# Three-port seat valves PN16, with male thread

# VXG44...


**Three-port seat valves with male thread, PN16**

- **Bronze Rg5**
- **DN15 ... DN40 mm (½" ... 1½")**
- **$k_{vs}$ 0.25 ... 25 $m^3$/h**
- **Stroke 5.5 mm**
- **Manual adjustment by means of mounted knob**
- **Can be equipped with SQS35..., SQS65... or SQS85... actuators**
- **Fittings can be delivered separately**

## Application

In small and medium-sized heating, ventilating and air conditioning systems as a **control valve** for **"mixing"** and **"diverting"** functions. **For closed circuits only.**

**Media**

| | |
|---|---|
| Cooling water<br>Chilled water<br>Low temperature hot water<br>Water with anti-freeze | +2 ... +120 °C |

## Type summary

| Type | DN [mm] | $k_{vs}$ [$m^3$/h] | $S_v$ | $\Delta p_{vmax.}$ mixing [kPa] | $\Delta p_{vmax.}$ diverting [1] [kPa] |
|---|---|---|---|---|---|
| **VXG44.15-0.25** | 15 | 0.25 | > 50 | 400 | 100 |
| **VXG44.15-0.4** | | 0.4 | | | |
| **VXG44.15-0.63** | | 0.63 | | | |
| **VXG44.15-1** | | 1 | | | |
| **VXG44.15-1.6** | | 1.6 | > 100 | | |
| **VXG44.15-2.5** | | 2.5 | | | |
| **VXG44.15-4** | | 4 | | | |
| **VXG44.20-6.3** | 20 | 6.3 | | | |
| **VXG44.25-10** | 25 | 10 | | 300 | 75 |
| **VXG44.32-16** | 32 | 16 | | 200 | 50 |
| **VXG44.40-25** | 40 | 25 | | 100 | 25 |

1) If noise is permitted, the same values apply as for mixing

DN = Nominal diameter

$k_{vs}$ = Nominal flow value as per VDI2173

$S_v$ = Rangeability as per VDI2173

$\Delta p_{vmax.}$ = Max. permissible differential pressure across the control path (A – AB = mixing or AB – A = diverting) of the valve valid for the entire stroke range

**Ordering**

When ordering, please specify the quantity, product name and type code.

*Example:* **1 Three-port valve VXG44.25-10**

The fittings must be ordered separately.

**Delivery**

The valve, actuator and possible fittings are packed and supplied separately.

## Equipment combinations

| Valves Type | $H_{100}$ [mm] | Actuators [1] SQS35..., SQS65..., SQS85... mixing $\Delta p_{max}$ [kPa] | Actuators [1] SQS35..., SQS65..., SQS85... diverting [2] $\Delta p_{max}$ [kPa] | Fittings Type |
|---|---|---|---|---|
| **VXG44.15-0.25** | 5.5 | 400 | 100 | **ALG15** |
| **VXG44.15-0.4** | | | | |
| **VXG44.15-0.63** | | | | |
| **VXG44.15-1** | | | 100 | |
| **VXG44.15-1.6** | | | | |
| **VXG44.15-2.5** | | | | |
| **VXG44.15-4** | | | | |
| **VXG44.20-6.3** | | | | **ALG20** |
| **VXG44.25-10** | | 300 | 75 | **ALG25** |
| **VXG44.32-16** | | 200 | 50 | **ALG32** |
| **VXG44.40-25** | | 100 | 35 | **ALG40** |
| | | **Data sheet N4573** | | |

1) Actuators available for delivery:
- AC 230 V with 3-position signal
- AC 24 V with 3-position signal
- AC 24 V with DC 0...10 V or DC 2...10 V proportional pos. signal

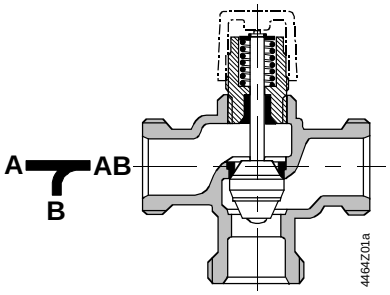
2) If noise is permitted, the same values apply as for mixing

