



## 3-Port Seat Valves with Male Thread, PN 16

## VXG41...

- Bronze CC491K (Rg5) valve body
- DN 15...DN 50
- $k_{vs}$  1.6...40 m<sup>3</sup>/h
- Flat sealing connections with external thread G...B to ISO 228/1
- Sets of ALG...3 screwed fittings with threaded connection available from Siemens
- Can be equipped with SQX... motoric or SKD... and SKB... electrohydraulic actuators

### Use

- For use in heating, ventilating and air conditioning systems as a control valve for mixing and diverting functions.
- For open and closed circuits.

### Media

Standard version for:

Cooling water Chilled water Low temperature hot water High temperature hot water Water with anti-freeze <sup>1) 2)</sup> Brine <sup>1) 2)</sup>	-25...+140 °C
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- 1) Media below 0 °C:  
ASZ6.5 stem heating element required to prevent freezing of the valve stem in the sealing gland.
- 2) Water with anti-freeze and brine:  
down to -25 °C as per DIN 3158 (stress case I)

## Type summary

Type reference	DN	$k_{vs}$ [m <sup>3</sup> /h]	$S_v$
VXG41.1301 <sup>1)</sup>	15	1.6	> 50
VXG41.1401 <sup>1)</sup>		2.5	
VXG41.15		4.0	
VXG41.20	20	6.3	> 100
VXG41.25	25	10	
VXG41.32	32	16	
VXG41.40	40	25	
VXG41.50	50	40	

- <sup>1)</sup> These types, as a standard, are equipped with a tight bypass. The other valves are available as special versions with tight bypass, type suffix 01 (e.g. VXG41.4001).

DN = Nominal size

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

$S_v$  = Rangeability  $k_{vs} / k_{vr}$

$k_{vr}$  = Smallest  $k_v$  value, at which the flow characteristic tolerances can still be maintained, by a differential pressure of 100 kPa (1 bar)

## Accessories

Type reference	Description
ALG...3	Set of 3 screwed fittings for 3-port valves, consisting of - 3 union nuts - 3 discs and - 3 flat seals
ASZ6.5	Electric stem heating element, AC 24 V 30 W, required for media below 0 °C

## Order

When ordering please give quantity, product name and type reference.

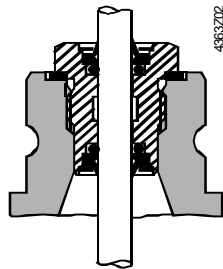
Example: 2 valves VXG41.25  
2 sets of screwed fittings ALG253

## Delivery

Valves, actuators and accessories are packed and supplied separately.

## Spare parts

Standard version



Replacement for EPDM-O ring sealing gland made from dezincification-free brass, including flat seal made from copper, for cooling water, chilled water, low temperature hot water, high temperature hot water, saturated steam, and brine -25...+140 °C

for VXG41... DN 15...DN 50 (stem-Ø 10 mm)  
order-no. 4 284 8874 0

## Equipment combinations

Valves	Actuators						Fitting sets		
	SQX...		SKD...		SKB...				
	Mixing	Diverting	Mixing	Diverting	Mixing	Diverting	Typ		
	$\Delta p_{max}$								
VVG41.1301	800	200 <sup>1)</sup>	800	200 <sup>1)</sup>	800	200 <sup>1)</sup>	ALG153		
VVG41.1401									
VVG41.15									
VVG41.20							150 <sup>1)</sup>	ALG203	
VVG41.25									ALG253
VVG41.32									
VVG41.40	100 <sup>1)</sup>	ALG403							
VVG41.50			ALG503						

<sup>1)</sup> If noise is permitted, the same values apply as for the mixing valve.

