



Series 02: DN40 and DN50



Series 01: DN 65...150

## Three-port slipper valves PN6

## VBF21..

### Three-port slipper valves, PN6, flanged

- Grey cast iron EN-GJL-250
- DN 40...150
- $k_{vs}$  25...820 m<sup>3</sup>/h
- Angle of rotation 90°
- Flange fittings to ISO 7005
- Manual adjuster for DN40 and DN50 slipper valves
- Can be fitted with type SQK.. or SAL..T10 electromotoric actuators
- No maintenance required

### Use

For use in closed-circuit heating systems and mixing applications.

## Type summary

Type	DN	k <sub>vs</sub> [m³/h]	SQK.. <sup>2)</sup> Δp <sub>max</sub> [kPa]	SAL..T10
VBF21.40 <sup>1)</sup>	40	25	30	30
VBF21.50 <sup>1)</sup>	50	40		
VBF21.65	65	63		
VBF21.80	80	100		
VBF21.100	100	160		
VBF21.125	125	550		
VBF21.150	150	820		

DN = Nominal size



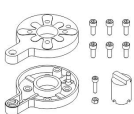
$k_{vs}$  = Nominal flow rate of cold water (5...30 °C) through the fully open slipper valve by a differential pressure of 100 kPa (1 bar)

$\Delta p_{max}$  = Maximum permissible differential pressure across the slipper valve's control path, valid for the entire actuating range of the motorized slipper valve

<sup>1)</sup> Series with manual adjuster

<sup>2)</sup> from 2019: only while stock lasts

## Accessories

Type	Description
<b>ASK31N</b> 	The ASK31N mounting kit consists of two mounting set parts, screws, adapter including fixing screw and adapter. For VPF21..., DN65...150 Series 01. Mounting instructions are enclosed with the kit.
<b>ASK32</b> <sup>2)</sup> 	The ASK32 mounting kit consists of a console and screw(s). For VPF21..., DN40...50 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 VPF21..., DN40...50 Series 01. Mounting instructions are enclosed with the kit.

<sup>2)</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 VPF21.65**  
**1 actuator type SAL31.00T10** and  
**1 mounting kit, type ASK31N**

## Delivery

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

## Spare parts

See overview, section „Spare parts“, page 7

## Equipment combinations

Type	Actuators SQK34... <sup>1)</sup> , SQK84... <sup>1)</sup>	SQK33... <sup>1)</sup>	SAL..T10
<b>VPF21.40</b>	direct mounting	ASK32 <sup>1)</sup>	ASK32N
<b>VPF21.50</b>			
<b>VPF21.65</b>			ASK31N
<b>VPF21.80</b>			
<b>VPF21.100</b>			
<b>VPF21.125</b>			
<b>VPF21.150</b>			

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

Type	Actuator type	Operating voltage	Positioning signal	Positioning time for 90°	Torque	Data sheet
<b>SQK33.00</b> <sup>1) 2)</sup>	Electro-motoric	AC 230 V	3-position	125 s	5 Nm	N4506
<b>SQK34.00</b> <sup>1) 3) 5)</sup>				135 s		N4508
<b>SAL31.00T10</b> <sup>4)</sup>				120 s	10 Nm	N4502
<b>SAL31.03T10</b> <sup>4)</sup>		AC / DC24 V	DC 0..10 V	30 s		
<b>SAL61.00T10</b> <sup>4)</sup>				120 s		
<b>SAL61.03T10</b> <sup>4)</sup>				30 s		
<b>SAL81.00T10</b> <sup>4)</sup>			3-position	120 s		
<b>SAL81.03T10</b> <sup>4)</sup>				30 s		
<b>SQK84.00</b> <sup>1) 3) 5)</sup>		AC 24 V		135 s	5 Nm	N4508

<sup>1)</sup> ab 2019: nur solange Vorrat

SQK33.00 ASC9.5

SQK34.00 ASC9.7

SQK84.00

<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 ASC10.51 or 2 auxiliary switches, type ASC10.51 or 1 potentiometer ASZ7.5/.. and 1 auxiliary switch, type ASC10.51

