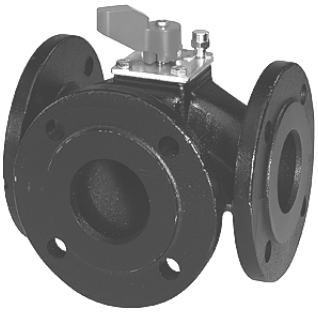


Series 02: DN40 and DN50

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^3/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 SQL… electromotoric actuators**
- **No maintenance required**

Use

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

Type summary

Type	DN	k_{vs} [m^3/h]	with actuator SQK... Δp_{max} [kPa]	with actuator SQL... Δp_{max} [kPa]
VBF21.40 *	40	25	30	30
VBF21.50 *	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)
Δp_{max} = Maximum permissible differential pressure across the slipper valve's control path, valid for the entire actuating range of the motorised slipper valve

* Series with manual adjuster

Accessories

Type	Description
ASK31 	The ASK31 mounting kit consists of a console with screws, a connector unit and a position indicator. For VBF21…, DN65…150 Series 01. Mounting instructions are enclosed with the kit.
ASK32 	The ASK32 mounting kit consists of a console and screw(s). For VBF21…, DN40…50 Series 02. Mounting instructions are enclosed with the kit.

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 VBF21.65
1 actuator type SQL33.00 and
1 mounting kit, type ASK31

Delivery

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

Spare parts

See overview, section „Spare parts“, page 6

Equipment combinations

Type	Actuators SQK34…, SQK84…	SQK33…	SQL33…, SQL83…
VBF21.40	direct mounting	ASK32	ASK32
VBF21.50			
VBF21.65			ASK31
VBF21.80			
VBF21.100			
VBF21.125			
VBF21.150			

Actuator overview

Type	Actuator type	Operating voltage	Positioning signal	Positioning time for 90°	Torque	Data-sheet
SQK33.00 [1]	electro-motoric	AC 230 V	3-position	125 s	5 Nm	N4506
SQL33.00 [3]					12,5 Nm	
SQL33.03 [3]				30 s	10 Nm	
SQK34.00 [2] [4]				135 s	5 Nm	N4508
SQL83.00 [3]		AC 24 V		125 s	12,5 Nm	N4506
SQK84.00 [2] [4]				135 s	5 Nm	N4508

[1] Can be fitted with 1 auxiliary switch, type ASC9.5
[2] Can be fitted with 1 auxiliary switch, type ASC9.7
[3] 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.
[4] For direct mounting on slipper valve types VBF21.40 and VBF21.50 (without mounting kit)

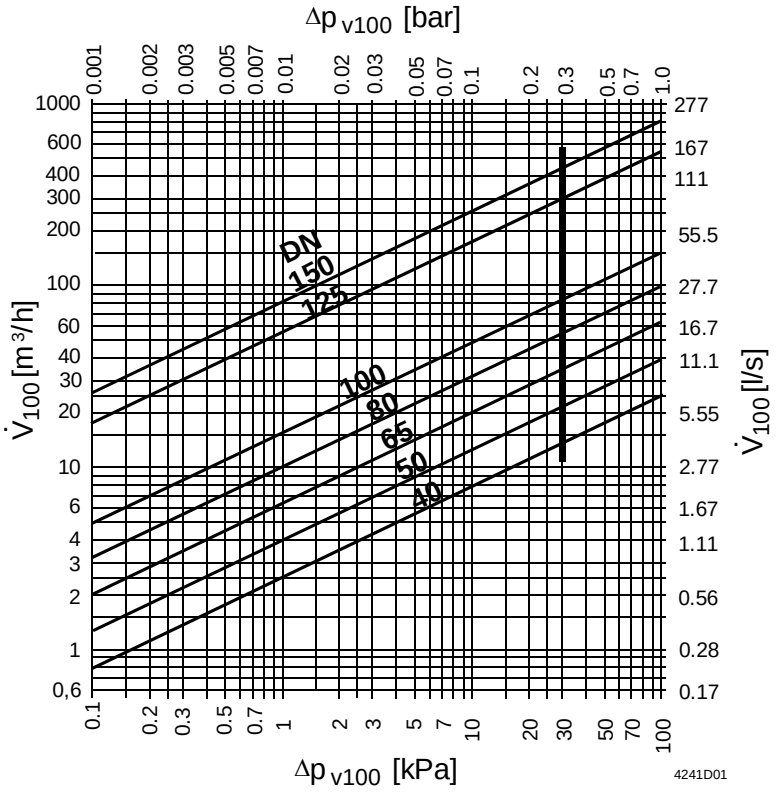
Technical design / mechanical design

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



Δp_{max} = Maximum permissible differential pressure across the slipper valve's control path, valid for the entire actuating range of the motorised slipper valve

Δp_{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 ≈ 10 mWC

1 m^3/h = 0.278 l/s water at 20 °C

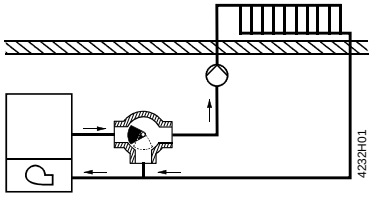
Notes

Engineering

The VBF21… 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 valve slipper to seize.

