



SERIES 02

## Three-port slipper valves PN10, female-threaded

VBI31..

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Three-port slipper valves, PN10, female-threaded

- Grey cast iron EN-GJL-250
- DN 20...40
- $k_{vs}$  6.3...25 m<sup>3</sup>/h
- Angle of rotation 90°
- Female-threaded connections, Rp  $\frac{3}{4}$  ... Rp 1 $\frac{1}{2}$
- With manual adjuster
- Can be fitted with type SQK.., SQL.. or SAL..T10 (with ASK32N) electromotoric actuators
- No maintenance required

### Application

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For use in closed-circuit heating systems, preferably in mixing applications.

## Types

Type	Connection [Inch]	DN	k <sub>vs</sub> [m <sup>3</sup> /h]	with actuators SQK.. <sup>1)</sup> , SQL.. <sup>1)</sup> , SAL..T10 Δp <sub>max</sub> [kPa]
				30
VBI31.20	Rp ¾	20	6.3	30
VBI31.25	Rp 1	25	10	
VBI31.32	Rp 1¼	32	16	
VBI31.40	Rp 1½	40	25	


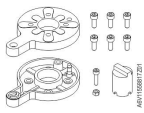
DN = Nominal size

k<sub>vs</sub> = Nominal flow rate of cold water (5...30 °C) through the fully open slipper valve by a differential pressure of 100 kPa (1 bar)

Δp<sub>max</sub> = Maximum permissible differential pressure across the slipper valve's control path, valid for the entire actuating range of the motorised slipper valve

<sup>1)</sup> from 2019: only while stock lasts

## Accessories

Type	Description
<b>ASK32</b> <sup>1)</sup> 	The ASK32 mounting kit consists of a console and screw(s). For VBG31... Series 02. Mounting instructions are enclosed with the kit.
<b>ASK32N</b> 	The ASK32N mounting kit consists of two mounting set parts, screws and adapter including fixing screw. For VBF21..., DN40...50 Series 01. Mounting instructions are enclosed with the kit.

<sup>1)</sup> from 2019: only while stock lasts

## Ordering

The slipper valve, actuator and mounting kit, if required, must be ordered separately. When ordering, please specify the quantity, product name and type code.

Example: **1 3-port slipper valve type VBI31.25**  
**1 actuator type SAL31.00T10** and  
**1 mounting kit, type ASK32N**

## Delivery

The slipper valve, actuator and mounting kit are packed separately.

## Spare parts

See overview, section „Spare parts“, page 6

## Equipment combinations

Type	Actuators			SAL..T10
	SQK34.. <sup>1)</sup> , SQK84.. <sup>1)</sup>	SQK33.00 <sup>1)</sup>	SQL33.. <sup>1)</sup> , SQL83.. <sup>1)</sup>	
VBI31.20	direct mounting	ASK32 <sup>1)</sup>	ASK32 <sup>1)</sup>	ASK32N
VBI31.25				
VBI31.32				
VBI31.40				

## Actuator overview

Type	Actuator type	Operating voltage	Positioning signal	Positioning time for 90°	Torque	Data-sheet
SQK33.00 <sup>1) 2)</sup>	electro-motoric	AC 230 V	3-position	125 s	5 Nm	N4506
SQL33.00 <sup>1) 4)</sup>					12,5 Nm	
SQL33.03 <sup>1) 4)</sup>				30 s	10 Nm	
SQK34.00 <sup>1) 3)</sup>				135 s	5 Nm	N4508
SAL31.00T10 <sup>5)</sup>				120 s		
SAL31.03T10 <sup>5)</sup>				30 s		
SAL61.00T10 <sup>5)</sup>		AC/DC 24 V	DC 0...10 V	120 s	10 Nm	N4502
SAL61.03T10 <sup>5)</sup>				30 s		
SAL81.00T10 <sup>5)</sup>				120 s		
SAL81.03T10 <sup>5)</sup>				30 s		
SQL83.00 <sup>1) 4)</sup>		AC 24 V	3-position	125 s	12,5 Nm	N4506
SQK84.00 <sup>1) 3)</sup>				135 s	5 Nm	N4508

