



## 2/2-Way Solenoid Control Valve

- Excellent range (1:200)
- Very good response
- Compact valve design
- Orifice sizes 2 ... 8 mm
- Port connection 3/8" and 1/2"

Type 2875 can be combined with...



**Type 8605**

Control Electronics,  
Cable plug version



**Type 8605**

Digital control electronics  
DIN-rail version



**Type 2508**

Cable plug

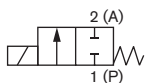


**Type 8611**

Universal controller

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, see ordering chart on page 3. 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.).

### Circuit function A



direct acting 2-way  
solenoid control valve,  
normally closed

Valve control takes place through a PWM signal<sup>1)</sup>. The duty cycle of the PWM signal determines the coil current and hence the position of the plunger. Optionally the valve can also be driven with DC voltage.

Please note the sizing comments for such a control valve on page 2.

<sup>1)</sup> PWM pulse width modulation

<sup>2)</sup> Pressure data [bar]: Measured as overpressure to the atmospheric pressure, orifice further depends on nominal pressure

<sup>3)</sup> Maximum value, value depends on operating pressure

<sup>4)</sup> Characteristic data of control behaviour depends on process conditions

<sup>5)</sup> by flow measurement

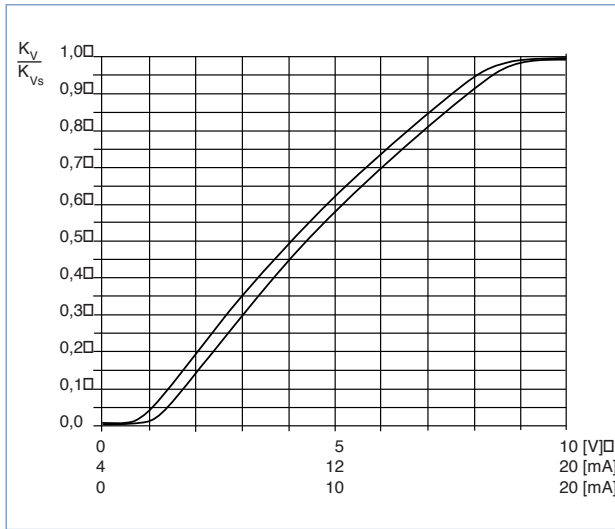
Technical Data - Valve	
<b>Body material</b>	Brass, stainless steel
<b>Seal material</b>	FKM, EPDM on request
<b>Medium</b>	Neutral gases, liquids on request
<b>Pressure range</b>	0 ... 25 bar <sup>2)</sup>
<b>Medium temperature</b>	-10 ... +90 °C
<b>Ambient temperature</b>	max. +55 °C
<b>Power supply</b>	24 V DC
<b>PWM frequency</b>	900 Hz
<b>Power consumption</b>	16 W
<b>Max. coil current <sup>3)</sup></b>	750 mA
<b>Duty cycle</b>	100% continuously rated
<b>Port connection</b>	G 3/8, G 1/2, NPT 3/8, NPT 1/2
<b>Electrical connection</b>	Tag connector (DIN EN 175301-803 Form A)
<b>Installation</b>	As required, preferably with actuator in upright position
<b>Typical control data <sup>4)</sup> at PWM-Control</b>	
Hysteresis	< 5%
Repeatability	< 0.5% FS <sup>5)</sup>
Sensitivity	< 0.25% FS <sup>5)</sup>
Span	1:200
Response time (10 -90%)	25 ms
<b>Protection class - valve</b>	IP65

The valve control can take place through the control electronics of Type 8605, which converts an analogue input signal into a PWM signal.

### Further functional features of the Type 8605 electronic control unit:

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

Characteristics of a solenoid control valve



Advice for valve sizing

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, the characteristics may change.

