






Direct-acting 2-way basic proportional valve

- High dynamics
- Orifice sizes DN 0.8 ... 2.0 mm
- Good range



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 2507 Cable plug - industry standard plug Form B	▶
	Type 8611 eCONTROL - Universal controller	▶

Type description

Type 2861 is an extremely compact solenoid control valve and is available with an orifice up to 2 mm. It is based on the standard version of Type 2871. It is used as an actuator in closed control loops (pressure, flow, temperature, etc.). Compared with the standard version, the valve is essentially of simpler construction and assembly and testing procedures are optimized, easing high volume series production with shorter delivery times.

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1. General Technical Data

Product properties	
Dimensions	Detailed information can be found in chapter "4. Dimensions" on page 5.
Material	
Body	Brass, stainless steel
Seal	FKM, EPDM
Performance data	
Typical values of positioning behaviour^{1.)}	
Hysteresis	< 5 %
Reproducibility	< 1 % of end value ^{2.)}
Response sensitivity	< 1 % of end value ^{2.)}
Setting range	1:25
Pressure range ^{3.)}	0...12 bar
Nominal operating mode	100 % continuous operation
Electrical data	
Operating voltage	24 V DC (12 V on request)
Power consumption	Maximum 5 W
Maximum coil current ^{4.)}	220 mA (at 5 W and 24 V coil)
PWM frequency ^{5.)}	800 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 mm ² /s (21 cSt)
Process/Port connection & communication	
Port connection size	Sub-base, G 1/8, NPT 1/8
Electrical connection	Cable plug Type 2507 acc. to DIN EN 175301 - 803 form B Detailed information can be found in chapter "Cable plug Type 2507, Form B" on page 9.
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. Materials

3.1. 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](#)