$H_{100}$ = 100 % stroke of the valve and the actuator

$\Delta p_{max}$ = Max. permissible differential pressure across the control path (A – AB = mixing or AB – A = diverting) of the valve across the entire actuating range of the motorised valve

## Mechanical design

**Valve cross-section**



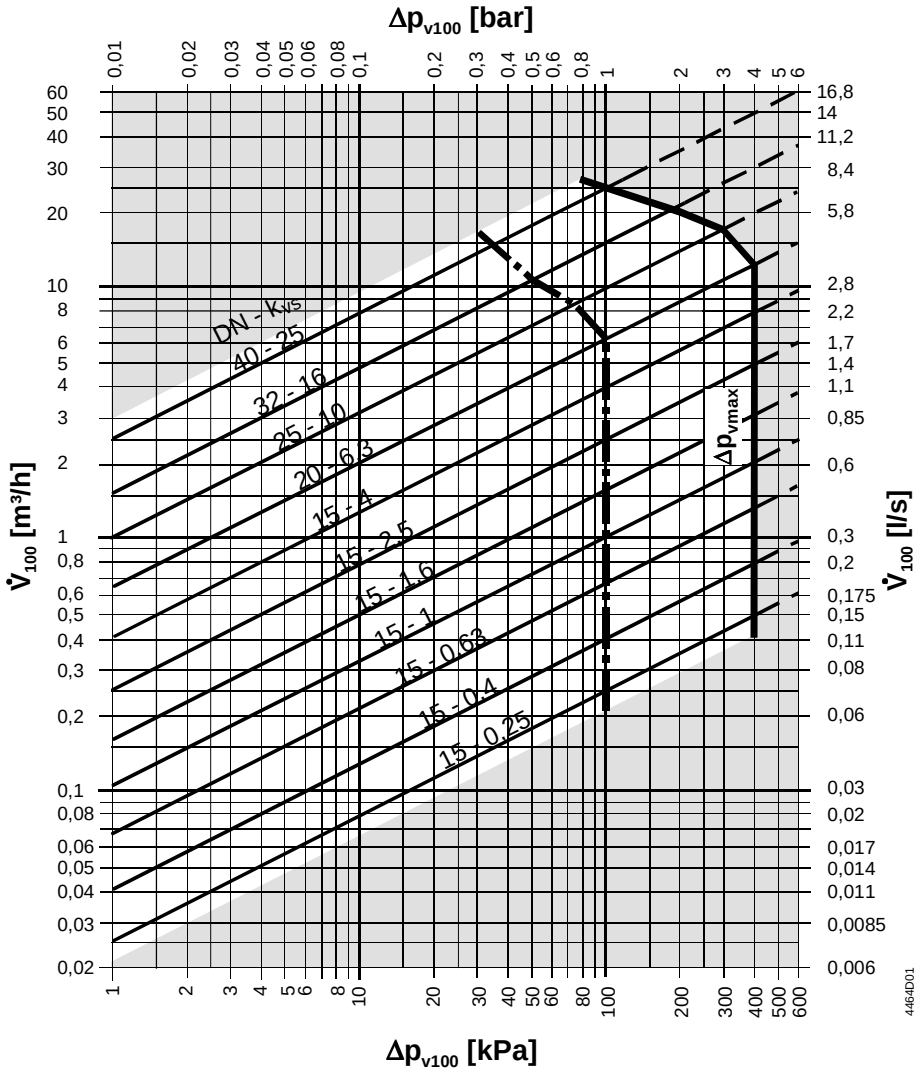

- Guided parabolic plug which is integrated in the valve stem.
- The seat is fitted in the through-port and attached directly to the valve body in the bypass.
- From DN25, the seat in the through-port in the valve body and attached to the ring in the bypass.

**Disposal**

The various material types used require that you disassemble the unit and sort the components prior to disposal.

