



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

Type 2875 can be combined with...



Type 8605

Control Electronics,
Cable plug version



Type 2508

Cable plug



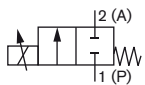
Type 8611

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. 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



2/2 way direct-acting,
solenoid proportional
control valve

Valve control takes place through a PWM signal¹⁾. 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.

¹⁾ PWM pulse width modulation

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

³⁾ Maximum value, value depends on operating pressure

⁴⁾ Characteristic data of control behaviour depends on process conditions

⁵⁾ By flow measurement

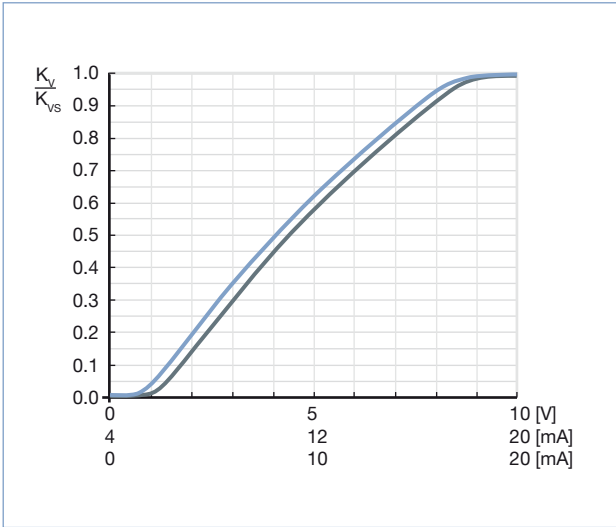
Technical data - Valve	
Body material	Brass, stainless steel
Seal material	FKM, EPDM on request
Medium	Neutral gases, liquids on request
Pressure range	0...25 bar ²⁾
Medium temperature	-10...+90 °C
Ambient temperature	max. +55 °C
Power supply	24 V DC
PWM frequency	900 Hz
Power consumption	16 W
Max. coil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

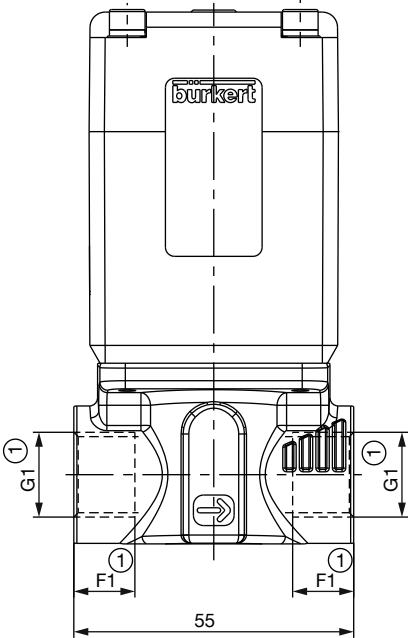
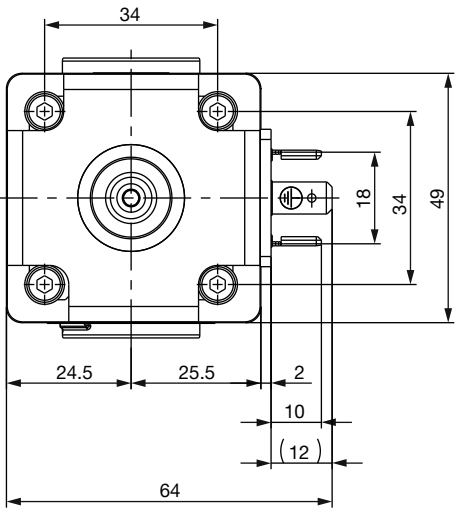
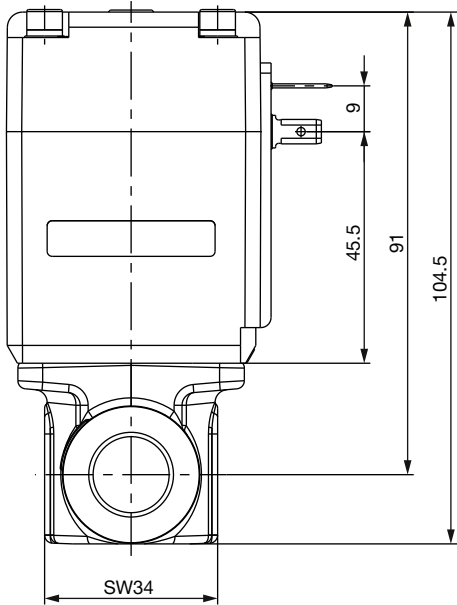
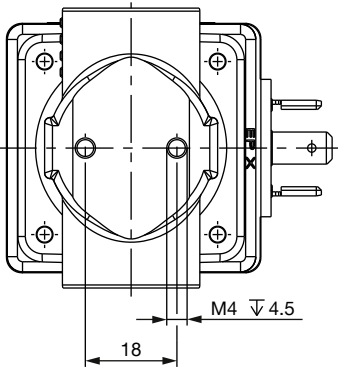
Pressure drop	k_v value for liquids [m ³ /h]	k_v value for gases [m ³ /h]
Subcritical $p_2 > \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000 \Delta p}}$	$= \frac{Q_N}{514} \sqrt{\frac{T_1 \rho_N}{p_2 \rho}}$
Supercritical $p_2 < \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000 \Delta p}}$	$= \frac{Q_N}{257 p_1} \sqrt{T_1 \rho_N}$