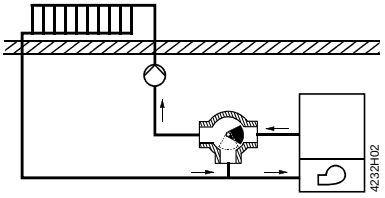
Mounting variants

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.

Accessory	Mounting instruction	
ASK31	M4290.1	4 319 5596 0

Accessory	Mounting instruction	
ASK32	M4290.2	4 319 5597 0

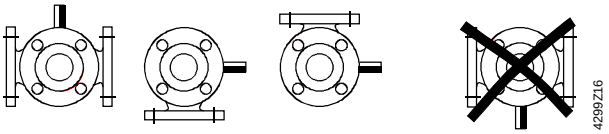
DN 40 and DN 50

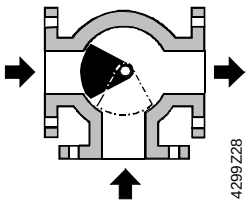
Two special screws are provided in the housing cover to fix the ASK32 mounting kit and the scale plate for position indication.

DN 65...150

The ASK31 kit contains all the components required for assembly.

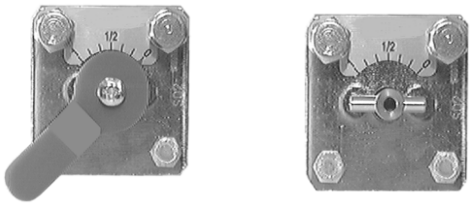
Orientation





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 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 as follows:

- DN 40 and DN 50 slipper valves: by the manual adjuster and scale plate and by the yellow colour 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

⚠ 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

Before disposal the slipper valve must be dismantled and separated into its various constituent materials.
Legislation may demand special handling of certain components, or it may be sensible from an ecological point of view.
Current local legislation must be observed.

Warranty

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.

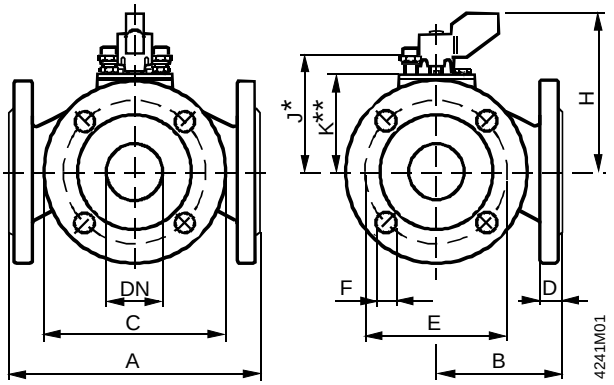
Technical data

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
	Angle of rotation		90°
Industry standards	Pressure Equipment Directive		PED 97/23/EC
	Pressure Accessories		as per article 1, section 2.1.4
	Fluid group 2	DN 40…125	• without CE-marking as per article 3, section 3 (sound engineering practice)
		DN 150	• category I, with CE-marking
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
	Scale plate for position indication		Aluminum
Dimensions / weight	see «Dimensions»		
	Flange connections		to ISO 7005

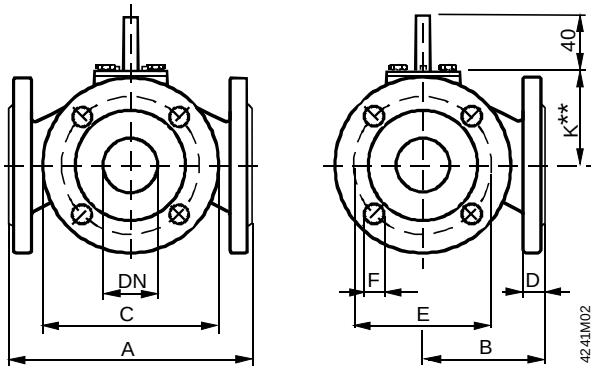
Dimensions

All dimensions in mm

VBF21.40 / VBF21.50
(with manual adjuster)



VBF21.65 ... VBF21.150
(without manual adjuster)



Type	DN	A	B	C	D	E	F	H	J *	K **		Weight
										ASK32	ASK31	[kg]
VBF21.40	40	180	90	130	16	100	14 (4x)	96	68	56		6,0
VBF21.50	50	180	90	140	16	110	14 (4x)	103	75	63		6,5
VBF21.65	65	200	100	160	16	130	14 (4x)				43	9,5
VBF21.80	80	230	115	190	18	150	19 (4x)				52	14,5
VBF21.100	100	260	130	210	18	170	19 (4x)				68	18,3
VBF21.125	125	320	160	240	20	200	19 (8x)				129	36,0
VBF21.150	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 SQL33.00, SQL33.03 or SQL83.00 with mounting kit ASK31

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.

Spare parts

Order numbers for spare parts

3-port slipper valve	O-ring service set		manual adjuster
			
VBF21.40		467695230	7467601750
VBF21.50		467695230	7467601750
VBF21.65		7467601760	
VBF21.80		7467601760	
VBF21.100		7467601760	
VBF21.125	7467601770		
VBF21.150	7467601770		

Mounting instructions for O-Ring replacement: M4241