burkert
FLUID CONTROL SYSTEMS

2/2-way proportional valve

- General purpose
- 0 ... 12 bar[1)]
- DN 0.8 ... 2.0 mm
- 1/8” or sub-base version

Type 2824 can be combined with…

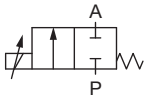
Type 8605
Digital control electronics
DIN-rail version

Type 2507
Cable plug

Typ 8611
Universal Controller

The direct-acting proportional valve Type 2824 can be used as a control valve for process control and is suitable for technical vacuum. Low hysteresis, high repeatability and high sensitivity ensure superior regulation behaviour. Thanks to an elastomeric sealing, the valve closes tightly and securely.

Circuit function A



Direct acting 2-way proportional valve, normally closed

Valve control takes place through the control electronics of Type 8605, which converts an analogue input into a PWM signal [2)].

Further functional features of the Type 8605 electronic control unit:

- Temperature compensation for coil heating by internal current regulation
- Simple zero and span settings
- Ramp function to dampen fast status changes

[1)] Pressure data [bar]: Overpressure with respect to atmospheric pressure
[2)] PWM pulse-width modulation
[3)] Characteristic data of control behaviour depends on process conditions

Technical data - valve	
Body material	Brass, Stainless steel
Seal material	FKM, EPDM on request
Media	Neutral gases, liquids
Medium temperature	-10 ... +90 °C
Ambient temperature	max. +55 °C
Viscosity	max. 21 mm^2/s
Operating voltage	24 V DC
Power consumption	5 W
Duty cycle	100% continuously rated
Port connection	Sub-base , G 1/8, NPT 1/8, others on request
Electric connection	Cable plug Type 2507, Form B Industrial standard
Installation	As required, preferably with actuator in upright position
Typical control data [3)]	
Hysteresis	< 5%
Repeatability	< 0.25% FS
Sensitivity	< 0.25% FS
Turn-down ratio	1:100
Protection class - valve	IP65

Technical data - control electronics Type 8605 (see separate datasheet)

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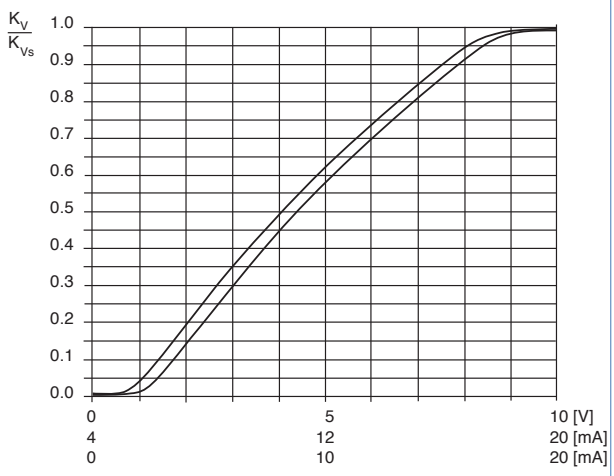
Characteristic of a proportional valve



Advice for valve sizing

In continuous flow applications, the choice of 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: Δp_{valve} > 30% of total pressure drop within the system

For that reason take advantage of Bürkert competent engineering services during the planning phase!

Determination of the kv value

Pressure drop	kv value for liquids [m³/h]	kv value for gases [m³/h]
Subcritical $p_2 > \frac{p_1}{2}$	$= Q\sqrt{\frac{\rho}{1000\,\Delta p}}$	$= \frac{Q_N}{514}\sqrt{\frac{T_1\,\rho_N}{p_2\,\Delta p}}$
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	Temperature if fluid medium	[(273+t)K]

[1] measured for water, Δp = 1 bar, via the device

[2] Standard conditions at 1.013 bar[3] and 0 °C (273K)

[3] Absolute pressure

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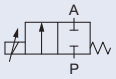
Ordering chart (other versions on request)

All valves with FKM sealing

Control function	Orifice [mm]	Port connection	kvs value water [m³/h] [1]	QNn value [l/min] [2]	Maximum pressure [bar] [3]	Coil power consumption [W]	Maximum coil current [mA]	Item no. Brass body	Item no. Stainless steel body
A 	0.8	sub-base FK01	0.018	19	12	5	210	175 660	175 677
		G 1/8	0.018	19	12	5	210	175 950	175 951
		NPT 1/8	0.018	19	12	5	210	175 952	175 953
	1.0	sub-base FK01	0.027	29	10	5	210	175 954	175 955
		G 1/8	0.027	29	10	5	210	175 956	175 957
		NPT 1/8	0.027	29	10	5	210	175 958	175 959
	1.2	sub-base FK01	0.038	41	8	5	210	175 960	175 961
		G 1/8	0.038	41	8	5	210	175 962	175 963
		NPT 1/8	0.038	41	8	5	210	175 964	175 965
	1.6	sub-base FK01	0.055	59	6	5	210	175 685	175 686
		G 1/8	0.055	59	6	5	210	175 687	175 688
		NPT 1/8	0.055	59	6	5	210	175 966	175 967
	2.0	sub-base FK01	0.090	97	3	5	210	175 968	175 969
		G 1/8	0.090	97	3	5	210	175 970	175 971
		NPT 1/8	0.090	97	3	5	210	175 972	175 973