- k_v Flow coefficient [m³/h]⁶⁾
- Q_N Standard flow rate [m³/h]⁷⁾
- p_1 Inlet pressure [bar]⁸⁾
- p_2 Outlet pressure [bar]⁸⁾
- 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]

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

Dimensions [mm] - standard version

Threaded version

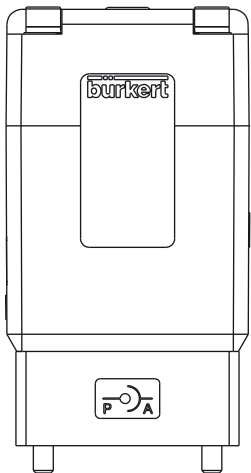
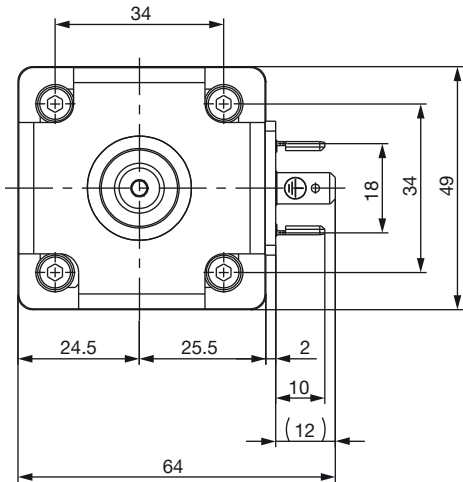
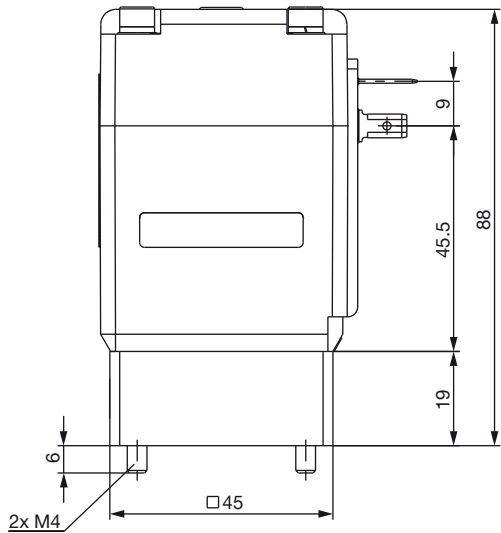
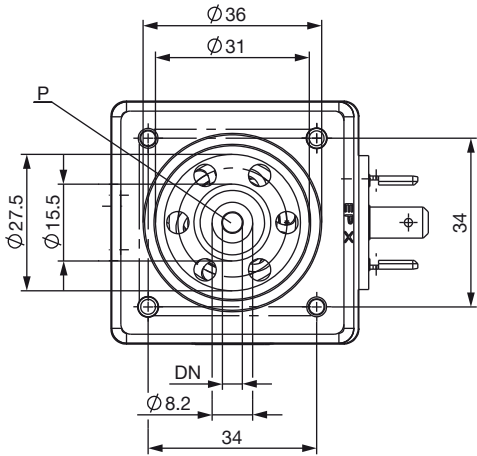


- 1 For G threads the mass
F1 and D1 apply
For NPT threads the mass
F2 and D2 apply

Version	F1	G1	F2	G2
Thread	12	G 3/8	10.3	NPT 3/8
	14	G 1/2	13.7	NPT 1/2

Dimensions [mm] - standard version

Subbase version



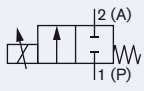
Threaded version

Version	F1	G1	F2	G2
Thread	12	G 3/8	10,3	NPT 3/8
	14	G 1/2	13,7	NPT 1/2

Subbase version

Ordering chart

All valves with FKM seal

Circuit function	Orifice [mm]	Port connection	k_{vs} value water [m ³ /h] ⁹⁾	Nominal pressure [bar] ¹⁰⁾	Max. differential pressure [bar]	Article no. brass	Article no. Stainless steel
A 2/2 way Normal closed (NC) 	2	G 3/8	0.12	25	12.5	236897 	236899 
		NPT 3/8	0.12	25	12.5	236898 	236900 
	3	G 3/8	0.25	10	5	236901 	236903 
		NPT 3/8	0.25	10	5	236902 	236904 
	4	G 3/8	0.45	8	4	236905 	236910 
		NPT 3/8	0.45	8	4	236908 	236912 
		G 1/2	0.45	8	4	236906 	236911 
	6	NPT 1/2	0.45	8	4	236909 	236913 
		G 1/2	0.80	4	2	236915 	236919 
	8	NPT 1/2	0.80	4	2	236917 	236921 
		G 1/2	1.10	2	1	236922 	236924 
	9.5	NPT 1/2	1.10	2	1	236923 	236925 
		G 1/2	1.40	0.7	0.35	273004 	314557 
		NPT 1/2	1.40	0.7	0.35	314555 	314559 