<sup>1)</sup> from 2019: only while stock lasts

SQK33.00      SQL33.00      ASC9.4      ASZ7.4

SQK34.00      SQL33.03      ASC9.5

SQK84.00      SQL83.00      ASC9.7

<sup>2)</sup> Can be fitted with 1 auxiliary switch, type ASC9.5

<sup>3)</sup> Can be fitted with 1 auxiliary switch, type ASC9.7

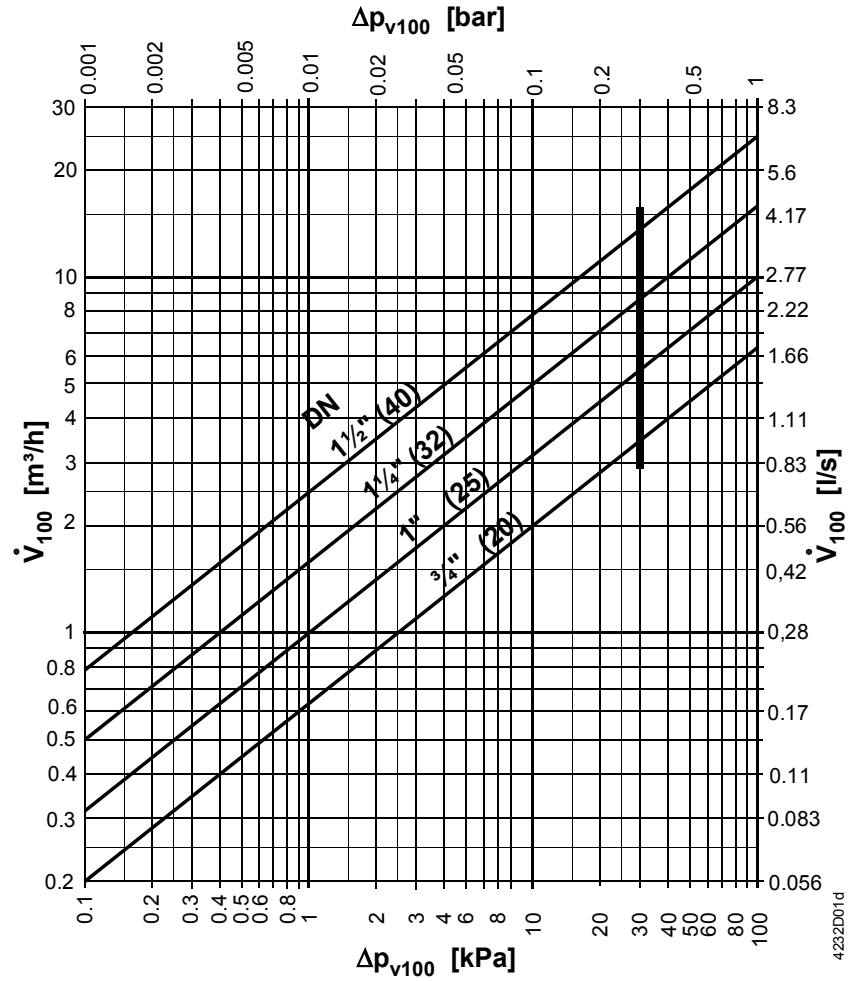
<sup>4)</sup> Can be fitted with 1 auxiliary switch type ASC9.5, or 1 double auxiliary switch, ASC9.4 or 1 potentiometer and 1 auxiliary switch type ASZ7.4.

<sup>5)</sup> Can be fitted with 1 auxiliary switch type ASC10.51 or 2 auxiliary switches ASC10.51 or 1 potentiometer ASZ7.5/.. and 1 auxiliary switch ASC10.51

## Technical design / mechanical design

Application      Boiler flow from the right or left. The manual adjuster, scale plate and slipper valve can be re-positioned to suit the application

Flow diagram



- $\Delta p_{max}$  = Maximum permissible differential pressure across the slipper valve's control path, valid for the entire actuating range of the motorised slipper valve
- $\Delta p_{v100}$  = Differential pressure across the fully open slipper valve by a volume flow  $V_{100}$
- $\dot{V}_{100}$  = Volumetric flow through the fully open slipper valve
- 100 kPa = 1 bar  $\approx$  10 mWC
- 1 m<sup>3</sup>/h = 0.278 l/s water at 20 °C

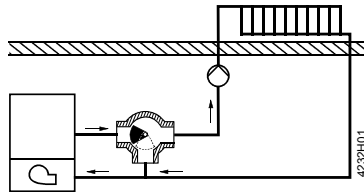
**Notes**

**Engineering**

The VBI31.. slipper valve should preferably be used in mixing applications. In systems where oxygen can enter the hydraulic system, there is an increased risk of corrosion which can cause the slipper valve to seize.