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

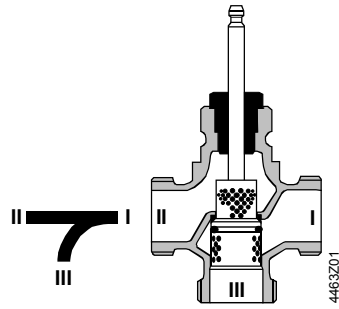
## Actuator overview

Type reference	Actuator type	Operating voltage	Positioning signal	Spring return	Positioning time	Positioning force	Data sheet	
SQX32.00	Motoric	AC 230 V	3-position	No	150 s	700 N	N4554	
SQX32.03					35 s			
SQX82.00		AC 24 V			150 s			
SQX82.03					35 s			
SQX62					DC 0...10 V <sup>1)</sup>			
SKD32.50	Electro-hydraulic	AC 230 V	3- position	No	120 s	1000 N	N4561	
SKD32.21				Yes	30 s			
SKD32.51				No	120 s			
SKD82.50		AC 24 V		Yes	30 s			N4563
SKD82.51				No				
SKD60				DC 0...10 V <sup>1)</sup>				
SKD62				Yes				
SKB32.50	Electro-hydraulic	AC 230 V	3- position	No	120 s	2800 N	N4564	
SKB32.51				Yes				
SKB82.50				No				
SKB82.51		Yes						
SKB60		AC 24 V		No				N4566
SKB62				DC 0...10 V <sup>1)</sup>				

<sup>1)</sup> or DC 4...20 mA

Note: Pneumatic actuators are available on request from your local office or branch.  
**Application is possible only if the VXG41... is used as a mixing valve.**

Valve cross section

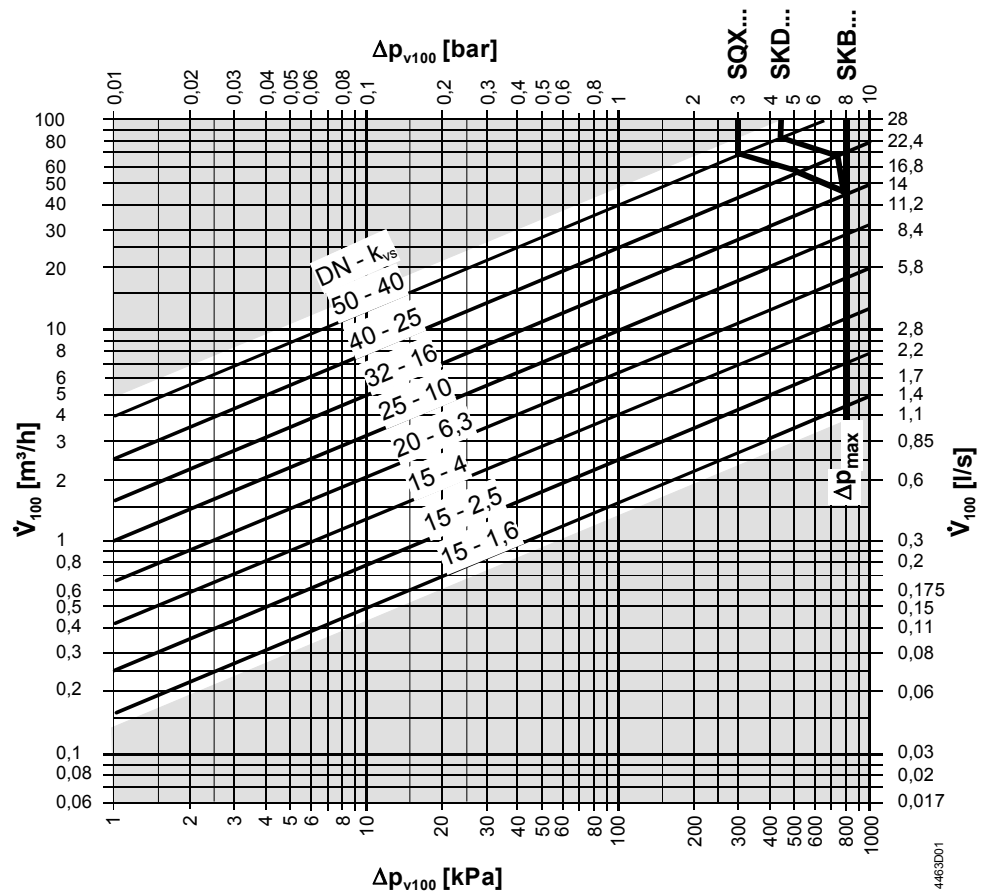


Guided perforated plug which is integrated in the valve stem.

The seat II – I is attached to the valve body with the aid of special gland material.

