

## 2/2-Way Proportional Valve Low- $\Delta p$

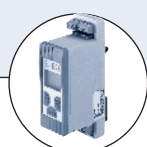
- For high flow rates with low inlet pressure
- Direct-acting, normally closed
- 0 – 10 PSI<sup>1)</sup>
- DN 8 – 12 mm
- 1/2" and 3/4"

Type 6024 can be combined with...



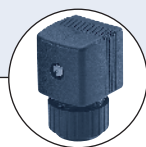
**Type 8605**

Control electronics  
Cable plug version



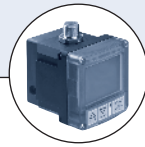
**Type 8605**

Digital control electronics  
DIN-rail version



**Type 2508**

Cable plug

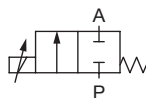


**Type 8611**

Universal controller

The direct-acting proportional valve Type 6024 works as an electromagnetically actuated control valve with relatively high flow rates at low operating pressures. The valve is normally closed.

### Valve operation A



Direct acting 2-way  
proportional valve,  
normally closed

It is controlled by Control Electronics Type 8605.

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

### Technical data - valve

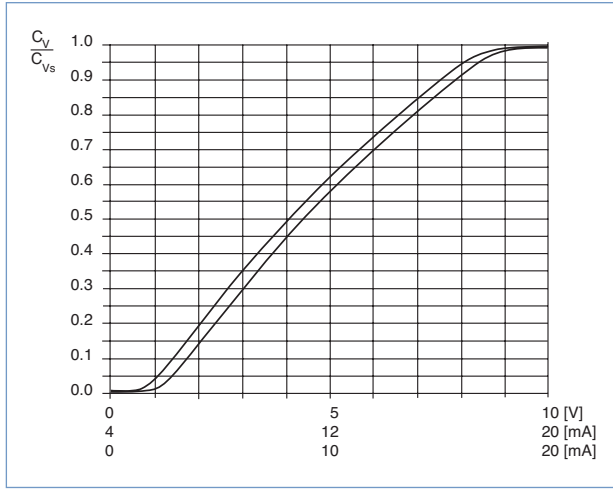
<b>Body material</b>	Brass, stainless steel
<b>Sealing material</b>	FKM, others on request
<b>Media</b> technical vacuum	Neutral gasses, liquids
<b>Medium temperature</b>	14°F to 194°F (-10°C to +90°C)
<b>Ambient temperature</b>	max. 131°F (+55°C)
<b>Viscosity</b>	max. 21 cSt
<b>Operating voltage</b>	24 V DC
<b>Power consumption</b>	max. 18 W (49 mm coil)
<b>Duty cycle</b>	100% continuously rated
<b>Port connection</b>	G 1/2, G 3/4 (NPT 1/2 and NPT 3/4 on request)
<b>Electrical connection</b>	Cable plug (DIN EN 175301-803 Form A)
<b>Mounting position</b>	any, preferably with drive at top
<b>Typical control data<sup>3)</sup></b>	
Hysteresis	< 7 %
Repeatability	< 0.5 % of F.S.
Sensitivity	< 0.5 % of F.S.
Turn-down ratio	1:25
C <sub>V5</sub> value <sup>2)</sup>	1.6 to 3.2 GPM
max. operating pressure <sup>1)</sup>	1.45 to 10.15 PSI (depending on DN and coil)
<b>Protection class - valve</b>	IP65 with plug-in module or cable plug on valve

<sup>1)</sup> Pressure data [PSI]: Overpressure with respect to atmospheric pressure

<sup>2)</sup> C<sub>V5</sub> value [GPM]: max. flow capacity for water

<sup>3)</sup> Characteristic data of control behaviour depends on process conditions

### Characteristics 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:  $\Delta p_{\text{valve}} > 30\%$  of total pressure drop within the system**

