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DATA SHEET

Type 2875

bürkert
FLUID CONTROL SYSTEMS

Direct-acting 2 way standard solenoid control valve

- Excellent range
- Very good response
- Compact valve design
- Orifice sizes 2...9.5 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 2875 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

Type 2875

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Type 2875

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%)	< 25 ms
Pressure range[3.]	0…25 bar
Nominal operating mode	100% continuous operation
Electrical data	
Operating voltage	24 V DC (12 V on request)
Power consumption	16 W
Maximum coil current[4.]	750 mA (at 16 W and 24 V coil)
PWM frequency[5.]	900 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 ⅜, G ½, NPT ⅜, NPT ½
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

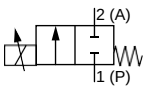
2.) By flow measurement

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

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 Gb II 2 D Ex mb IIIC T130 °C Db IECEx: Ex mb IIC T4 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.

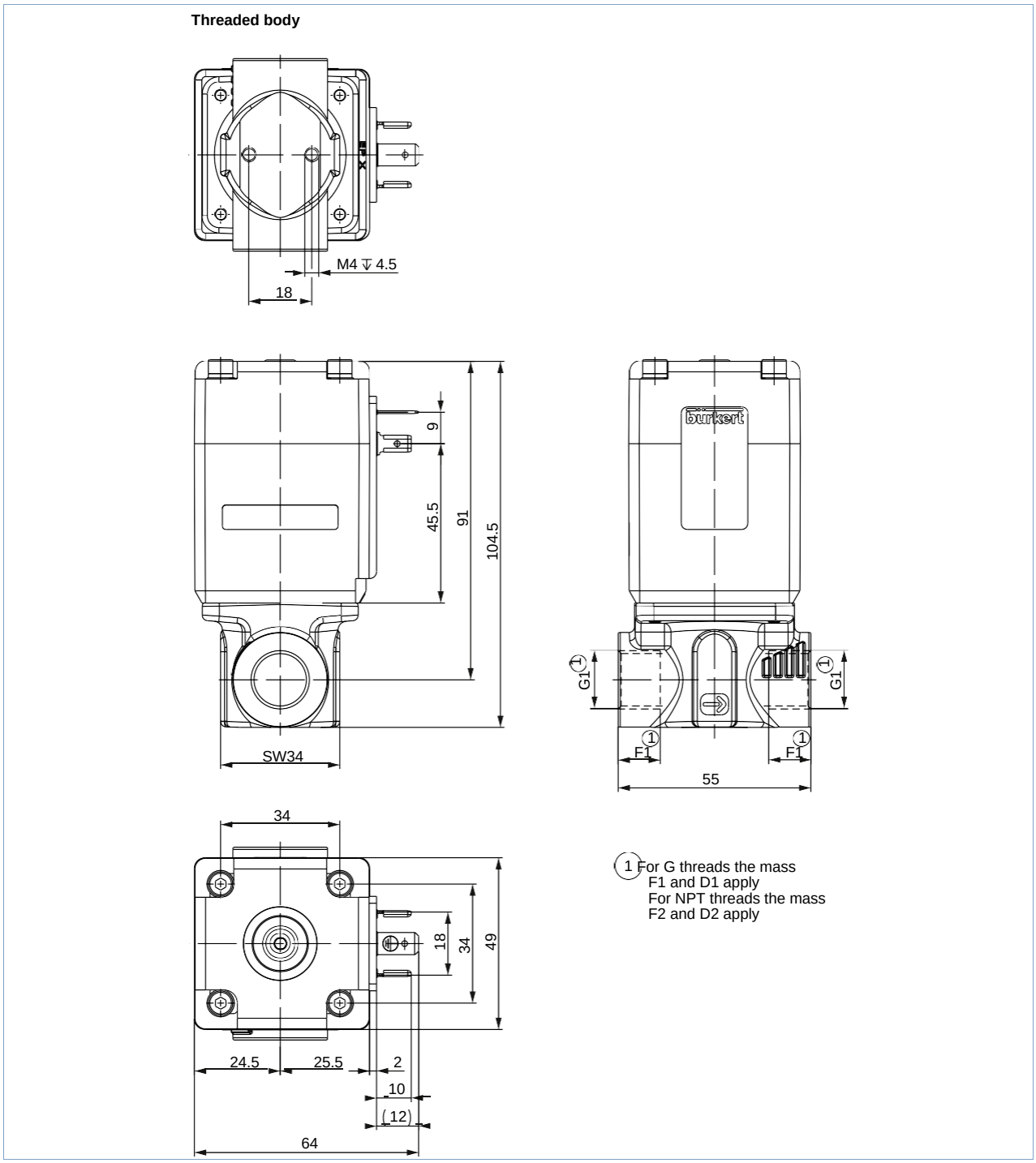
Start Chemical Resistance Check

5. Dimensions

5.1. Standard version

Threaded body

Note:
Dimensions in mm



Body version	F1	G1	F2	G2
Threaded body	12	G ⅜	10.3	NPT ⅜
	14	G ½	13.7	NPT ½

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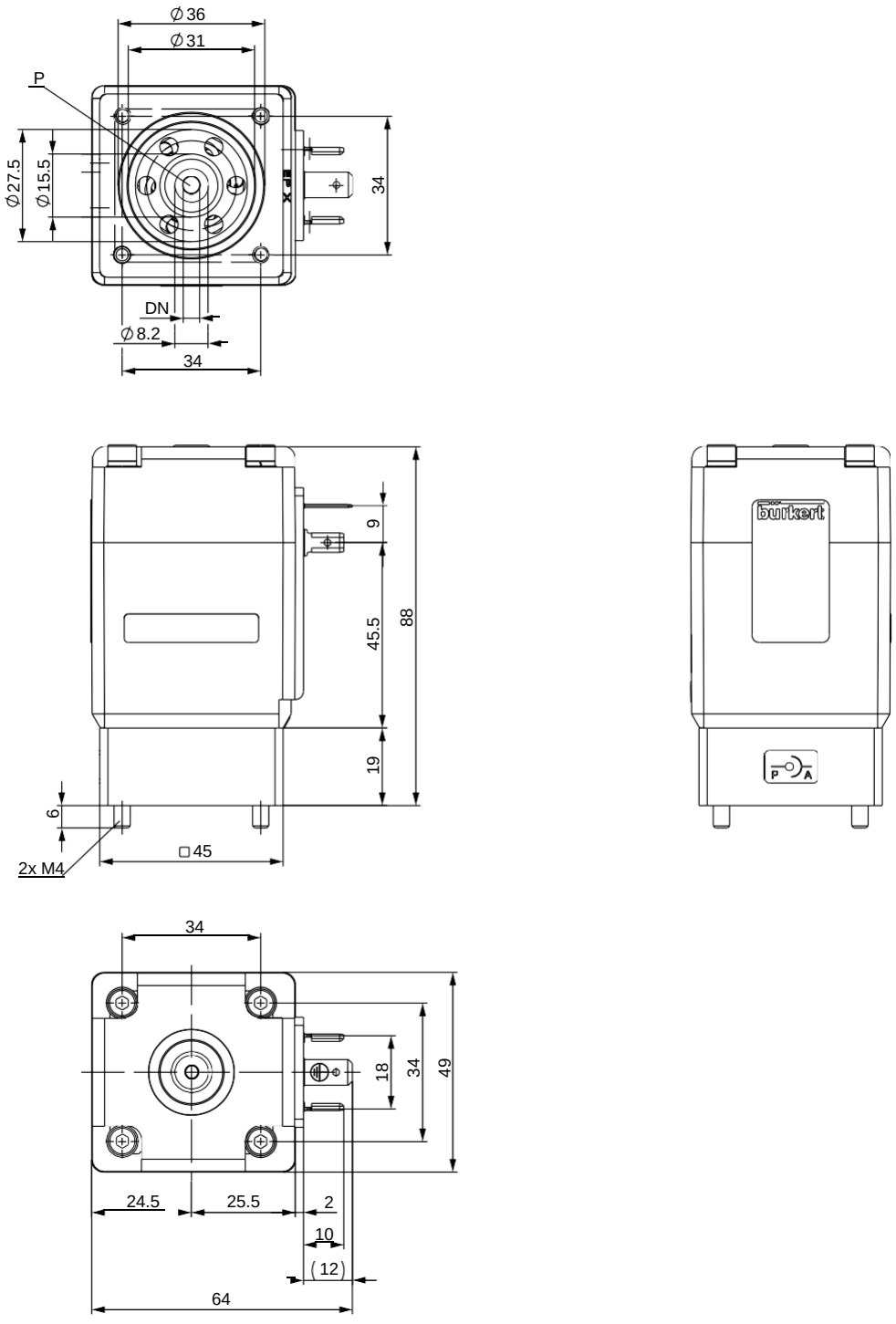
Type 2875

