

## BUE: 3-way flanged valve, PN 16/10 (pn.)

### How energy efficiency is improved

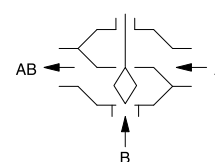
Efficient use in continuous control systems

### Features

- Continuous control of cold and hot water in closed circuits<sup>1)</sup>
- Water quality as per VDI 2035
- In combination with AVP 242 valve actuators as control unit
- Not suitable for drinking water
- Valve with flange connection as per EN 1092-2, seal form B, for PN 16 and PN 10
- Regulating valve, free of silicone grease, painted black
- The control passage is closed when the spindle is moved out
- Used as a control valve
- Valve body and seat made of grey cast iron
- Stainless-steel spindle
- Plug made of brass with glass-fibre reinforced PTFE sealing ring
- Stuffing box made of brass with wiper ring and double O-ring seal made of EPDM



BUE032F300



### Technical data

#### Parameters

Nominal pressure	PN 16/10
Connection	Flange as per EN 1092-2, form B
Valve characteristic, control passage F200	Linear
Valve characteristic, control passage F300	Equal-percentage
Valve characteristic, mixing passage	Linear
Control ratio of valve	> 50:1
Stuffing box	2 EPDM O-rings
Leakage rate of control passage	< 0.05% of $k_{VS}$ value
Leakage rate, mixing passage	< 1% of $k_{VS}$ value
Valve stroke	8 mm

#### Ambient conditions

Operating temperature <sup>2)</sup>	-10...150 °C
Operating pressure	PN 16: Up to 120 °C, 16 bar At 150 °C, 14.4 bar PN 10: Up to 120 °C, 10 bar At 150 °C, 9 bar Between 120 °C and 150 °C, a linear interpolation can be performed

#### Standards and directives

Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534 (page 3)
Pressure Equipment Directive	97/23/EC (fluid group II) No CE label, article 3.3

#### Overview of types

Type	Weight	$k_{VS}$ value	Nominal diameter
BUE015F330	3.2 kg	1 m <sup>3</sup> /h	DN 15
BUE015F320	3.2 kg	1.6 m <sup>3</sup> /h	DN 15
BUE015F310	3.2 kg	2.5 m <sup>3</sup> /h	DN 15
BUE015F300	3.2 kg	4 m <sup>3</sup> /h	DN 15
BUE020F300	4.1 kg	6.3 m <sup>3</sup> /h	DN 20

<sup>1)</sup> Air humidity must not exceed 75%

<sup>2)</sup> At temperatures below 0 °C, use a stuffing box heater. Use adaptor (accessory) at temperatures above 100 °C



Type	Weight	$k_{vs}$ value	Nominal diameter
BUE025F300	4.7 kg	10 m <sup>3</sup> /h	DN 25
BUE032F300	7.1 kg	16 m <sup>3</sup> /h	DN 32
BUE040F300	8.4 kg	22 m <sup>3</sup> /h	DN 40
BUE050F300	11.2 kg	28 m <sup>3</sup> /h	DN 50
BUE050F200	11.2 kg	40 m <sup>3</sup> /h	DN 50

#### Accessories

Type	Description
0372240001	Manual adjustment for valves with 8 mm stroke
0372249001	Adaptor required when temperature of the medium is 100...130 °C (recommended for temperatures < 10 °C) DN 15...50
0372249002	Adaptor required when temperature of the medium is >130 up to 150 °C, DN 15...50
0378284100	Stuffing box heater 230V~, 15 W for medium below 0 °C
0378284102	Stuffing box heater 24V~, 15 W for medium below 0 °C
0378368001	Complete replacement stuffing box for DN 15...50

#### Combination of BUE with pneumatic actuator

- i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*
- i** *Definition of  $\Delta p_s$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.*
- i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.*
- i** *The running time is based on the centair air flow rate (400 l<sub>r</sub>/h) and on a supply line with a length of 20 m and a diameter of 4 mm.*

#### Combination of BUE with pneumatic actuator AVP 242

Actuator	AVP242F001
Admissible pressure $p_{stat}$	≤ 6 bar
Running time	8 s
Stroke	8 mm

#### $\Delta p$ [bar]

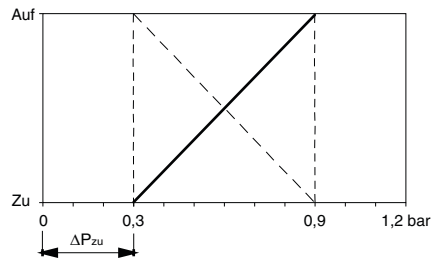
As control valve	$\Delta p_{max}$	$\Delta p_s$
BUE015F330 BUE015F320 BUE015F310 BUE015F300 BUE020F300	10.0	16.0
BUE025F300	10.0	12.0
BUE032F300	6.0	6.5
BUE040F300	4.0	4.0
BUE050F300 BUE050F200	2.5	2.5