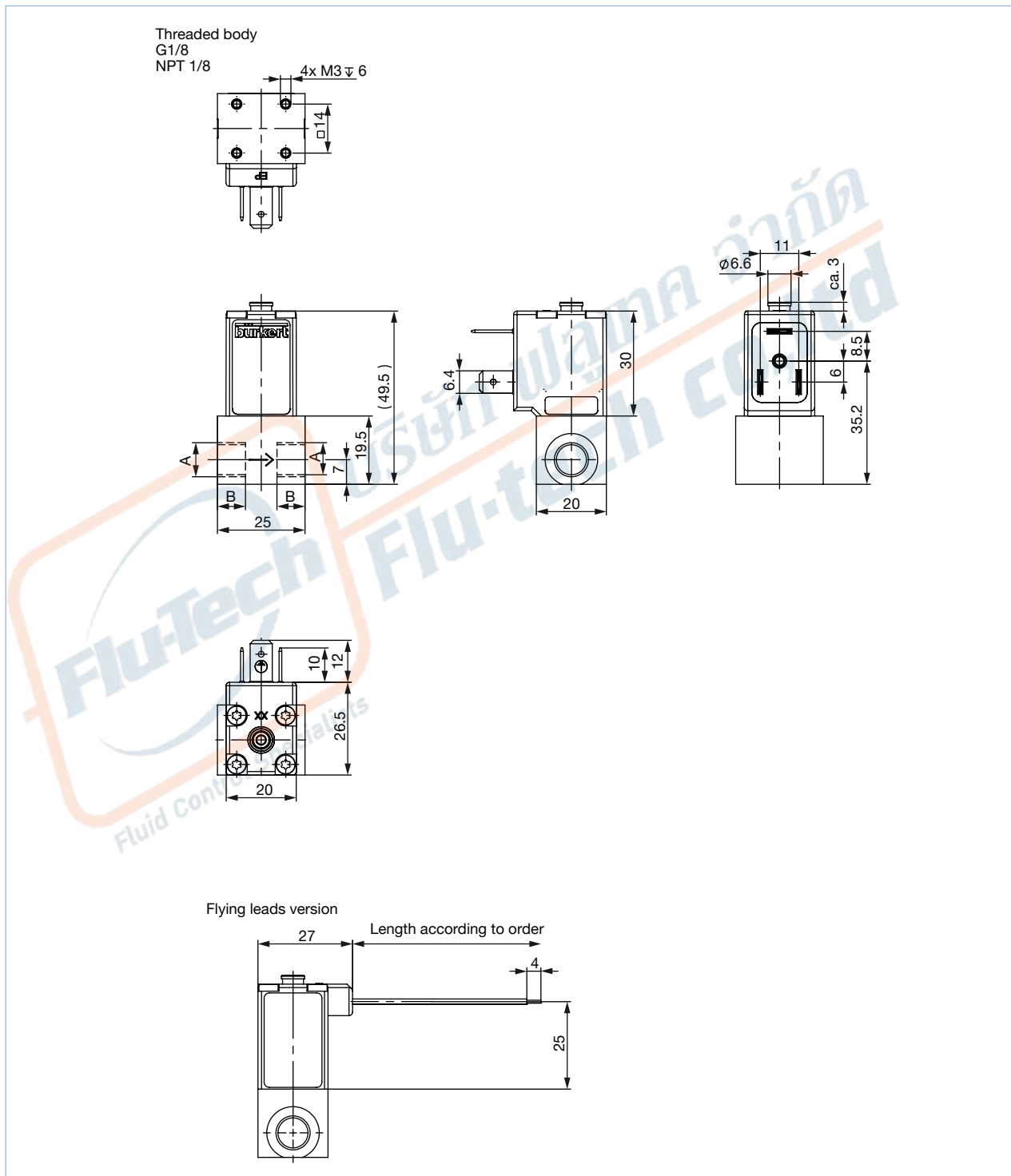


4. Dimensions

4.1. Threaded body

Note:

Dimensions in mm

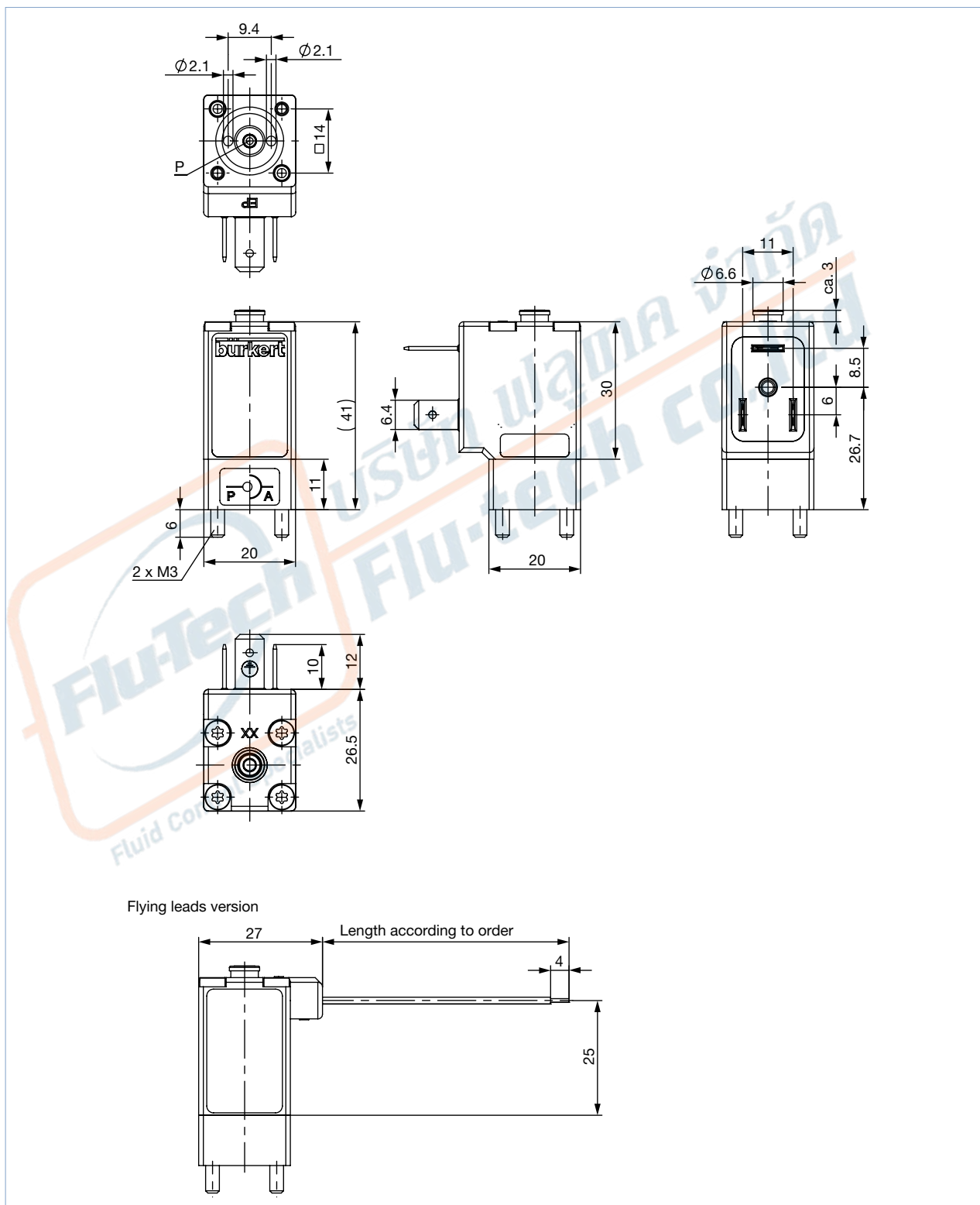


Body version	Threaded body	
A	G 1/8	NPT 1/8
B	8	7

4.2. Sub-base body

Note:

Dimensions in mm



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5. Performance specifications

5.1. Flow characteristic

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 $p_2 < \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000 \Delta p}}$	$= \frac{Q_N}{257 p_1} \sqrt{T_1 \rho_N}$

K_V Flow coefficient	[m ³ /h] ¹⁾
Q_N Standard flow rate	[m 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/m ³]
ρ_N Standard density	[kg/m ³]
T_1 Medium temperature	[(273+t)K]

- 1.) Measured for water, $\Delta p = 1$ bar, over the valve
- 2.) At reference conditions 1.013 bar and 0 °C (273 K)
- 3.) Absolute pressure

5.2. Exemplary characteristic curve of a proportional valve

Note:

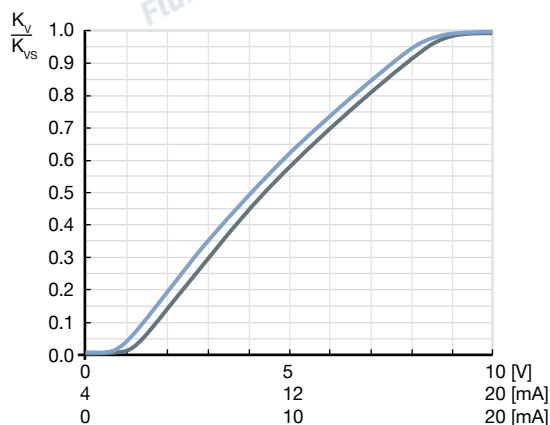
In continuous flow applications, the choice of an appropriate valve size is much more important than with on/off valves. The optimum size should be selected such that the resulting flow in the system is not unnecessarily reduced by the valve. However, a sufficient part of the pressure drop should be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

Recommended value: $\Delta p_{\text{valve}} > 25\%$ 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!



6. Product operation

6.1. 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 **"5.2. Exemplary characteristic curve of a proportional valve"** on page 7.

7. Ordering information

7.1. 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](#)

7.2. 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 **"5.2. Exemplary characteristic curve of a proportional valve"** on page 7 on product selection.

7.3. 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.

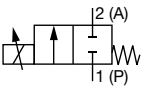
[Try out our product filter](#)

7.4. Ordering chart

Standard version

Note:

- All valves with FKM seal
- Please note that the cable plug must be ordered separately, see “Cable plug Type 2507, Form B” on page 9 or separate data sheet for **Type 2507** ▶.





Circuit function	Orifice	Port connection ^{1.)}	K _{vs} value water ^{2.)} [m ³ /h]	Nominal pressure ^{3.)} [bar]	Article no. brass body	Article no. stainless steel body
	[mm]					
A, proportional control valve 2/2 way Direct-acting Normally closed 	0.8	Sub-base FK01	0.018	12	255637 𠄎	275076 𠄎
		G 1/8	0.018	12	255638 𠄎	275070 𠄎
	1.0	Sub-base FK01	0.027	10	275073 𠄎	275077 𠄎
		G 1/8	0.027	10	249896 𠄎	265373 𠄎
	1.2	Sub-base FK01	0.038	8	275074 𠄎	275078 𠄎
		G 1/8	0.038	8	255640 𠄎	267087 𠄎
	1.6	Sub-base FK01	0.055	6	249009 𠄎	275079 𠄎
		G 1/8	0.055	6	249897 𠄎	275071 𠄎
	2.0	Sub-base FK01	0.090	3	275075 𠄎	275080 𠄎
		G 1/8	0.090	3	275069 𠄎	275072 𠄎

1.) NPT on request

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

3.) Pressure data: Overpressure with respect to atmospheric pressure.

Further versions on request


 Material Seal material FFKM Seal material EPDM	 Analytical Oxygen version, Parts oil-, fat- and silicon free
 Coil Other coil power Specific, power setting for lower pressure Other operating voltages Coil with flying leads	 Process connection Special valve orifice

7.5. Ordering chart accessories

Cable plug Type 2507, Form B

Note:


- The delivery includes the flat seal and fixing screw.
- Further versions see data sheet **Type 2507** ▶.

Cable plug	Version	Voltage	Article no.
	Without circuitry (AC/DC)	0...250 V AC/DC	423845 𠄎

Control electronics Type 8605

Note:

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

Control electronics	Version	Max. coil current range [mA]	Type 2861	Type 2861	Article no.
			24 V DC	12 V DC	
	Standard rail	40...220	x	–	316531
	Standard rail	200...1000	x	x	316532

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