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

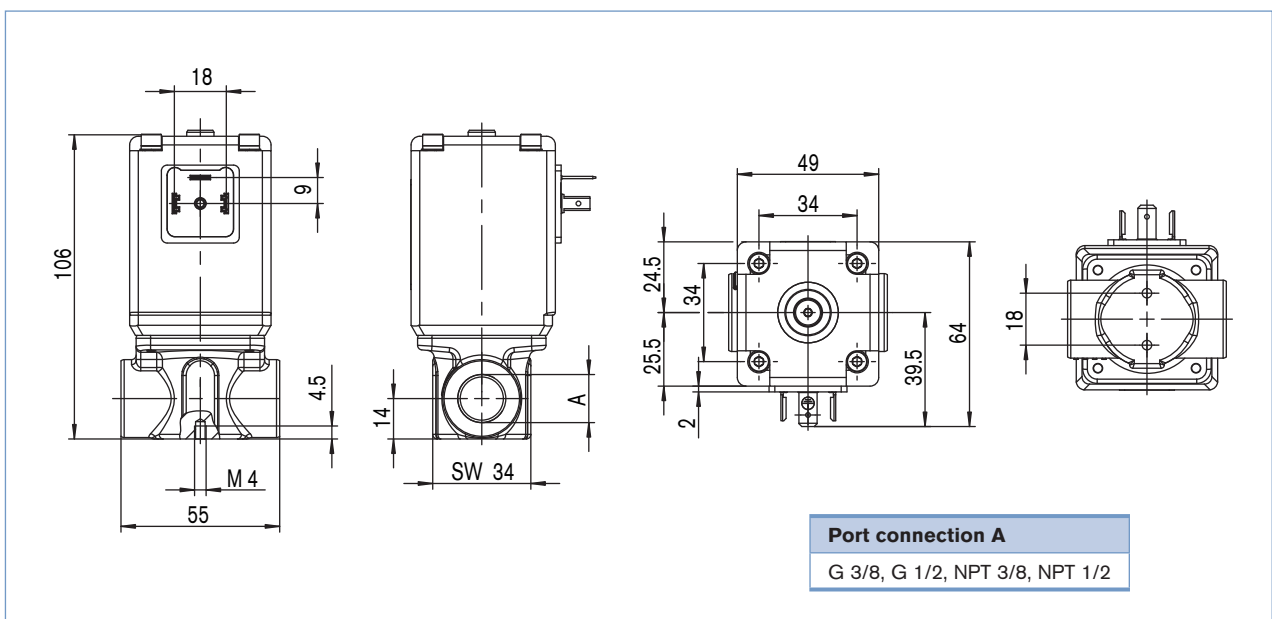
Determination of the  $k_v$  value

Pressure drop	$k_v$ value for liquids [m <sup>3</sup> /h]	$k_v$ value for gases [m <sup>3</sup> /h]
Subcritical $p_2 > \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000 \Delta p}}$	$= \frac{Q_N}{514} \sqrt{\frac{T_1 \rho_N}{p_2 \rho}}$
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<sup>3</sup>/h]<sup>6)</sup>
- $Q_N$  Standard flow rate [m<sup>3</sup>/h]<sup>7)</sup>
- $p_1$  Inlet pressure [bar]<sup>8)</sup>
- $p_2$  Outlet pressure [bar]<sup>8)</sup>
- $\Delta p$  Differential pressure  $p_1 - p_2$  [bar]
- $\rho$  Density [kg/m<sup>3</sup>]
- $\rho_N$  Standard density [kg/m<sup>3</sup>]
- $T_1$  Medium temperature [(273+t)K]

- <sup>6)</sup> measured for water,  $\Delta p = 1$  bar, over the value
- <sup>7)</sup> At reference conditions 1.013 bar and 0°C (273K)
- <sup>8)</sup> Absolute pressure

Dimensions [mm]



## Ordering chart

## All valves with FKM seal

Circuit function	Orifice [mm]	Port connection	$k_{vs}$ value water [m <sup>3</sup> /h] <sup>9)</sup>	Nominal pressure <sup>10)</sup> [bar]	Max. differential pressure [bar]	Item no. brass	Item no. Stainless steel	
<b>A</b> 2/2-way Normal closed (NC) 	2	G 3/8	0.12	25	12.5	236 897	236 899	
		NPT 3/8	0.12	25	12.5	236 898	236 900	
	3	G 3/8	0.25	10	5	236 901	236 903	
		NPT 3/8	0.25	10	5	236 902	236 904	
	4	G 3/8	G 3/8	0.45	8	4	236 905	236 910
			NPT 3/8	0.45	8	4	236 908	236 912
		G 1/2	G 1/2	0.45	8	4	236 906	236 911
			NPT 1/2	0.45	8	4	236 909	236 913
	6	G 1/2	0.80	4	2	236 915	236 919	
		NPT 1/2	0.80	4	2	236 917	236 921	
	8	G 1/2	1.10	2	1	236 922	236 924	
		NPT 1/2	1.10	2	1	236 923	236 925	

<sup>9)</sup>  $k_{vs}$  value: Flow rate value for water, measured at +20 °C and 1 bar pressure differential over a fully opened valve.

<sup>10)</sup> Pressure data [bar]: 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.

**Note:** Please note that the valves are delivered without control electronics, Type 8605, and cable plug (see ordering chart for accessories).

## Ordering chart - variants with approvals

## All valves with FKM seal

Circuit function	Orifice [mm]	Approvals <sup>11)</sup>	Port connection <sup>12)</sup>	$k_{vs}$ value water [m <sup>3</sup> /h]	Nominal pressure [bar]	Max. differential pressure [bar]	Item no. brass	Item no. Stainless steel
<b>A</b> 2/2-way Normal closed (NC) 	2	UR	G 3/8	0.12	25	12.5	274 976	274 988
			NPT 3/8	0.12	25	12.5	274 977	274 989
		DVGW	G 3/8	0.12	25	12.5	275 052	on request
			ATEX / IECEx	G 3/8	0.12	25	12.5	276 549
	3	UR	G 3/8	0.25	10	5	274 978	274 990
			NPT 3/8	0.25	10	5	274 979	274 991
		DVGW	G 3/8	0.25	10	5	275 053	on request
			ATEX / IECEx	G 3/8	0.25	10	5	276 550
	4	UR	G 3/8	0.45	8	4	274 980	274 992
			NPT 3/8	0.45	8	4	274 981	274 993
		DVGW	G 3/8	0.45	8	4	275 054	on request
			ATEX / IECEx	G 3/8	0.45	8	4	276 553
		UR	G 1/2	0.45	8	4	274 982	274 994
			NPT 1/2	0.45	8	4	274 983	274 995
	6	UR	G 1/2	0.80	4	2	274 984	274 996
			NPT 1/2	0.80	4	2	274 985	274 997
		DVGW	G 1/2	0.80	4	2	275 056	on request
			ATEX / IECEx	G 1/2	0.80	4	2	276 555
	8	UR	G 1/2	1.10	2	1	274 986	274 998
			NPT 1/2	1.10	2	1	274 987	274 999
DVGW		G 1/2	1.10	2	1	275 057	on request	
		ATEX / IECEx	G 1/2	1.10	2	1	276 556	on request