[1] kVs value: Flow rate value for water, measured at +20 °C and 1 bar pressure differential over a fully opened valve.
[2] QNn value: Flow rate value for air with inlet pressure of 6 bar1), 1 bar pressure differential and +20 °C.
[3] Pressure data [bar]: Overpressure with respect to atmospheric pressure

Please note that the valves are delivered without control electronics unit and cable plug (see Accessory Ordering Information below).

Further versions on request

Materials
Seal material FFKM - Resistant to aggressive media
Seal material EPDM

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

Electrical connection
12 V Coil
Cable coil 300mm

Approvals
UR
CSA

Ordering chart for accessories

Cable plug Type 2507, Form B Industrial standard

The delivery of a cable plug includes the flat seal and fixing screw

Voltage	Current rating	Item no.
Without circuitry		
0 ... 250 V AC/DC	max. 6 A	423 845

Elecronic Control Type 8605 - please see datasheet 8605

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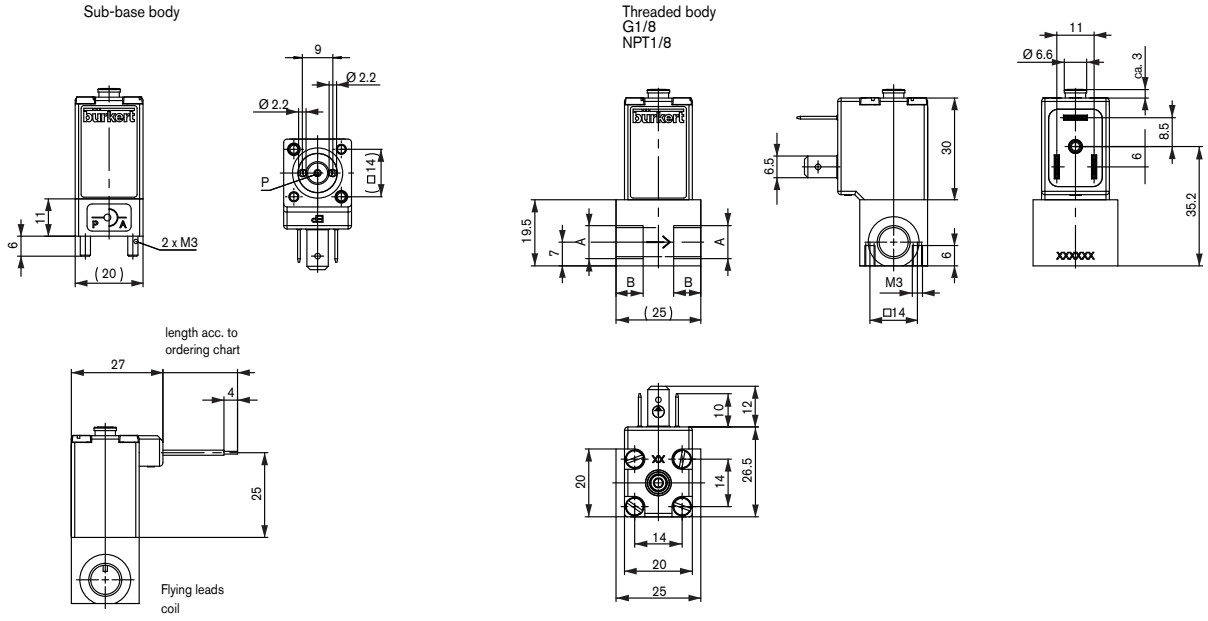
Dimensions [mm]



A	B
NPT 1/8	7
G1/8	8

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Note
You can fill out the fields directly in the PDF file before printing out the form.

Design data for proportional valves

Please fill out this form and send to your local Bürkert Sales Centre* with your inquiry or order

Company	Contact person
Customer no.	Dept.
Address	Tel./Fax
Town / Postcode	E-Mail

= Mandatory fields | **Quantity** | **Desired delivery date**

Process data

Medium			
State of medium		☐ **liquid** ☐ **gaseous** ☐ **vaporous**	
Medium temperature			°C
Maximum flow rate	Q_{nom} =		Unit:
Minimum flow rate	Q_{min} =		Unit:
Inlet pressure at nominal operation	p_1 =		barg
Outlet pressure at nominal operation	p_2 =		barg
Maximum inlet pressure	p_{1max} =		barg
Ambient temperature			°C

Additional specifications

Body material	☐ Brass	☐ Stainless steel
Seal material	☐ FKM	☐ other

Note Please state all pressure values as **overpressures with** respect to atmospheric [barg].

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