

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



- Direct-acting, normally closed
- 0 - 0.7 bar<sup>1)</sup>
- DN 8 - 12 mm
- 1/2" or 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

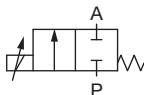


**Type 8611**

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

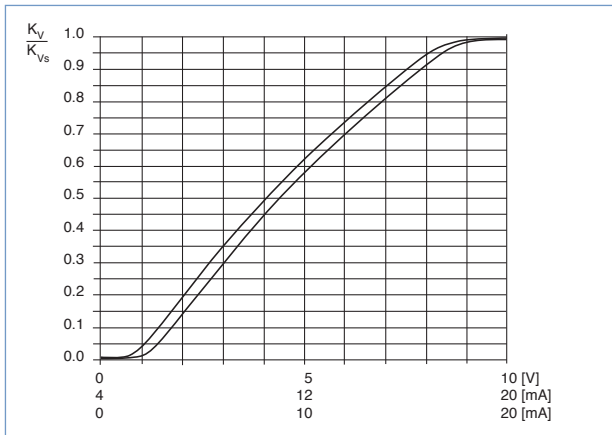
<b>Body material</b>	Brass, stainless steel
<b>Sealing material</b>	FKM, others on request
<b>Media</b> technical vacuum	Neutral gasses, liquids
<b>Medium temperature</b>	-10 to +90 °C
<b>Ambient temperature</b>	Max. +55 °C
<b>Viscosity</b>	Max. 21 mm <sup>2</sup> /s
<b>Operating voltage</b>	24 V DC
<b>Power consumption</b>	Max. 18 W
<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 Type 2508 (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
$k_{vs}$ value <sup>2)</sup>	1.4 to 2.8 m <sup>3</sup> /h
Max. operating pressure <sup>1)</sup>	0.1 to 0.7 bar (depending on DN)
<b>Protection class - valve</b>	IP65 with plug-in module or cable plug on valve

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

<sup>2)</sup>  $K_{vs}$  value [m<sup>3</sup>/h]: max. flow capacity for water

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

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

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

## Determination of the kv value

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

$k_v$  Flow coefficient [m<sup>3</sup>/h]<sup>1)</sup>  
 $Q_N$  Standard flow rate [m<sup>3</sup>/h]<sup>2)</sup>  
 $p_1$  Inlet pressure [bar]<sup>3)</sup>  
 $p_2$  Outlet pressure [bar]<sup>3)</sup>  
 $\Delta p$  Differential pressure  $p_1 - p_2$  [bar]  
 $\rho$  Density [kg/m<sup>3</sup>]  
 $p_N$  Standard density [kg/m<sup>3</sup>]  
 $T_1$  Temperature if fluid medium [(273+t)K]

<sup>1)</sup> measured for water,  $\Delta p = 1$  bar, via the device

<sup>2)</sup> Standard conditions at 1.013 bar<sup>3)</sup> and 0 °C (273K)

<sup>3)</sup> Absolute pressure

## Ordering chart for valves

Valve operation	Orifice [mm]	Port connection	$k_v$ value for water [m <sup>3</sup> /h] <sup>1)</sup>	$Q_N$ value [l/min] <sup>2)</sup>	Maximum operating pressure [bar] <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	1.4	1500	0.7	18	580	150 401	–
		G 3/4	1.4	1500	0.7	18	580	150 427	–
	10	G 1/2	2.0	2150	0.4	18	580	150 402	150 404
		G 3/4	2.0	2150	0.4	18	580	150 428	150 429
	12	G 1/2	2.8	3020	0.2	18	580	–	150 426
		G 3/4	2.8	3020	0.2	18	580	150 406	150 408

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

2)  $Q_N$  value: Flow rate value for air with inlet pressure of 6 bar<sup>1)</sup>, 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 accessories below).

Devices also suitable for technical vacuum.