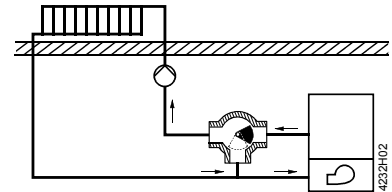
**Mounting variants**

*Boiler flow from left*



Factory setting

*Boiler flow from right*



Re-position the valve slipper, scale plate and manual adjuster, as described in the mounting instructions for VB... slipper valves.

**Mounting**

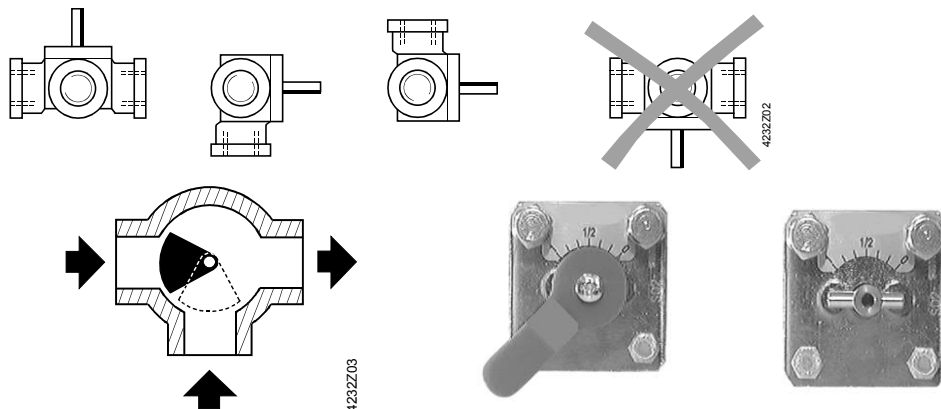
The slipper valves are easy to assemble directly on site. The slipper valve, actuator and ASK32 mounting kit (if needed) are packed separately.

Accessory	Mounting instruction	
ASK32 <sup>1)</sup>	M4290.2	4 319 5597 0
ASK32N	A6V11558817	A5W00057302

<sup>1)</sup> from 2019: only while stock lasts

Two special screws are provided in the housing cover to fix the ASK32 mounting kit and the scale plate for position indication.

**Orientation**



**Factory setting**

Slipper positioned for "boiler flow from left".

- Anti-clockwise rotation: opening
- Clockwise rotation: closing.

**Manual adjuster** with scale plate, position indicator and yellow colour marking for position of slipper

Position indicator at "0" = boiler flow path fully closed.

**Commissioning**

When commissioning the slipper valve, ensure that the position and rotation of the valve slipper are appropriate for the system concerned (see "Engineering").

The position of the valve slipper is indicated by:

- the manual adjuster and scale plate
- the yellow colour marking on the pin in the slipper valve shaft

## Maintenance

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### **Warning**

Before performing any service work on the slipper valve, actuator or mounting kit:

- switch OFF the pump and power supply
- close the main shut-off valve in the pipework
- release pressure in the pipes and allow them to cool down completely.
- If necessary, disconnect electrical connections from terminals.

The slipper valve can be commissioned with the manual adjuster fitted, or with a correctly fitted actuator.

### **Disposal**

Do not dispose of the device as household waste.

- Special handling of individual components may be mandated by law or make ecological sense.
- Observe all local and currently applicable laws and regulations.

## Warranty

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The technical data given for these applications is valid only in conjunction with the Siemens actuators as detailed under «Equipment combinations».

