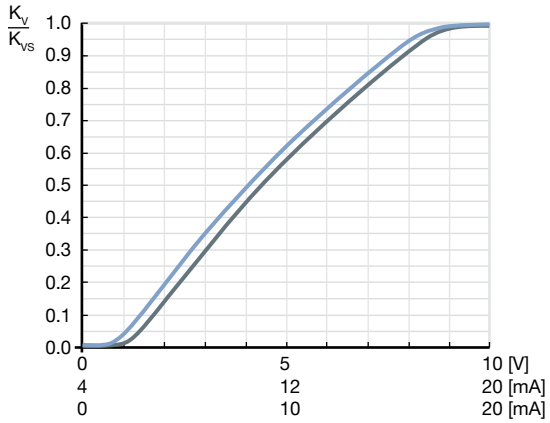
6.2. Exemplary characteristic curve of a proportional valve

Note:
In continuous flow applications, the choice of an appropriate valve size is much more important than with on/off valves. The optimum size should be selected such that the resulting flow in the system is not unnecessarily reduced by the valve. However, a sufficient part of the pressure drop should be taken across the valve even when it is fully opened.

Recommended value: $\Delta p_{valve} > 25\,\%$ of total pressure drop within the system

Otherwise, the ideal, linear valve curve characteristic is changed.

If the differential pressure (difference between inlet and outlet pressure) exceeds half the value of the nominal pressure discontinuities may occur.
For that reason take advantage of Bürkert competent engineering services during the planning phase!



7. Product operation

7.1. Control unit

Valve control takes place through a PWM signal (pulse-width modulation). The duty cycle of the PWM signal determines the coil current and hence the position of the plunger.

The Bürkert control electronics Type 8605 (see relevant data sheet **Type 8605** ▶) converts an analogue signal to a reference value corresponding to the valve type PWM signal and provides additional functions such as temperature compensation (coil heating), ramp function and the adjustment of min. and max. duty cycle/coil current for the control range.

Please note the sizing comments for such a control valve in chapter **"6.2. Exemplary characteristic curve of a proportional valve" on page 8**.

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8. Ordering information

8.1. Bürkert eShop – Easy ordering and quick delivery

Bürkert eShop – Easy ordering and fast 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

8.2. Recommendation regarding product selection

Note:

- Please use the **"Product Inquiry Form"** at the end of this data sheet for the specifications of the device configuration and send us a copy of the inquiry with information about the application.
- Please note the chapter **"6.2. Exemplary characteristic curve of a proportional valve" on page 8** on product selection.

8.3. 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

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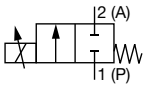
8.4. Ordering chart

Standard version

Note:

- All valves with FKM seal
- Please note that the cable plug must be ordered separately, see "Cable plug Type 2518, Form A according to DIN EN 175301-803" on page 13 or separate data sheet for **Type 2518** ▶.

Circuit function	Orifice	Port connection	K_{VS} value water[1.]	Nominal pressure[2.]	Maximum differential pressure	Article no. brass body	Article no. stainless steel body
	[mm]		[m³/h]	[bar]	[bar]		
A, proportional control valve 2/2 way Direct-acting Normally closed  	0.8	Sub-base FK01	0.018	16	8	234291	234306
		G ⅛	0.018	16	8	234289	234305
		NPT ⅛	0.018	16	8	236229	236230
	1.2	Sub-base FK01	0.040	12	6	234293	234308
		G ⅛	0.040	12	6	234292	234307
		NPT ⅛	0.040	12	6	236231	236232
	1.5	Sub-base FK01	0.060	10	5	234295	234310
		G ⅛	0.060	10	5	234294	234309
		NPT ⅛	0.060	10	5	236233	236234
	2.0	Sub-base FK01	0.100	8	4	234298	234313
		G ⅛	0.100	8	4	234296	234311
		NPT ⅛	0.100	8	4	236235	236236
		G ¼	0.100	8	4	234297	234312
		NPT ¼	0.100	8	4	236237	236238
	2.5	Sub-base FK01	0.150	5	2.5	234300	234315
		G ¼	0.150	5	2.5	234299	234314
		NPT ¼	0.150	5	2.5	236239	236241
	3.0	Sub-base FK01	0.220	3.5	1.75	234302	234317
		G ¼	0.220	3.5	1.75	234301	234316
		NPT ¼	0.220	3.5	1.75	236242	236243
	4.0	Sub-base FK01	0.320	2	1	234304	234319
		G ¼	0.320	2	1	234303	234318
		NPT ¼	0.320	2	1	236244	236245

1.) Flow rate value for water, measured at +20 °C and 1 bar pressure differential over a fully opened valve.