<sup>11)</sup> Approvals: UR (UL recognized)  
DVGW - Approval acc. to the European gas device guidelines (DIN 3394-1)  
ATEX - II 2 G EEx m II T4 or T6  
IECEx - Ex e mb IIC T6 Gb

<sup>12)</sup> Port connections: Others on request.

## Ordering chart - variants for higher differential pressure

### All valves with FKM seal

Circuit function	Orifice [mm]	Approvals <sup>11)</sup>	Port connection <sup>12)</sup>	$k_{vs}$ value water [m <sup>3</sup> /h]	Nominal pressure [bar]	Item no. brass	Item no. Stainless steel
<b>A</b> 	2.0	UR	G 3/8	0.12	25	239 040	239 085
		ATEX / IECEx	G 3/8	0.12	25	275 000	275 005
		ATEX / IECEx	G 3/8	0.12	25	274 877	on request
	3.0	UR	G 3/8	0.25	10	239 086	239 087
		ATEX / IECEx	G 3/8	0.25	10	275 001	275 006
		ATEX / IECEx	G 3/8	0.25	10	274 878	on request
	4.0	UR	G 3/8	0.45	8	239 088	239 089
		ATEX / IECEx	G 3/8	0.45	8	274 090	274 091
		ATEX / IECEx	G 3/8	0.45	8	274 879	on request
	6.0	UR	G 1/2	0.80	4	239 090	239 091
		ATEX / IECEx	G 1/2	0.80	4	275 002	275 007
		ATEX / IECEx	G 1/2	0.80	4	274 880	on request
8.0	UR	G 1/2	1.10	2	239 092	239 093	
	ATEX / IECEx	G 1/2	1.10	2	275 004	275 008	
	ATEX / IECEx	G 1/2	1.10	2	274 881	on request	

**Note:** The following technical data changes compared with the data on page 1

- PWM frequency 500 Hz, span 1:100.
- Other connection variations (sub-base, NPT) on request

### Ordering chart for accessories

#### Cable plug 2508 acc. to DIN EN 175301-803 Form A

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

Circuitry	Voltage / frequency	Item no.
None	0 - 250 V AC/DC	008 376
None, with 3 m cable	0 - 250 V AC/DC	783 573

**Control electronics, Type 8605** - please see datasheet

#### **i** Further versions on request

**Material**  
EPDM

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

**Approvals**  
UR (UL recognized)  
DVGW/ Gas device guidelines  
ATEX / IECEx

**Port connection**  
flange connections

**Note**

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

**Design data for solenoid control valves**

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

Company	Contact person
Customer No	Department
Address	Tel./Fax
Postcode/Town	E-mail

<input type="checkbox"/> = Mandatory fields	<input type="text"/> Quantity	<input type="text"/> Requested delivery date
<b>Process data</b>		
<input type="checkbox"/> Medium	<input type="text"/>	
<input type="checkbox"/> State of medium	<input type="checkbox"/> liquid	<input type="checkbox"/> gaseous
<input type="checkbox"/> Medium temperature	<input type="text"/> °C	
<input type="checkbox"/> Maximum flow rate	$Q_{nom} =$ <input type="text"/>	Unit: <input type="text"/>
<input type="checkbox"/> Minimum flow rate	$Q_{min} =$ <input type="text"/>	Unit: <input type="text"/>
<input type="checkbox"/> Inlet pressure at nominal operation	$p_1 =$ <input type="text"/>	barg
<input type="checkbox"/> Outlet pressure at nominal operation	$p_2 =$ <input type="text"/>	barg
<input type="checkbox"/> Max. inlet pressure (nominal pressure)	$p_{1max} =$ <input type="text"/>	barg
<input type="checkbox"/> Ambient temperature	<input type="text"/> °C	
<b>Additional specifications</b>		
<input type="checkbox"/> Body material	<input type="checkbox"/> Brass	<input type="checkbox"/> Stainless steel
<input type="checkbox"/> Seal material	<input type="checkbox"/> FKM	<input type="checkbox"/> other <input type="text"/>

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

**Standard series of solenoid control valves**

**Type 2871**  
Orifice 0.05 to 2mm  
20mm coil width



**Type 2873**  
Orifice 0.8 to 4mm  
32mm coil width



**Type 2875**  
Orifice 2 to 8mm  
49mm coil width

In case of special application conditions, please consult for advice.

Subject to alteration.  
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