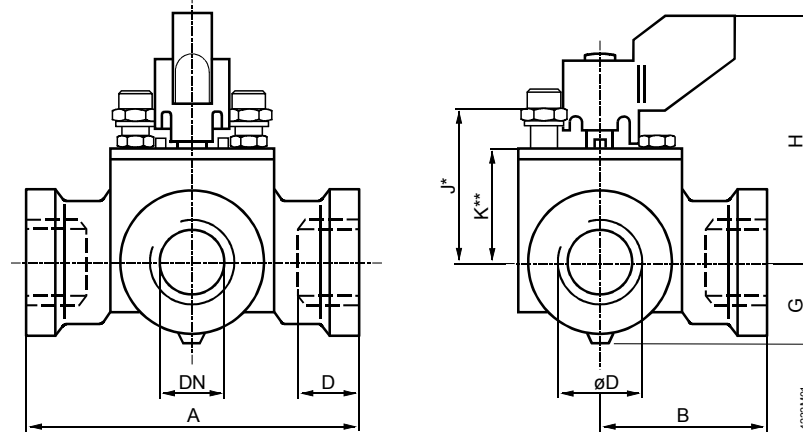
All terms of the warranty will be invalidated by the use of actuators from other manufacturers.

## Technical data

Functional data	PN class	PN 10 to ISO 7268	
	Working pressure	max. 1000 kPa (10 bar) to ISO 7005 within the permissible medium temperature range	
	Flow characteristic	through-port	linear
		bypass	linear
	Leakage rate	0...0,1 % of $k_{vs}$ -value	
	Permissible media	low temperature hot water, water with max 50 % vol. anti-freeze; Recommendation: water treatment to VDI 2035	
	Medium temperature	1...120 °C	
	Angle of rotation	90°	
Materials	Slipper valve body	Grey cast iron EN-GJL-250	
	Shaft	stainless steel	
	Slipper	Brass	
	O-rings	EPDM	
	Manual adjuster	Plastic	
	Scale plate for position indication	Aluminum	
Dimensions / weight	see «Dimensions»		
Standards, directives and approvals	Threaded connections	Rp... to ISO7-1	
	EAC conformity	Eurasia conformity	
	Pressure Equipment Directive	PED 2014/68/EU	
	Pressure Accessories	Scope: Article 1, section 1	
		Definitions: Article 2, section 5	
	Fluid group 2:	DN 20...40	without CE-marking as per article 4, section 3 (sound engineering practice) <sup>1)</sup>
	Environmental compatibility	The product environmental declaration CE1E4232en <sup>2)</sup> contains data on RoHS compliance, materials composition, packaging, environmental benefit, disposal	
	<sup>1)</sup> Valves where PS x DN < 1000, do not require special testing and cannot carry the CE label.		
<sup>2)</sup> The documents can be downloaded from <a href="http://siemens.com/bt/download">http://siemens.com/bt/download</a> .			

**Dimensions**

All dimensions in mm




Type	DN	ø D [Inch]	A	B	D	G	H	J*	K**	Weight [kg]
VBI31.20	20	Rp ¾	110	55	14.5	24.5	74	46	34	1.4
VBI31.25	25	Rp 1			17					
VBI31.32	32	Rp 1¼	130	65	19	42.5	81.5	53.5	41.5	2.1
VBI31.40	40	Rp 1½								2.3

- DN = Nominal size
- ø D = Rp... threaded connections for pipes to ISO 7-1
- J\* = Installation height of actuators SQK34.00 or SQK84.00 without mounting kit
- K\*\* = Installation height of actuators SQK33.00, SQL33.0... or SQL83.00 with mounting kit ASK32 of actuators SAL..T10 with mounting kit ASK32N

- Overall height of slipper valve and actuator = Installation height of three-port slipper valve
- + Installation height of mounting kit, if used (ASK32 = 50 mm; ASK32N = 50 mm)
- + Installation height of actuator
- + Minimum clearance (>200 mm) from ceiling or wall for mounting, connection, operation, service etc.

**Spare parts**

Order number for spare parts

	manual adjuster
	
<b>3-port slipper valve</b>	
VBI31.20	7467601750
VBI31.25	
VBI31.32	
VBI31.40	

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