2.) Pressure data: Overpressure with respect to atmospheric pressure, with a differential pressure (difference between inlet and outlet pressure) above half of the nominal pressure there are discontinuities in the valve's characteristics possible."

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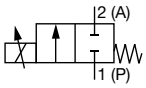
Version with approvals

Note:

- All valves with FKM seal and ATEX version with 3 m connection cable.
- Please note that the cable plug must be ordered separately, see "Cable plug Type 2518, Form A according to DIN EN 175301-803" on page 13 or separate data sheet for **Type 2518** ▶.
- For detailed information regarding the approval UL, ATEX and IECEx see "3. Approvals" on page 4.

Circuit function	Orifice	Port connection[1.]	Approvals	K_{VS}-value water	Nominal pressure[2.]	Maximum differential pressure	Article no. brass body	Article no. stainless steel body
	[mm]			[m³/h]	[bar]	[bar]		
A, proportional control valve 2/2 way Direct-acting Normally closed  	0.8	G ⅛	UR	0.018	16	8	274944	274960
		NPT ⅛		0.018	16	8	274945	274961
		G ⅛	ATEX / IECEx	0.018	8	4	304473	On request
	1.2	G ⅛	UR	0.040	12	6	274946	274962
		NPT ⅛		0.040	12	6	274947	274963
		G ⅛	ATEX / IECEx	0.040	6	3	304474	On request
	1.5	G ⅛	UR	0.060	10	5	274948	274964
		NPT ⅛		0.060	10	5	274949	274965
		G ⅛	ATEX / IECEx	0.060	6	3	304475	On request
	2	G ⅛	UR	0.100	8	4	274950	274966
		NPT ⅛		0.100	8	4	274951	274967
		G ⅛	ATEX / IECEx	0.100	6	3	304476	On request
		G ¼	UR	0.100	8	4	274952	274968
		NPT ¼		0.100	8	4	274953	274969
	2.5	G ¼	UR	0.150	5	2.5	274954	274970
		NPT ¼		0.150	5	2.5	274955	274971
		G ¼	ATEX / IECEx	0.150	3	1.5	304470	On request
	3.0	G ¼	UR	0.220	3.5	1.75	274956	274972
		NPT ¼		0.220	3.5	1.75	274957	274973
		G ¼	ATEX / IECEx	0.220	2	1	304477	On request
	4.0	G ¼	UR	0.320	2	1	274958	274974
		NPT ¼		0.320	2	1	274959	274975
		G ¼	ATEX / IECEx	0.320	1	0.5	304472	On request

1.) Port connection: others on request

2.) UR (UL recognized)

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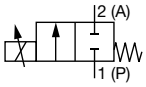
Version for higher differential pressures

Note:

- All valves with FKM seal
- Other connection variations (Sub-base, NPT) on request
- Please note that the cable plug must be ordered separately, see "Cable plug Type 2518, Form A according to DIN EN 175301-803" on page 13 or separate data sheet for **Type 2518** ▶.
- PWM frequency 800 Hz
- Span 1:100

Circuit function	Orifice [mm]	Port connection	Approvals	K_{VS}-value water [m^3/h]	Nominal pressure [bar]	Article no. brass body	Article no. stainless steel body
A, proportional control valve 2/2 way Direct-acting Normally closed  	0.8	G ⅛	–	0.018	16	239070	239072
		G ⅛	UR	0.018	16	275009	275016
		G ⅛	ATEX / IECEx	0.018	8	304465	On request
	1.2	G ⅛	–	0.040	12	239073	239074
		G ⅛	UR	0.040	12	275010	275018
		G ⅛	ATEX / IECEx	0.040	6	330865	On request
	1.5	G ⅛	–	0.060	10	239075	239076
		G ⅛	UR	0.060	10	275011	275019
		G ⅛	ATEX / IECEx	0.060	6	326019	On request
	2	G ⅛	–	0.100	8	239077	239078
		G ⅛	UR	0.100	8	275012	275020
		G ⅛	ATEX / IECEx	0.100	6	330866	On request
	2.5	G ¼	–	0.150	5	239079	239080
		G ¼	UR	0.150	5	275013	275022
		G ¼	ATEX / IECEx	0.150	3	330867	On request
	3.0	G ¼	–	0.220	3.5	239081	239082
		G ¼	UR	0.220	3.5	275014	275023
		G ¼	ATEX / IECEx	0.220	2	330868	On request
	4.0	G ¼	–	0.320	2	239083	239084
		G ¼	UR	0.320	2	275015	275024
		G ¼	ATEX / IECEx	0.320	1	330869	On request
	5.0	G ¼	–	0.430	0.8	280645	On request
	6.0	G ¼	–	0.580	0.5	254419	On request