Sub-base body

Note:
Dimensions in mm

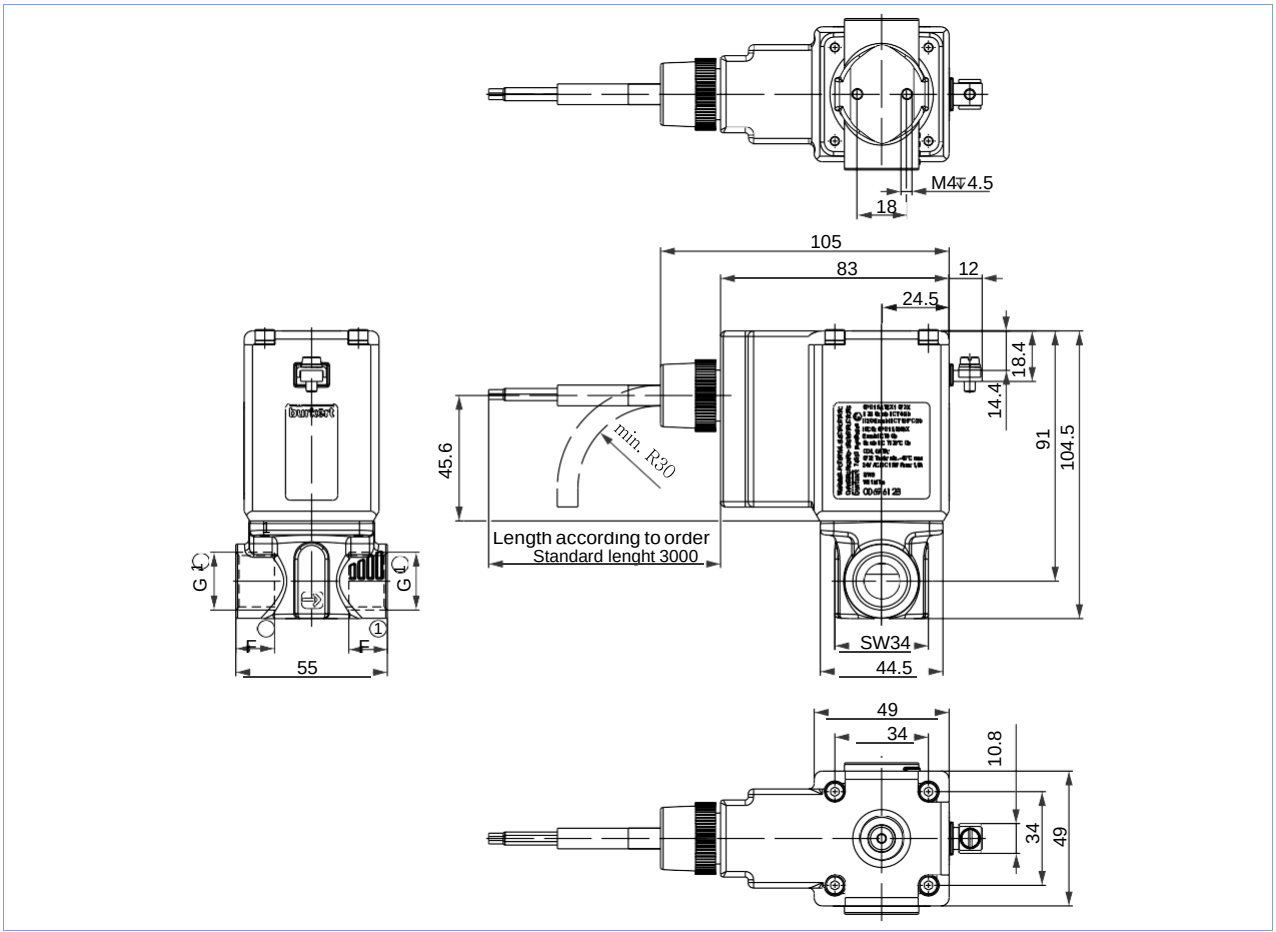
Sub-base body



5.2. ATEX version

Threaded body

Note:
Dimensions in mm

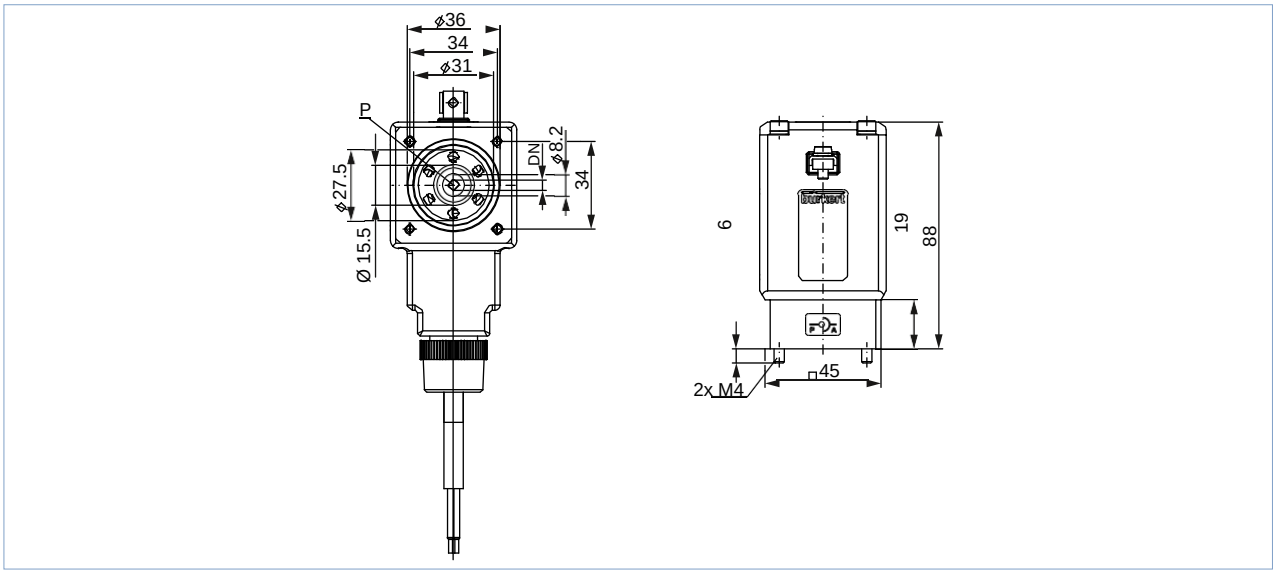


Body version	F1	G1	F2	G2
Threaded body	12	G ⅜	10.3	NPT ⅜
	14	G ½	13.7	NPT ½

Type 2875

Sub-base body

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 $p_2 > \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000 \otimes p}}$	$= \frac{Q_N}{514} \sqrt{\frac{T_1 \rho_N}{p_2 \otimes p}}$
Supercritical $p_2 < \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000 \otimes p}}$	$= \frac{Q_N}{257 p_1} \sqrt{T_1 \rho_N}$

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

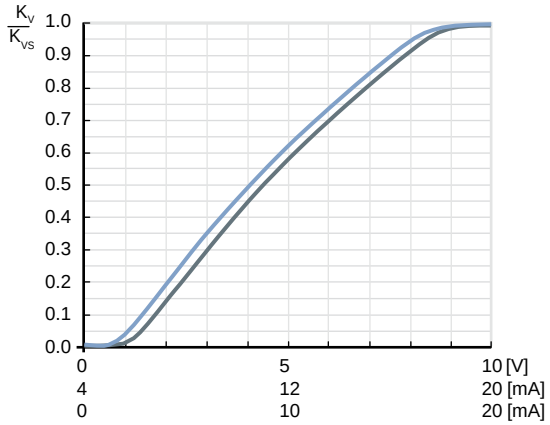
6.2. Exemplary characteristic curve of a proportional valve

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 or responding 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 9**.

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

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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 9** 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.

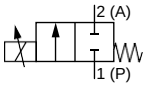
Try out our product filter

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  	2	G ⅜	0.12	25	12.5	236897	236899
		NPT ⅜	0.12	25	12.5	236898	236900
	3	G ⅜	0.25	10	5	236901	236903
		NPT ⅜	0.25	10	5	236902	236904
	4	G ⅜	0.45	8	4	236905	236910
		NPT ⅜	0.45	8	4	236908	236912
		G ½	0.45	8	4	236906	236911
		NPT ½	0.45	8	4	236909	236913
	6	G ½	0.80	4	2	236915	236919
		NPT ½	0.80	4	2	236917	236921
	8	G ½	1.10	2	1	236922	236924
		NPT ½	1.10	2	1	236923	236925
	9.5	G ½	1.40	0.7	0.35	273004	314557
		NPT ½	1.40	0.7	0.35	314555	314559

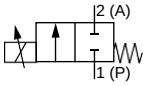
1.) Flow rate value for water, measured at + 20 °C and 1 bar pressure differential over a fully opened valve.
2.) Pressure data: Overpressure with respect to atmospheric pressure, with a differential pressure (difference between inlet and outlet pressure) above half of the nominal pressure there are discontinuities in the valve's characteristics possible."