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

### Determination of the $C_v$ value

Pressure drops	$C_v$ value for liquids [GPM]	$C_v$ value for air and gasses [SCFM]
Subcritical ( $p_2 > p_1 \times .53$ )	$C_v = \frac{Q_L \sqrt{Sg}}{\sqrt{\Delta p}}$	$C_v = \frac{Q_g \sqrt{Sg}}{\sqrt{\Delta p \times p_2}}$
Supercritical ( $p_2 < p_1 \times .53$ )	$C_v = \frac{Q_L \sqrt{Sg}}{\sqrt{\Delta p}}$	$C_v = \frac{Q_g \times 2 \sqrt{Sg}}{p_1}$

- $C_v$  = Liquids – flow coefficient in GPM at 1 PSI  $\Delta p$   
Gasses – flow coefficient in SCFM for each PSIG of inlet pressure
- Sg = Specific gravity (Specific gravity of air and water @ 60°F=1)
- $p_1$  = Inlet pressure in PSIA
- $p_2$  = Outlet pressure in PSIA
- $\Delta p$  = Differential pressure ( $p_1 - p_2$ )
- PSIA = Gauge pressure (PSIG) + 14.7
- $Q_L$  = Liquid flow in GPM
- $Q_g$  = Gas flow in SCFM

### Ordering chart for valves

Valve operation	Orifice [mm]	Port connection	$C_{vs}$ value for water [GPM] <sup>1)</sup>	$Q_{Nn}$ value [l/min] <sup>2)</sup>	Maximum operating pressure [PSI] <sup>3)</sup>	Power consumption [W]	Maximum coil current [mA]	Item no. Brass body	Item no. Stainless steel body
 Direct-acting 2-way proportional valve, closed by spring action without current	8	G 1/2	1.6	1500	10.15	18	580	150 401	-
		G 3/4	1.6	1500	10.15	18	580	150 427	-
	10	G 1/2	2.3	2150	5.8	18	580	150 402	150 404
		G 3/4	2.3	2150	5.8	18	580	150 428	150 429
	12	G 1/2	3.2	3020	2.9	18	580	150 425	150 426
		G 3/4	3.2	3020	2.9	18	580	150 406	150 408

1)  $C_{vs}$  value: Flow rate value for water, measured at 68°F (+20°C) and 1 PSI pressure differential over a fully opened valve.  
 2)  $Q_{Nn}$  value: Flow rate value for air with inlet pressure of 87 PSI<sup>1)</sup>, 14.5 PSI pressure differential and 68°F (+20°C).  
 3) Pressure data [PSI]: Overpressure with respect to atmospheric pressure