Further versions on request

Material
Seal material FFKM
Seal material EPDM

Analytical
Oxygen version, Parts oil-, fat- and silicon free

Approval
UR (UL recognized)
ATEX / IECEx

Electrical connection
12 V Coil

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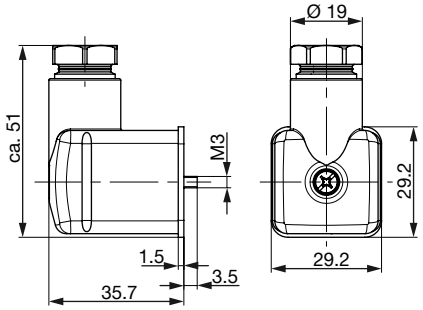
8.5. Ordering chart accessories

Cable plug Type 2518, Form A according to DIN EN 175301-803

Note:
Further versions see data sheet **Type 2518** ▶.

Cable plug	Dimensions	Version	Voltage	Article no.
		Without circuitry (AC/DC)	0…250 V AC/DC	314802

Control unit Type 8605

Note:
Further versions see data sheet **Type 8605** ▶.

	Version	Max. coil current range	Type 2873	Type 2873	Article no.
		[mA]	24 V DC	12 V DC	
	Cable plug with PG cable gland	200…1000	x	x	316530
	Cable plug with M12 connection	200…1000	x	x	316528
	Cable plug with PG cable gland	500…2000	–	x	316529
	Cable plug with M12 connection	500…2000	–	x	316526
	Cable plug with PG cable gland without operating element	200…1000	x	x	316521
	Cable plug with M12 connection without operating element	200…1000	x	x	316522
	Cable plug with PG cable gland without operating element	500…2000	–	x	316523
	Cable plug with M12 connection without operating element	500…2000	–	x	316525
	Standard rail	200…1000	x	x	316532
	Standard rail	500…2000	–	x	316533

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Product Enquiry Form - Proportional valve

Thank you for your interest in our products! In order to provide you with optimum advice, please fill out the following form and send it to your **Bürkert representative** or e-mail address: info@burkert.com. All information submitted will of course be kept strictly confidential.

Please fill in the **required fields**! *

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Personal Information			
Company		**Contact person**	
Customer no.		**Department**	
Street		**Postcode / Town**	
Telephone no.		**Email**	

Delivery

Quantity Required delivery date

Operating data	
Function (Function of the control valve in the process / process description)	
Operating medium	
Type of medium	○ Fluid ○ Steam ○ Gas
Supply voltage	V
Ambient temperature (max.)	$t_{u\,max}$ = ○ °C / ○ °F

Fluidic data					
Flow range Q_{Nom}	min.	max.	unit		
Inlet pressure at Q_{Nom}	p_1 =	barg[1.)]			
Outlet pressure at Q_{Nom}	p_2 =	barg[1.)]			
Max. inlet pressure	p_{1max} =	barg[1.)]			
Medium temperature (min./ max.)	$t_{m\,min}$ =	$t_{m\,max}$ =	○ °C / ○ °F		
Port connection	○ G (DIN ISO 228/1) ○ Flange		○ NPT (ANSI B1.2) ○ Other		

1.) Please indicate all pressure values as overpressure to atmospheric pressure [barg] (g = relative pressure)

Material specifications			
Body	○ Stainless steel	○ Brass	○ Other
Seals	○ FKM	○ EPDM	○ Other

Approvals / Conformities

e. g. UL/UR, KTW W270, DVGW Gas, ATEX/IECEx, EAC, etc.

Additional Requirements / Comment

Send form Delete form

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