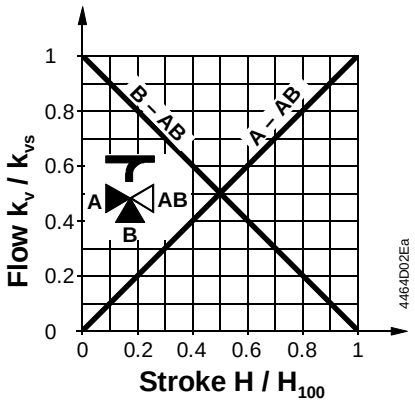
## Sizing

### Flow diagram




100 kPa = 1 bar ≈ 10 mWG
1 $m^3/h$ = 0.278 kg/s water at 20 °C
——— = $\Delta p_{vmax.}$ = Max. permissible differential pressure across the **mixing valve's A – AB control path** (actuator) valid for the entire stroke range
– · – = $\Delta p_{vmax.}$ = Max. permissible differential pressure across the **diverting valve's AB – A control path** (actuator) valid for the entire stroke range
$\Delta p_{v100}$ = Pressure difference across the fully opened valve (actuator) across the control path (A – AB = mixing or AB – A = diverting) at flow $\dot{V}_{100}$
$\dot{V}_{100}$ = Flow in $m^3/h$

### Valve flow characteristic




**Valve flow characteristic:**
– Through-port: linear as per VDI /VDE2173
– Bypass: linear as per VDI /VDE2173

**Mixing:**
Flow from port A and port B to port AB

**Diverting:**
Flow from port AB to port A and port B

Port A = variable flow
Port B = Bypass (variable flow)
Port AB = constant flow

Use the three-port valve primarily as a mixing valve

## Notes

**Engineering**

Water quality requirements as per VDI2035.

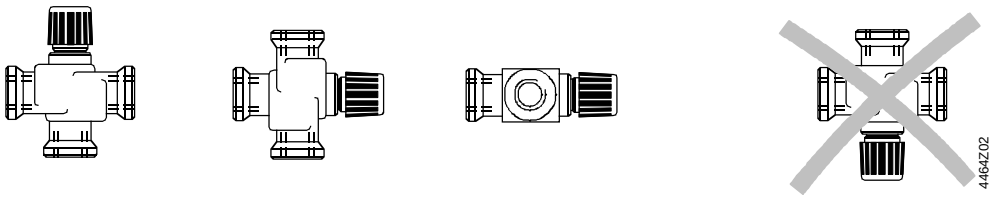
Note

We recommend installing a strainer upstream of the valve to ensure long-term functional safety.

**Mounting**

Both valve and actuator can easily be assembled at the mounting location. Neither special tools nor adjustments are required.
The valve is supplied with mounting instructions.

Mounting positions

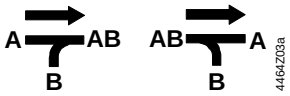



*Permissible* *Not permissible*

Direction of flow

When mounting, pay attention to the valve's flow direction symbol:

Mixing from A / B to AB




Diverting from AB to A / B

**Commissioning**

Commission the valve using the mounted manual adjustment button or a correctly mounted actuator.

Stem retracts: Through-port opens, bypass closes
Stem extends: Through-port closes, bypass opens

**Service**

⚠ For actuator service work: Turn off the pump and the operating voltage, close the shutoff valves, depressurize the pipes and allow them to cool down.
Disconnect the electrical connections, where required, from the terminals.
Recommission the valve using the mounted manual adjustment button or a correctly mounted actuator.

Stem sealing gland

The stem sealing gland cannot be exchanged. In the case of leakage, the entire valve must be replaced, whereby the information provided in "Service" must be observed. Contact your local office or branch.

**Warranty**

The use of third-party actuators expressly voids any warranty claims.

