



SERIES 02

Three-port slipper valves PN10, female-threaded

VBI31...

Three-port slipper valves, PN10, female-threaded

- Grey cast iron EN-GJL-250
- DN 20...40
- k_{vs} 6.3...25 m³/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... or SQL... electromotoric actuators
- No maintenance required

Application

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

Types

| Type | Connection [Inch] | DN | k_{vs} [m ³ /h] | with actuators SQK..., SQL... Δp_{max} [kPa] |
|----------|-------------------|----|------------------------------|--|
| VBI31.20 | Rp 3/4 | 20 | 6.3 | 30 |
| VBI31.25 | Rp 1 | 25 | 10 | |
| VBI31.32 | Rp 1 1/4 | 32 | 16 | |
| VBI31.40 | Rp 1 1/2 | 40 | 25 | |

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

Accessories

| Type | Description |
|--|---|
| ASK32  | The ASK32 mounting kit consists of a console and screw(s). For VBI31... 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 VBI31.25**
1 actuator type SQL33.00 and
1 mounting kit, type ASK32

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... |
| VBI31.20 | direct mounting | ASK32 | ASK32 |
| VBI31.25 | | | |
| VBI31.32 | | | |
| VBI31.40 | | | |

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⁾ | | AC 24 V | | 135 s | 5 Nm | N4508 |
| SQL83.00 ³⁾ | | | | 125 s | 12,5 Nm | N4506 |
| SQK84.00 ²⁾ | | | | 135 s | 5 Nm | N4508 |

¹⁾ Can be fitted with 1 auxiliary switch, type ASC9.5

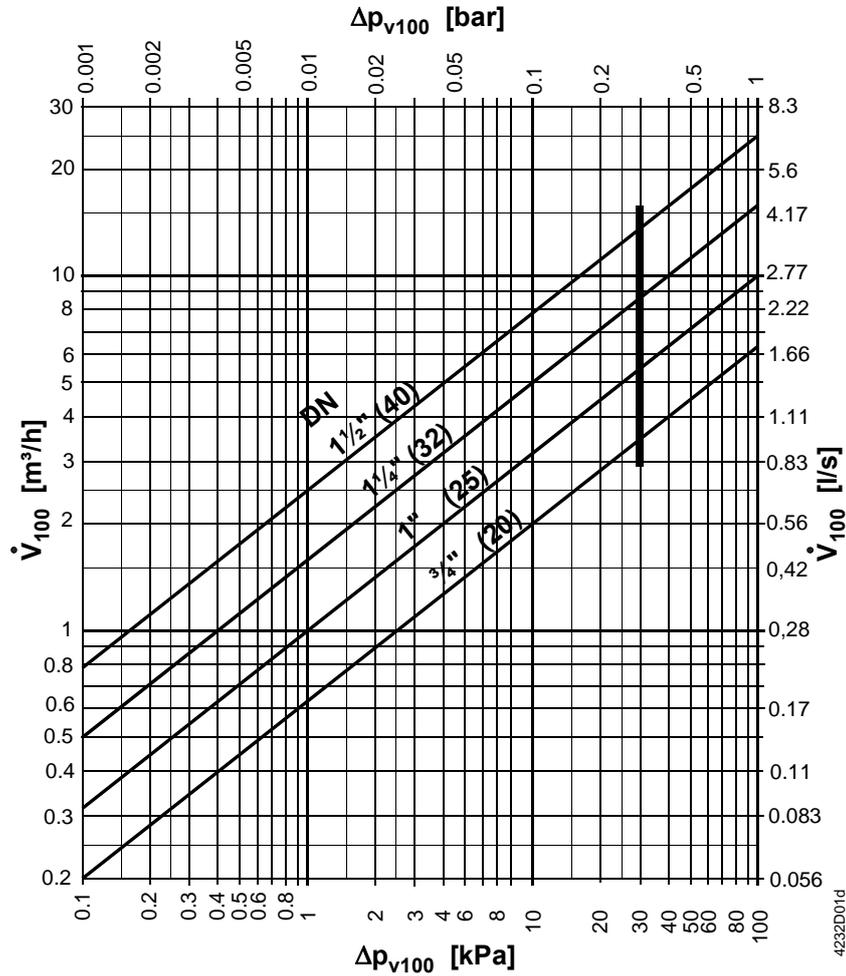
²⁾ Can be fitted with 1 auxiliary switch, type ASC9.7

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.