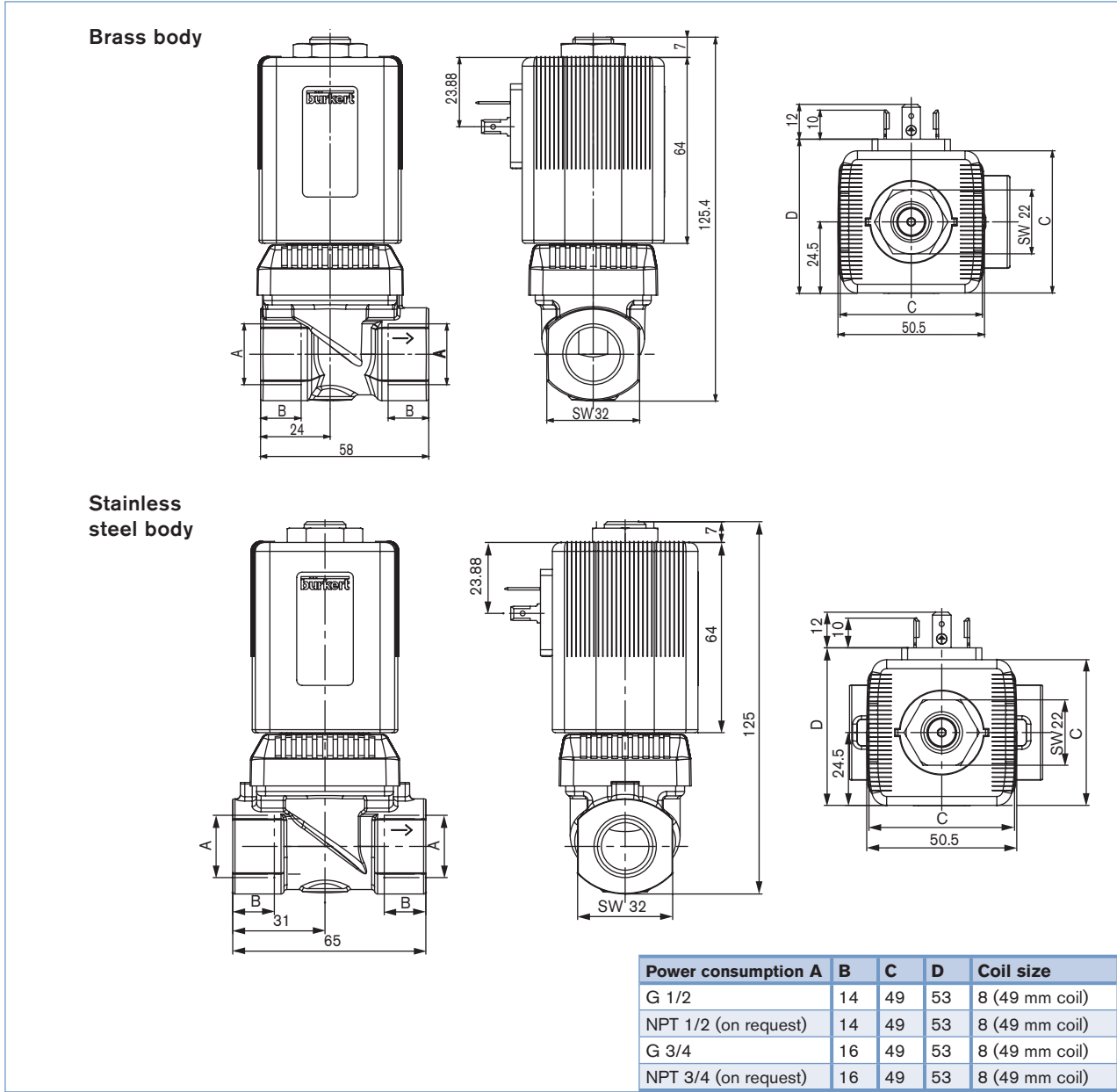
**Please note** that the valves are delivered without control electronics unit and cable plug (see accessories below).  
 Devices also suitable for technical vacuum.

#### Further versions on request

- Analytical**  
Oil and fat-free version
- Port connection**  
NPT 1/2, NPT 3/4

Please also use the "request for quotation" form on last page [go to page](#)

Dimensions [mm]



DTS 1000084635 EN Version: C Status: RL (released | freigegeben | validé) printed: 22.09.2017

Ordering chart for accessories

Cable plug Type 2508 according 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

Electronic Control Type 8605

Please see separate datasheet. Click on the box "More info."... you will come to our website for this product where you can download the datasheet.



**Note**

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

**Proportional valves – request for quotation**

▶ 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**

<input type="checkbox"/> Medium	<input type="text"/>		
<input type="checkbox"/> State of medium	<input type="checkbox"/> liquid	<input type="checkbox"/> gaseous	<input type="checkbox"/> vaporous
Medium temperature	<input type="text"/>	°F	
<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"/>	PSIG	
<input type="checkbox"/> Outlet pressure at nominal operation	$p_2 =$ <input type="text"/>	PSIG	
Maximum inlet pressure	$p_{1max} =$ <input type="text"/>	PSIG	
Ambient temperature	<input type="text"/>	°F	

**Additional specifications**

<b>Body material</b>	<input type="checkbox"/> Brass	<input type="checkbox"/> Stainless steel
<b>Seal material</b>	<input type="checkbox"/> FKM	<input type="checkbox"/> other <input type="text"/>

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