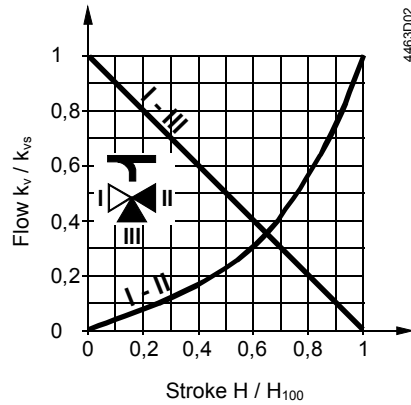
Sizing

Flow diagramm



- $\Delta p_{max}$  = Maximum permissible differential pressure across the valve's control path, valid for the entire actuating range of the motorised valve
- $\Delta p_{v100}$  = Differential pressure across the fully open valve and the valve's control path II – I by a volume flow  $V_{100}$
- $V_{100}$  = Volume flow through the fully open valve ( $H_{100}$ )
- 100 kPa = 1 bar  $\approx$  10 mWS
- 1 m<sup>3</sup>/h = 0.278 l/s water at 20 °C

## Valve flow characteristic



Valve flow characteristic in the

### Through-port

0 ... 30 %: linear

30 ... 100 %:  $n_{g1} = 3$  to VDI / VDE 2173

### Bypass

0...100 %: linear

**Mixing:** flow from port II and port III to port I

**Diverting:** flow from port I to port II and port III

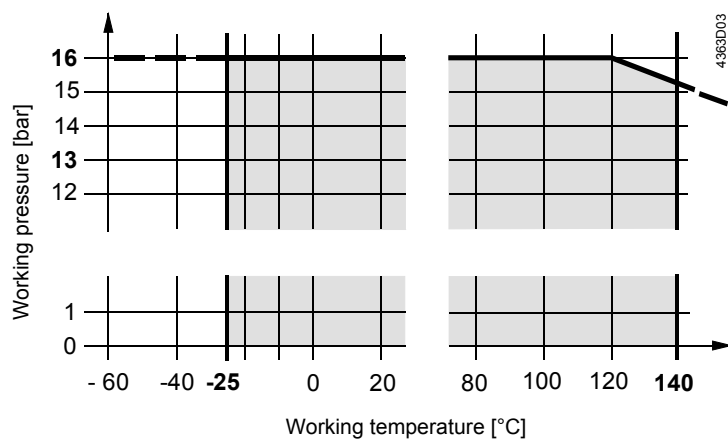
Port I = constant flow

Port II = variable flow

Port III = bypass (variable flow)

Use the 3-port valve primarily as a mixing valve.

## Working pressure and temperature



Working pressure staged as per ISO 7268 and EN 1333

at operating temperatures of  $-25...+140$  °C as per DIN 4747 and DIN 3158

## Notes

### Engineering



In open circuits, there is a risk of valve plug seizing caused by scale deposits. Thus, use only the most powerful actuator SKB... for these applications. Additionally, periodic actuation (twice or three times per week) must be planned.

With closed and open circuits always use a strainer upstream of the valve to increase the valve's functional safety.



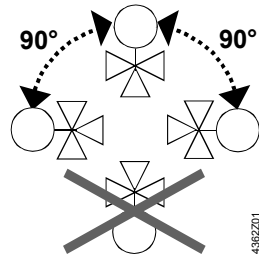
For media below 0 °C, use the electric ASZ6.5 stem heating element to prevent the valve stem from freezing in the sealing gland. For safety reasons, the stem heating element has been designed for AC 24 V / 30 W operating voltage.

### 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 4 319 9563 0.

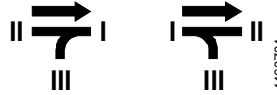
Orientation



Direction of flow

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

- Mixing from II / III to I
- Diverting from I to II / III



Commissioning



**Commission the valve only if the actuator has been mounted correctly.**

Valve stem retracts: through-port II – I opens, bypass III closes  
 Valve stem extends: through-port II – I closes, bypass III opens

Maintenance

VXG41... valves require no maintenance.



**Warning**

When doing service work on the valve / actuator:

- Deactivate the pump and turn off the power supply
- Close the shutoff valves
- Fully reduce the pressure in the piping system and allow pipes to completely cool down

If necessary, disconnect the electrical wires.

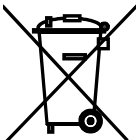
Before putting the valve into operation again, make certain the actuator is correctly fitted.

Stem sealing gland

- The glands can be exchanged without removing the valve, provided the pipes are depressurized and cooled off and the stem surface is unharmed, refer to «Order».
- If the stem is damaged in the gland range, replace the entire stem-plug-unit.