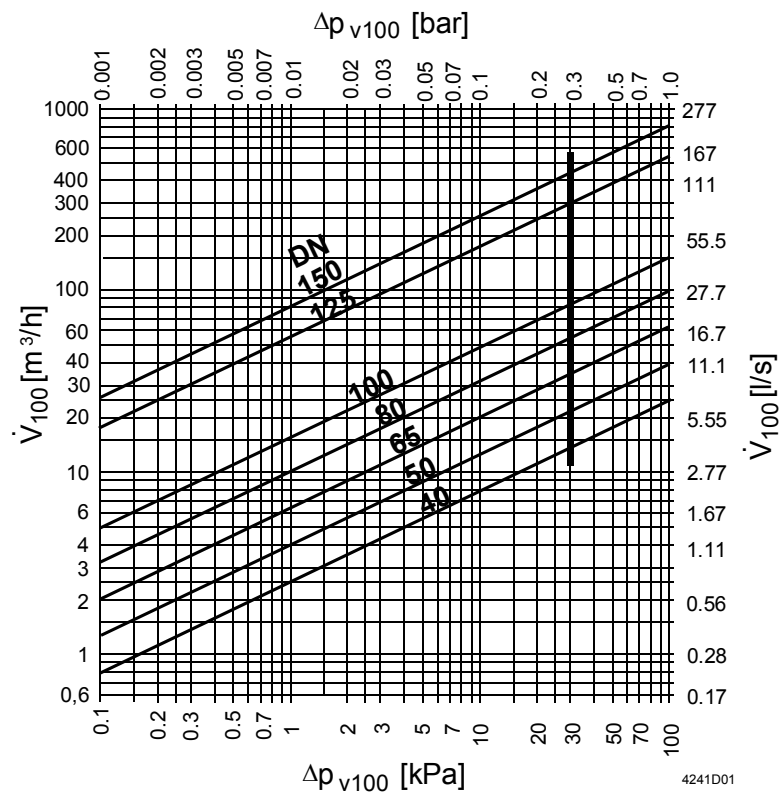
<sup>5)</sup> For direct mounting on slipper valve types VBF21.40 and VBF21.50 (without mounting kit)

## Technical design / mechanical design

**Application** Boiler flow from the right or left. The manual adjuster (DN 40 and DN 50), scale plate and valve slipper can be re-positioned to suit the application

## Sizing

### Flow diagram



$\Delta p_{\max}$  = Maximum permissible differential pressure across the slipper valve's control path, valid for the entire actuating range of the motorized 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

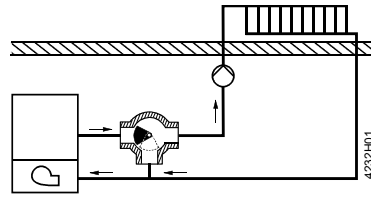
## Engineering

Use the VBF21.. in mixing applications.

In systems where oxygen can enter the hydraulic system, there is an increased risk of corrosion which can cause the valve slipper to seize.

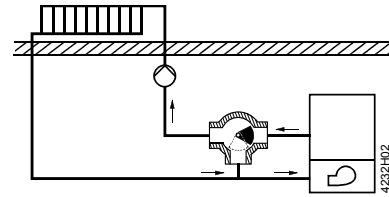
## Mounting variants

### Boiler flow from left



Factory setting

### Boiler flow from right



Re-position the valve slipper, scale plate and manual adjuster (DN 40 and DN 50), as described in the mounting instructions.

## Mounting

The slipper valves are easy to assemble directly on site.

The slipper valve, actuator and mounting kit (with mounting instruction) are packed separately.

Mounting instructions for O-Ring replacement: M4241

Accessory	Mounting instruction	
<b>ASK31N</b>	M4502.1	74 319 0739 0
<b>ASK32</b> <sup>1)</sup>	M4290.2	4 319 5597 0
<b>ASK32N</b>	A6V11558817	A5W00057302

<sup>1)</sup> ab 2019: nur solange Vorrat

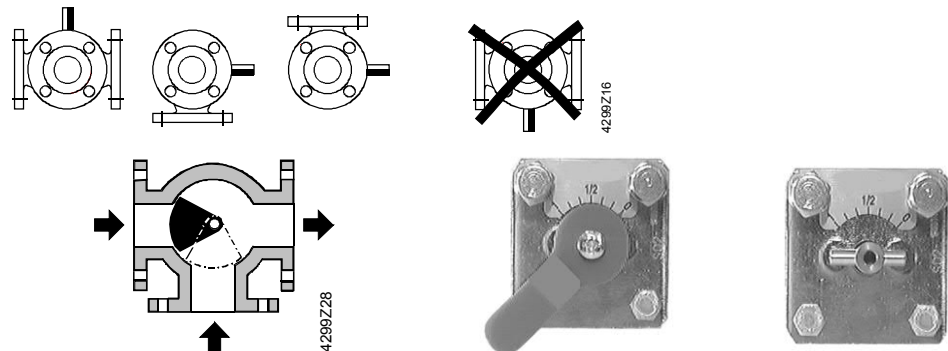
## DN 40 and DN 50

Two special screws are provided in the housing cover to fix the ASK32 mounting kit and the scale plate for position indication. The ASK32N kit contain all the components required for assembly.

## DN 65...150

The ASK31N kit contain all the components required for assembly.

## Orientation



### Factory setting

Slipper positioned for "boiler flow from left".

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

### Manual adjuster for DN40 / DN50 with scale plate

position indicator and yellow color 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 as follows:

- DN 40 and DN 50 slipper valves: by the manual adjuster and scale plate and by the yellow color marking on the pin in the slipper valve shaft
- DN 65...150 slipper valves: by a red plastic marker (part of the mounting kit) which is fitted to the slipper valve shaft.