Cannot be used as distribution valve

 At temperatures above 100°C, accessories are required

**Pressure-stroke characteristic (with valve attached), characteristic not adjustable:**

AVP242



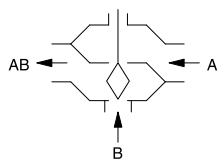
————— = normally closed (function E)

----- = normally open (function A)

Sequences possible with XSP31

**Description of operation**

The valve can be moved to any intermediate position with a pneumatic actuator. When the spindle is moved out, the control passage of the valve is closed. These valves may only be used as control valves. The flow direction marked on the valve must be observed. Use as a distribution valve is not permitted with pneumatic actuators, because this would cause pressure surges. The flow parameters correspond to EN 60534.

**Used as a control valve**

These control valves are characterised by their reliability and precision and make an important contribution towards environmentally friendly regulation. They meet challenges such as safety functions, overcoming differential pressures, controlling medium temperatures and performing the shut-off function, all in a low-noise form.

The valve spindle is automatically and firmly connected to the actuator spindle. The brass plug controls the equal-percentage flow rate in the control passage. The tightness of the valve is ensured by the seat incorporated in the body.

The stuffing box is maintenance-free. This consists of a brass body, two O-rings, a wiper ring and a grease reserve. This is free of silicone grease, and silicone oil may not be used for the spindle. The grease reserve stops particles that may be present in the medium from penetrating to the upper O-ring.

**Intended use**

This product is only suitable for the purpose intended by the manufacturer, as described in the "Description of operation" section.

All related product documents must also be adhered to. Changing or converting the product is not admissible.

**Engineering and fitting notes**

The actuator is mounted directly on the valve and fastened with screws. The actuator is connected with the valve spindle automatically. The closing point must be adjusted as described in the fitting instructions (MV 506012 AVP 242).

**Additional technical data**

Technical information	
Pressure and temperature data	EN 764, EN 1333
Fluidic parameters	VDI/DE 2173
SAUTER slide rule for valve sizing	P100013496
Parameters, fitting notes, control, general information	Applicable EN, DIN, AD, TRD and UVV regulations

**Fitting instructions:**

Technical information	
DN 15...50	MV 506008
AVP 242 F001	MV 506041
Declaration on materials and the environment	MD 76.116

### Fitting position

The control unit can be fitted in any position, but the hanging position is not recommended. Condensate, drops of water, etc. must be prevented from entering the actuator. When installed horizontally, without any structural support for the actuator, the maximum weight on the valve is 25 kg.

When the actuator is mounted on the valve, make sure that the plug is not twisted on the seat (this may damage the sealing surface). When insulating the valve, it may only be insulated up to the connecting clip of the actuator.

### Using with steam

The valves can be used for low-pressure steam up to 115 °C with the same  $\Delta p_{\max}$  values. When used as a regulating valve, make sure that the valve does not operate mainly on the lower third of its stroke range. This leads to an extremely high flow speed, which greatly reduces the serviceable life of the valve.

### Using with water

So that impurities are retained in the water (welding beads, rust particles, etc.) and the plug seal is not damaged, we recommend installing collecting filters, for example one for each floor or pipe run. Water requirements according to VDI 2035.

When using an additive in the water, the compatibility of the materials must be checked with the manufacturer of the medium. The materials table shown below may be used. When glycol is used, we recommend using a concentration of between 20% and 55%.

### Other information regarding hydraulics and noise in systems

The valves can be used in a low-noise environment. To prevent noise, the pressure differences  $\Delta p_{\max}$  listed below should not be exceeded.

The pressure difference  $\Delta p_v$  is the maximum pressure that may act on the valve regardless of the stroke position, in order that the risk of cavitation and erosion is limited. These values are irrespective of the actuator force. The cavitation accelerates wear on the plug and seat in the valve and causes noises. To prevent cavitation, the differential pressure should not exceed the value  $\Delta p_{\text{krit}}$ :