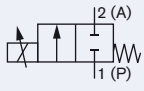
⁹⁾ k_{vs} value: Flow rate value for water, measured at +20 °C and 1 bar pressure differential over a fully opened valve.

¹⁰⁾ 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 ¹¹⁾	Port connection ¹²⁾	k_{vs} value water [m ³ /h]	Nominal pressure [bar]	Max. differential pressure [bar]	Article no. brass	Article no. Stainless steel
A 2/2 way Normal closed (NC) 	2	UR	G 3/8	0.12	25	12.5	274976 	274988 
			NPT 3/8	0.12	25	12.5	274977 	274989 
		DVGW	G 3/8	0.12	5	5	314262 	on request
		ATEX / IECEx	G 3/8	0.12	20	10	291483 	on request
	3	UR	G 3/8	0.25	10	5	274978 	274990 
			NPT 3/8	0.25	10	5	274979 	274991 
		DVGW	G 3/8	0.25	5	5	314265 	on request
		ATEX / IECEx	G 3/8	0.25	9	4.5	291485 	on request
	4	UR	G 3/8	0.45	8	4	274980 	274992 
			NPT 3/8	0.45	8	4	274981 	274993 
		DVGW	G 3/8	0.45	5	4	314267 	on request
		ATEX / IECEx	G 3/8	0.45	7	3.5	291486 	on request
		UR	G 1/2	0.45	8	4	274982 	274994 
			NPT 1/2	0.45	8	4	274983 	274995 
		UR	G 1/2	0.80	4	2	274984 	274996 
			NPT 1/2	0.80	4	2	274985 	274997 
	6	DVGW	G 1/2	0.80	4	2	314269 	on request
			G 1/2	0.80	3.5	1.75	291487 	on request
		ATEX / IECEx	G 1/2	0.80	3.5	1.75	291487 	on request
	8	UR	G 1/2	1.10	2	1	274986 	274998 
			NPT 1/2	1.10	2	1	274987 	274999 
		DVGW	G 1/2	1.10	2	1	314270 	on request
			G 1/2	1.10	1.5	0.75	291488 	on request

¹¹⁾ Approvals:

UR (UL recognized)

DVGW - Approval acc. to the European gas device guidelines (DIN EN 161)

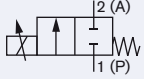
ATEX - II 2 G Ex mb IIC T4 Gb ; II 2 D Ex mb IIIC T130°C Db

IECEx - Ex mb IIC T4 Gb ; Ex mb IIIC T130°C Db

¹²⁾ Port connections: Others on request.

Ordering chart - variants for higher differential pressure

All valves with FKM seal

Circuit function	Orifice [mm]	Approvals ¹¹⁾	Port connection ¹²⁾	k _{vs} value water [m³/h]	Nominal pressure [bar]	Article no. brass	Article no. Stainless steel
A 2/2 way Normal closed (NC) 	2.0		G 3/8	0.12	25	239040	239085
		UR	G 3/8	0.12	25	275000	275005
		ATEX / IECEx	G 3/8	0.12	20	291468	on request
	3.0		G 3/8	0.25	10	239086	239087
		UR	G 3/8	0.25	10	275001	275006
		ATEX / IECEx	G 3/8	0.25	9	291470	on request
	4.0		G 3/8	0.45	8	239088	239089
		UR	G 3/8	0.45	8	274090	274091
		ATEX / IECEx	G 3/8	0.45	7	291474	on request
	6.0		G 1/2	0.80	4	239090	239091
		UR	G 1/2	0.80	4	275002	275007
		ATEX / IECEx	G 1/2	0.80	3.5	291476	on request
	8.0		G 1/2	1.10	2	239092	239093
		UR	G 1/2	1.10	2	275004	275008
		ATEX / IECEx	G 1/2	1.10	1.5	291477	on request
	9.5		G 1/2	1.40	0.7	291586	314558

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
- For $\Delta p > 145$ PSI it is possible to get inconsistencies in the characteristic curve because of flow conditions in the application.

¹¹⁾ Approvals:

UR (UL recognized)

DVGW - Approval acc. to the European gas device guidelines (DIN EN 161)

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

¹²⁾ Port connections: Others 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	Article no.
None	0...250 V AC/DC	008376
None, with 3 m cable	0...250 V AC/DC	783573

Control electronics, Type 8605

Please see datasheet

 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