Application Boiler flow from the right or left. The manual adjuster, scale plate and slipper valve 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 \dot{V}_{100}
- \dot{V}_{100} = Volumetric flow through the fully open slipper valve
- 100 kPa = 1 bar \approx 10 mWC
- 1 m^3/h = 0.278 l/s water at 20 °C

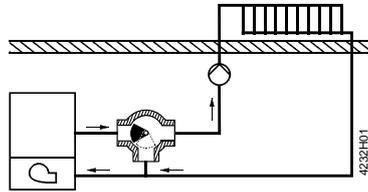
Notes

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.

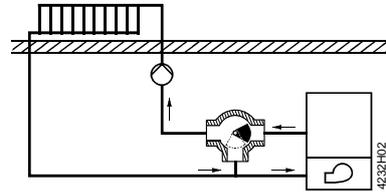
Mounting variants

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.

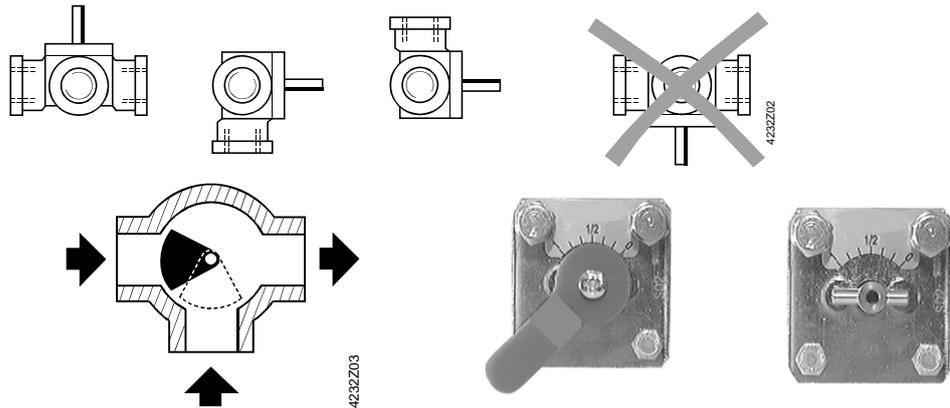
Mounting

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 | M4290.2 4 319 5597 0 |

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

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».

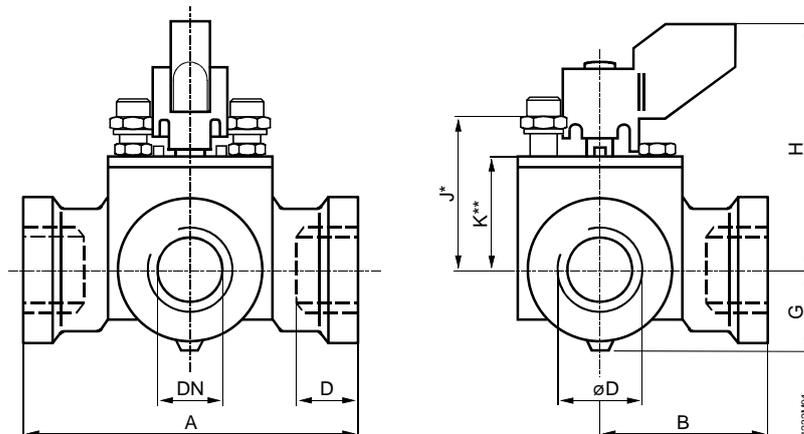
All terms of the warranty will be invalidated by the use of actuators from other manufacturers.

Technical data

| | | |
|----------------------|-------------------------------------|---|
| Functional data | PN class | PN 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° |
| | Industry standards | Pressure Equipment Directive |
| Pressure Accessories | | as per article 1, section 2.1.4 |
| Fluid group 2 | | • without CE-marking as per article 3, section 3 (sound engineering practice) |
| Materials | Slipper valve body | Grey cast iron EN-GJL-250 |
| | Shaft | stainless steel |
| | Slipper | Brass |
| | O-rings | EPDM |
| | Manual adjuster | Plastic |
| Dimensions / weight | Scale plate for position indication | Aluminum |
| | see «Dimensions» | |
| | Threaded connections | Rp... to ISO7-1 |

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 actuator SQK34.00 or SQK84.00 without mounting kit

K** = Installation height of actuator SQK33.00, SQL33.0... or SQL83.00 with mounting kit ASK32

Overall height of slipper valve and actuator = Installation height of three-port slipper valve
 + Installation height of mounting kit, if used (ASK32 = 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

| | O-Ring service set | manual adjuster |
|-----------------------------|--------------------|-----------------|
| 3-port slipper valve | | |
| VBI31.20 | 4 67695230 | 7467601750 |
| VBI31.25 | 4 67695230 | 7467601750 |
| VBI31.32 | 4 67695230 | 7467601750 |
| VBI31.40 | 4 67695230 | 7467601750 |

Mounting instructions for O-Ring replacement: M4241