$$\Delta p_{\text{krit}} = (p_1 - p_v) \times 0.5$$

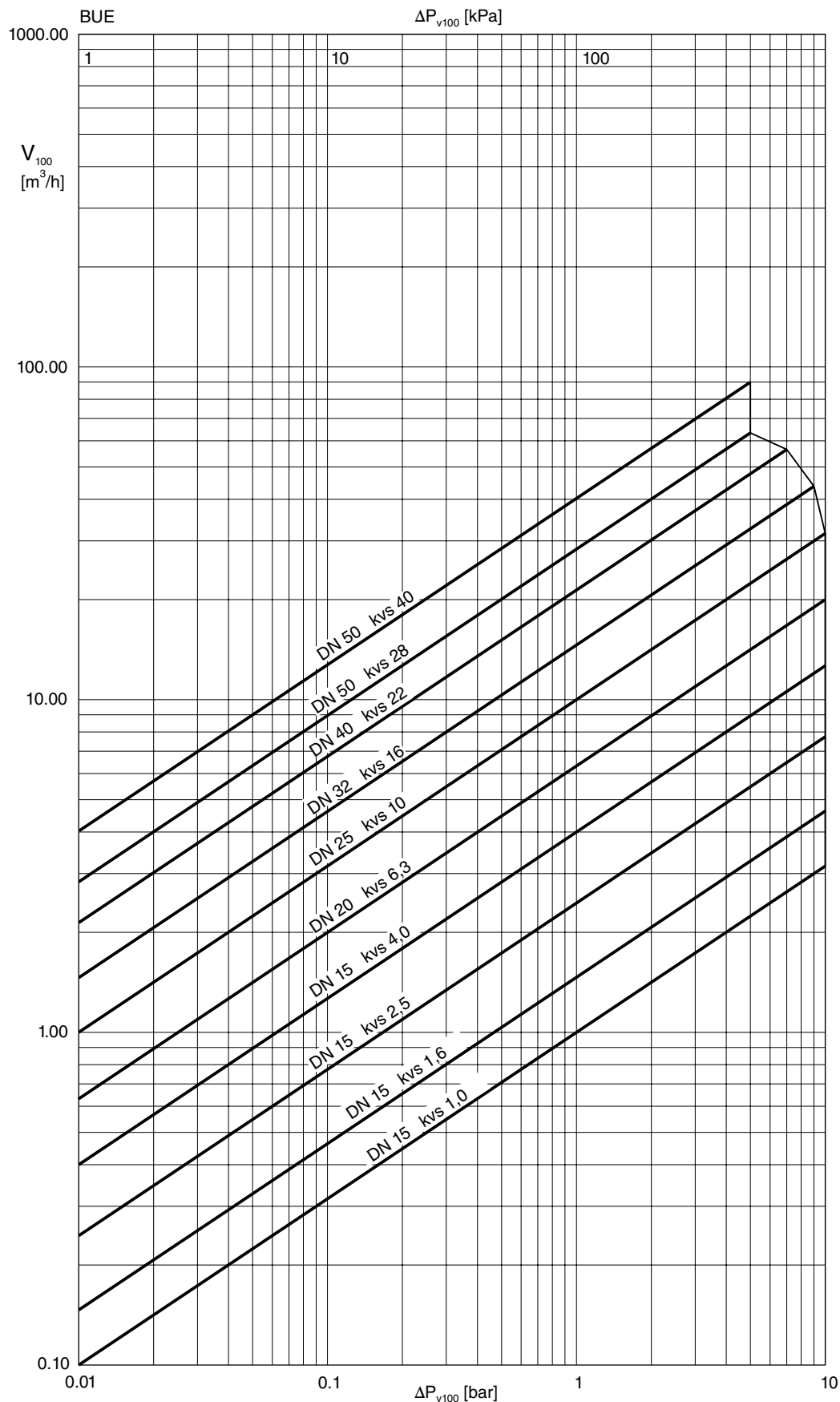
$p_1$  = upstream pressure before the valve (bar)

$p_v$  = steam pressure at operating temperature (bar)

The calculation works with absolute pressure.

Note that when the pressure difference  $\Delta p_{\max}$  is exceeded, the valve can be damaged by cavitation and erosion. For the spring return, the stated  $\Delta p_s$  values are also the permissible differential pressure up to which the actuator can guarantee that the valve is closed in the event of an incident. Because this is an emergency function with a fast stroke movement (using a spring), this value can exceed  $\Delta p_{\max}$ .

Flow-rate chart



1: Control valve

Type	$\Delta p_v$
	<b>Used as a control valve</b>
BUE015	10
BUE020	10
BUE025	10
BUE032	9
BUE040	7
BUE050	5

#### Additional version information

Valve body made of grey cast iron as per EN 1561, code EN-GJL-250, material number EN-JL 1040 with smooth drilled flanges as per EN 1092-2, seal form B. Valve body protected by matt paint RAL 9005 jet black. Recommended for the welding flange as per EN 1092-1. Valve fitting length as per EN 558-1, basic series 1. Flat seal on valve body made of asbestos-free material.