Type 2875

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 approvals see "3. Approvals" on page 4.

Circuit function	Orifice	Approvals	Port connection[1.]	K_{VS}-value water[2.]	Nominal pressure	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  	2	UR	G ⅜	0.12	25	12.5	274976	274988
			NPT ⅜	0.12	25	12.5	274977	274989
		ATEX / IECEx	G ⅜	0.12	20	10	291483	On request
	3	UR	G ⅜	0.25	10	5	274978	274990
			NPT ⅜	0.25	10	5	274979	274991
		ATEX / IECEx	G ⅜	0.25	9	4.5	291485	On request
	4	UR	G ⅜	0.45	8	4	274980	274992
			NPT ⅜	0.45	8	4	274981	274993
		ATEX / IECEx	G ⅜	0.45	7	3.5	291486	On request
		UR	G ½	0.45	8	4	274982	274994
			NPT ½	0.45	8	4	274983	274995
	6	UR	G ½	0.80	4	2	274984	274996
			NPT ½	0.80	4	2	274985	274997
		ATEX / IECEx	G ½	0.80	3.5	1.75	291487	On request
	8	UR	G ½	1.10	2	1	274986	274998
			NPT ½	1.10	2	1	274987	274999
		ATEX / IECEx	G ½	1.10	1.5	0.75	291488	On request

1.) Port connection: others on request

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

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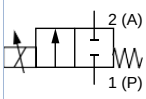
Type 2875

Version for higher differential pressures

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** .
- PWM frequency 500 Hz, Span 1:100
- Other connection variations (Sub-base, NPT) on request
- For Δp> 10 bar it is possible to get inconsistencies in the characteristic curve because of flow conditions in the application.
- For detailed information regarding the approvals see “3. Approvals” on page 4.

Circuit function	Orifice	Approvals	Port connection[1.]	K_{VS}-value water[2.]	Nominal pressure	Article no. brass body	Article no. stainless steel body
	[mm]			[m³/h]	[bar]		
A, proportional control valve 2/2 way Direct-acting Normally closed  	2.0	–	G ⅜	0.12	25	239040	239085
		UR	G ⅜	0.12	25	275000	275005
		ATEX / IECEx	G ⅜	0.12	20	291468	On request
	3.0	–	G ⅜	0.25	10	239086	239087
		UR	G ⅜	0.25	10	275001	275006
		ATEX / IECEx	G ⅜	0.25	9	291470	On request
	4.0	–	G ⅜	0.45	8	239088	239089
		UR	G ⅜	0.45	8	274090	274091
		ATEX / IECEx	G ⅜	0.45	7	291474	On request
	6.0	–	G ½	0.80	4	239090	239091
		UR	G ½	0.80	4	275002	275007
		ATEX / IECEx	G ½	0.80	3.5	291476	On request
	8.0	–	G ½	1.10	2	239092	239093
		UR	G ½	1.10	2	275004	275008
		ATEX / IECEx	G ½	1.10	1.5	291477	On request
	9.5	–	G ½	1.40	0.7	291586	314558

1.) Port connection: others on request

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

Further versions on request			
	Material EPDM		**Analytical** Oxygen version, Parts oil-, fat- and silicon free
	Approval UR (UL recognized) ATEX / IECEx		**Process connection** Sub-base version

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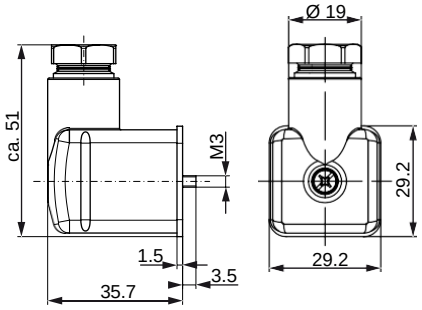
8.5. Ordering chart accessories

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 [mA]	2875 24 V DC	2875 12 V DC	Article no.
	Cable plug with PG cable gland	200…1000	x	–	316530
	Cable plug with M12 connection	200…1000	x	–	316528
	Cable plug with PG cable gland	500…2000	x	x	316529
	Cable plug with M12 connection	500…2000	x	x	316526
	Cable plug with PG cable gland without operating element	200…1000	x	–	316521
	Cable plug with M12 connection without operating element	200…1000	x	–	316522
	Cable plug with PG cable gland without operating element	500…2000	x	x	316523
	Cable plug with M12 connection without operating element	500…2000	x	x	316525
	Standard rail	200…1000	x	–	316532
	Standard rail	500…2000	x	x	316533

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