## Maintenance

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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

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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 6 to ISO 7268
	Working pressure		max. 600 kPa (6 bar) to ISO 7005 within the permissible medium temperature range
	Flow characteristic	through-port	linear
		bypass	linear
	Leakage rate	DN 40...100	0 ... 0,1 % of $k_{vs}$ -value
		DN 125...150	0 ... 0,5 % of $k_{vs}$ – value
	Permissible media		low temperature hot water, water with anti-freeze; Recommendation: water treatment to VDI 2035
	Medium temperature		1...120 °C
Standards, directives and approvals	Angle of rotation		90°
	Pressure Equipment Directive		PED 2014/68/EU
	Pressure-carrying accessories		Scope: Article 1, section 1 Definitions: Article 2, section 5
	Fluid group 2	DN 40...125	Without CE certification as per article 4, section 3 (sound engineering practice) <sup>1)</sup>
		DN 150	Category I, Modul A, with CE-marking as per article 14, section 2
	EU conformity (CE)	DN 150	A5W00006521 <sup>2)</sup>
Environmental compatibility	EAC Conformity		Eurasia Conformity
	The product environmental declarations CE1E4241en <sup>2)</sup> contains data on Environmentally compatible product design and assessments (RoHS compliance, Materials composition, packaging, environmental benefit, disposal).		
Materials	Slipper valve body		Grey cast iron EN-GJL-250
	Shaft		stainless steel
	Slipper	DN 40...100	brass
		DN 125...150	bronze
	O-rings		EPDM
	Manual adjuster		Plastic
Dimensions / weight	Scale plate for position indication		Aluminum
	see «Dimensions»		
	Flange connections		to ISO 7005

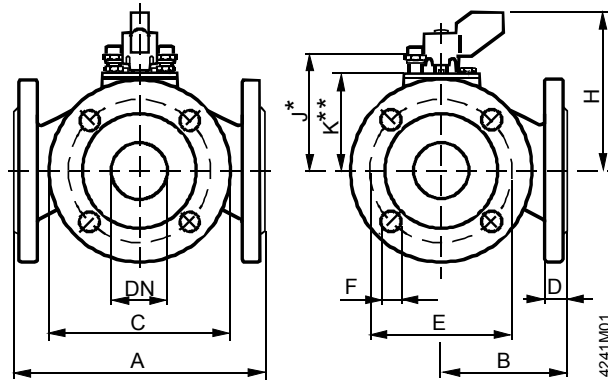
<sup>1)</sup> Valves where  $PS \times DN < 1000$ , do not require special testing and cannot carry the CE label.

<sup>2)</sup> The documents can be downloaded from <http://siemens.com/bt/download>

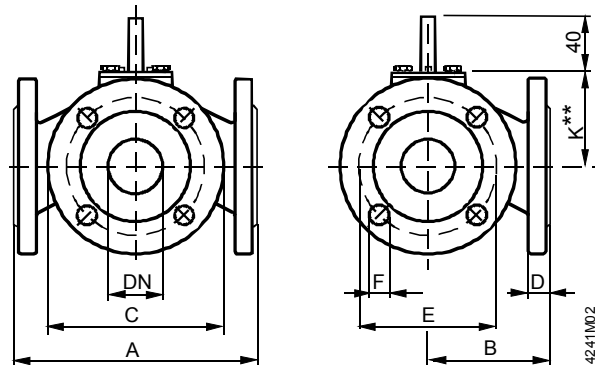
## Dimensions

All dimensions in mm

### VPF21.40 / VPF21.50 (with manual adjuster)



### VPF21.65 .. VPF21.150 (without manual adjuster)



Type	DN	A	B	C	D	E	F	H	J *	K **			Weight [kg]
										ASK32	ASK31N	ASK32N	
VPF21.40	40	180	90	130	16	100	14 (4x)	96	68	56		56	6.0
VPF21.50	50	180	90	140	16	110	14 (4x)	103	75	63		63	6.5
VPF21.65	65	200	100	160	16	130	14 (4x)				43		9.5
VPF21.80	80	230	115	190	18	150	19 (4x)				52		14.5
VPF21.100	100	260	130	210	18	170	19 (4x)				68		18.3
VPF21.125	125	320	160	240	20	200	19 (8x)				129		36.0
VPF21.150	150	350	175	265	20	225	19 (8x)				144		45.3

DN = Nominal size

J\* = Installation height for actuators SQK34.00 or SQK84 (without mounting kit)

K\*\* = Installation height for type SQK33.00 actuators with mounting kit ASK32, and SAL..T10 with mounting kit ASK31N or ASK32N

Overall height of slipper valve and actuator

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

### Order numbers for spare parts

	<b>manual adjuster</b>
	
<b>3-port slipper valve</b>	
<b>VBF21.40</b>	
<b>VBF21.50</b>	7467601750
<b>VBF21.65</b>	
<b>VBF21.80</b>	
<b>VBF21.100</b>	
<b>VBF21.125</b>	
<b>VBF21.150</b>	

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