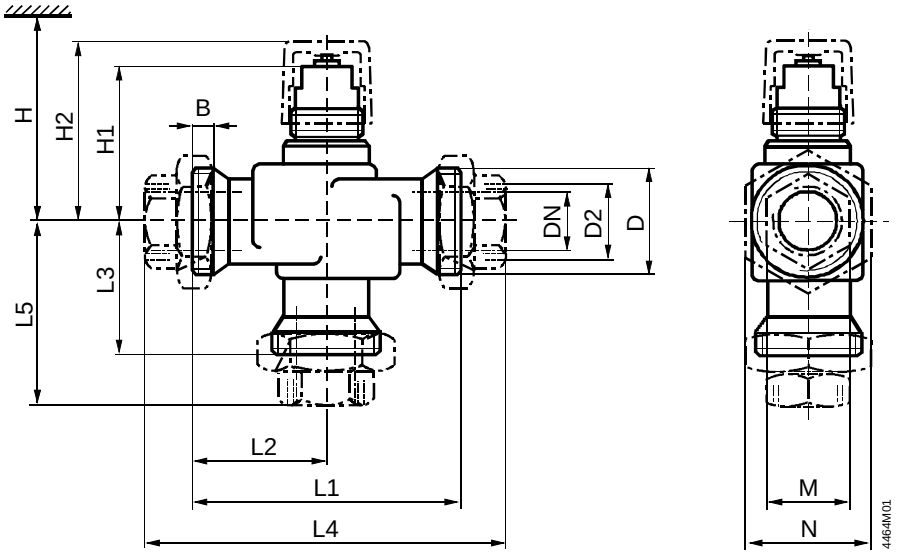
The technical data $\Delta p_{max}$, $\Delta p_s$, leakage rate, noise level and life apply only when used together with the Landis & Staefa actuators as listed in "Type summary".

## Technical data

| | | |
|---|---|---|
| **Function data** | PN class | PN16 |
| | Valve flow characteristic | |
| | Through-port | linear as per VDI /VDE2173 |
| | Bypass | linear as per VDI /VDE2173 |
| | Leakage rate | |
| | Through-port | 0 ... 0.02 % of $k_{vs}$ value, VDI /VDE2174 |
| | Bypass | 0 ... 0.02 % of $k_{vs}$ value, VDI /VDE2174 |
| | Permissible pressure | 1600 kPa (16 bar), ISO7268 / EN1333 |
| | Working pressure | DIN4747 / DIN3158 in the range of +2 ... +120 °C |
| | Threaded connection | |
| | Valve | G...B as per ISO228/1 |
| | Fittings | Rp... as per ISO7/1 |
| | Stroke | 5.5 mm |
| | Weight | see "Dimensions" (table) |
| **Materials** | Valve body | bronze G-CuSn5ZnBb (Rg5) as per DIN1705 |
| | Seat | stainless steel, bronze Rg5 and brass |
| | Seat in bypass | Bronze Rg5 or brass |
| | Plug | stainless steel or brass |
| | Stem | stainless steel |
| | Gland materials | EPDM-O rings |
| | Fittings ALG… | black malleable cast iron |

## Dimensions

All dimensions in mm




| DN [mm] | B | D | D2 | H1 | H2 | L1 | L2 | L3 | L4 | L5 | M | N | Weight without fittings [kg] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **15** | 8.5 | G1B | Rp½ | 53 | 63 | 100 | 50 | 50 | 148 | 74 | 25 | 41 | 0.50 |
| **20** | 9 | G1¼B | Rp¾ | 68 | 78 | | | | 150 | 75 | 32 | 50 | 0.85 |
| **25** | | G1½B | Rp1 | 71 | 81 | 105 | 52.5 | 52.5 | 160 | 80 | 38 | 55 | 1.20 |
| **32** | 11 | G2B | Rp1¼ | 77.5 | 87.5 | | | | 170 | 85 | 47 | 70 | 1.60 |
| **40** | | G2¼B | Rp1½ | 80.5 | 90.5 | 130 | 65 | 65 | 198 | 99 | 53 | 75 | 2.30 |

| DN [mm] | H SQS35..., SQS65..., SQS85... |
|---|---|
| **15** | > 364 |
| **20** | > 379 |
| **25** | > 382 |
| **32** | > 389 |
| **40** | > 392 |

DN = Nominal diameter
H = Total actuator height plus minimum distance to wall or ceiling for mounting, connection, operation, service, etc.
H1 = Dimension from the pipe centre to install of the actuator
H2 = Pipe centre to upper edge of manual adjustment button