### Further versions on request



#### Analytical

Oil and fat-free version

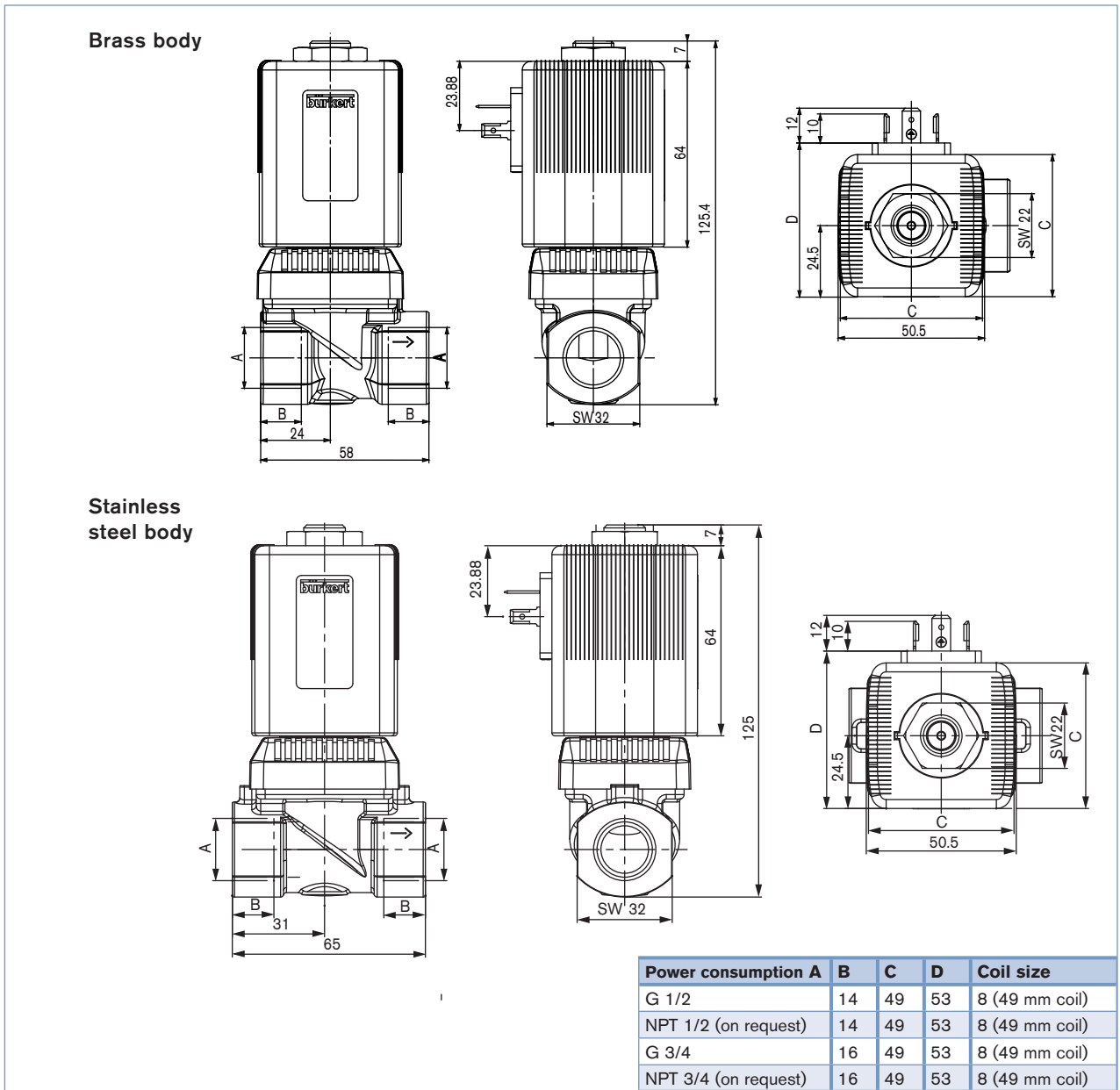


#### Port connection

NPT 1/2, NPT 3/4

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

## Dimensions [mm]



## 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	
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	
Maximum inlet pressure	$p_{1max} =$ <input type="text"/>	barg	
Ambient temperature	<input type="text"/>	°C	

**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 [barg].

\*To find your nearest Bürkert facility, click on the orange box → [www.burkert.com](http://www.burkert.com)

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

We reserve the right to make technical changes without notice.  
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