#### Material numbers as per DIN

	DIN material no.	DIN designation
Valve body	EN-JL 1040	EN-GJL-250 (GG25)
Valve seat	EN-JL 1040	EN-GJL-250
Spindle	1.4305	X8CrNiS18-9
Plug	CW617W	CuZn40Pb2
Plug seal	PTFE	
Stuffing box	CW617W	CuZn40Pb2

#### Additional details on the definitions of pressure difference

##### $\Delta p_v$ :

Maximum admissible pressure difference over the valve in each stroke position, limited by noise level and erosion.

This parameter characterises the valve as a flow element with specific hydraulic behaviour. Monitoring the cavitation and erosion along with the associated noise increases the service life and the operational capacity.

##### $\Delta p_{max}$ :

Maximum admissible pressure difference over the valve at which the actuator can reliably open and close the valve.

This takes account of: Static pressure and flow effects. This value ensures trouble-free stroke movement and closing of the valve. The value  $\Delta p_v$  of the valve is never exceeded.

##### $\Delta p_s$ :

Maximum admissible pressure difference over the valve in the event of a malfunction (e.g. power failure, excessive temperature or pressure, pipe break) at which the actuator can close the valve tightly and, if necessary, maintain the entire operating pressure against atmospheric pressure. Because this is a quick-closing function with a rapid stroke movement,  $\Delta p_s$  can be greater than  $\Delta p_{max}$  or  $\Delta p_v$ . The disruptive flow effects that arise here are quickly passed through and are of minor importance in this mode.

For 3-way valves, the values only apply to the control passage.

##### $\Delta p_{stat}$ :

Line pressure behind the valve. This essentially corresponds to the dormant pressure when the pump is switched off, for example caused by the fluid level in the system, increased pressure due to pressure tanks, steam pressure, etc.

On valves that close under pressure, the static pressure plus the pump pressure must be used.

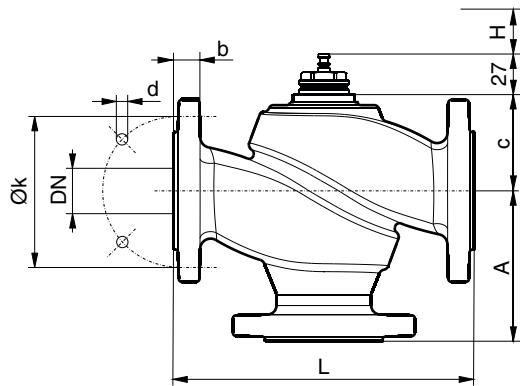
#### Disposal

When disposing of the product, observe the currently applicable local laws.

More information on materials can be found in the Declaration on materials and the environment for this product.

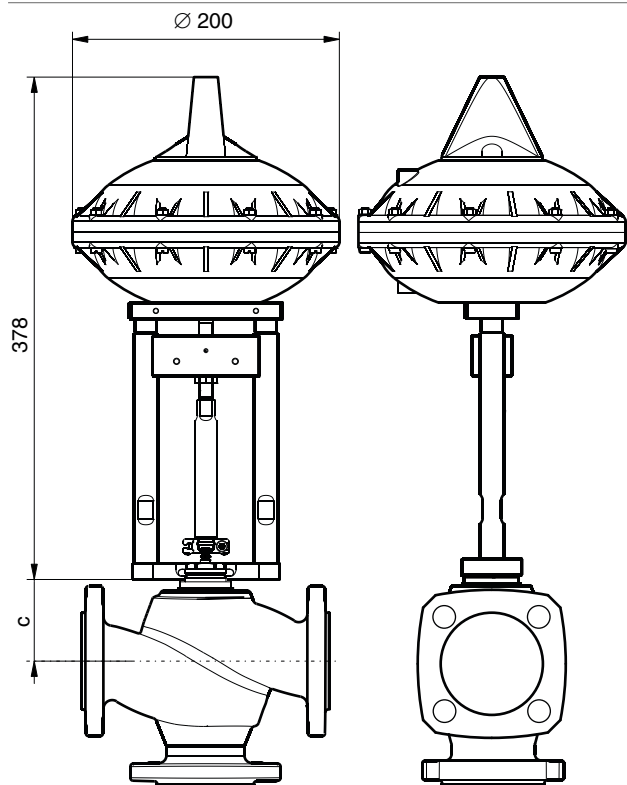
Dimension drawings

DN 15...50



VUE, BUE	DN	A	c	L	H	k	d	b
015	15	70	41,5	130	8	65	14 x 4	14
020	20	75	48	150	8	75	14 x 4	16
025	25	80	54,5	160	8	85	14 x 4	16
032	32	95	60,5	180	8	100	19 x 4	18
040	40	100	70,5	200	8	110	19 x 4	18
050	50	115	71	230	8	125	19 x 4	20

AVP242F001



**Accessories**