Contact your local office or branch.

Disposal



Before disposal the 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

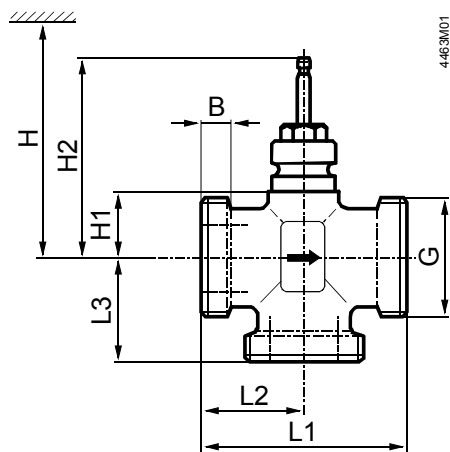
The technical data given for these applications is valid only in conjunction with the Siemens actuators as detailed under «Equipment combinations».

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

## Technical data

Functional data	PN class	PN 16 to EN 1333
	Permissible operating pressure	1600 kPa (16 bar) to ISO 7268 / EN1333
	Working pressure	to DIN 4747 / DIN 3158 in the range of –25...+140 °C (refer to page 5)
	Flow characteristic	
	• Through-port 0...30 %	• linear
	• Through-port 30...100 %	• equal percentage; $n_{gl} = 3$ to VDI / VDE 2173
	• Bypass 0...100%	• linear
	Leakage rate	
	• Through-port	• 0...0.02 % of $k_{vs}$ value to DIN EN 1349
	• Bypass standard version	• 0.5...2% of $k_{vs}$ value
	• Bypass special vers. (VXG41...01)	• 0...0.2% of $k_{vs}$ value
	Permissible media	cooling water, chilled water, low temperature hot water, high temperature hot water, water with anti-freeze, brine. recommendation: water treatment to VDI 2035
	Medium temperature	–25...+140 °C
	Industry standards	Rangeability $S_v$
Nominal stroke		20 mm
Pressure Equipment Directive		PED 97/23/EC
Pressure Accessories		as per article 1, section 2.1.4
Materials	Fluid group 2	without CE-marking as per article 3, section 3 (sound engineering practice)
	Valve body	bronze CC491K (Rg5)
	Seat, plug, stem	stainless steel
	Sealing gland	dezincification-free brass
Dimensions / Weight	gland materials	EPDM O rings
	Refer to «Dimensions»	
	External thread connections	G...B to ISO 228/1

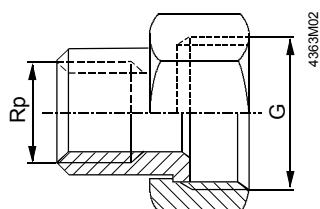
## Dimensions



- DN = Nominal size  
H = Total actuator height plus minimum distance to the wall or the ceiling for mounting, connection, operation, service, etc.  
H1 = Dimension from the pipe centre to install the actuator (upper edge)  
H2 = Valve in the «Closed» position means that the stem is fully extended

Type reference	DN	B [mm]	G [Zoll]	L1 [mm]	L2 [mm]	L3 [mm]	H1 [mm]	H2 [mm]	SQX...	SKD...	SKB...	Weight [kg]
VXG41.1301 VXG41.1401 VXG41.15	15	10	G1B	100	50	50	26	122.5	> 450	> 525	> 600	1.20
VXG41.20	20		G1¼B									1.25
VXG41.25	25	14	G1½B	105	52.5	52.5	34	130.5	> 460	> 535	> 610	1.50
VXG41.32	32		G2B									2.10
VXG41.40	40	15	G2¼B	130	65	65	46	142.5	> 470	> 545	> 620	2.60
VXG41.50	50	16	G2½B	150	75	75						3.80

## Screwed fittings



Type reference	for valve type	G [Zoll]	Rp [Zoll]
ALG15...	VXG41.11...15	G1	Rp½
ALG20...	VXG41.20	G1¼	Rp¾
ALG25...	VXG41.25	G1½	Rp1
ALG32...	VXG41.32	G2	Rp1¼
ALG40...	VXG41.40	G2¼	Rp1½
ALG50...	VXG41.50	G2½	Rp2

- On valve side: cylindrical thread to ISO 228/1
- On pipe side: with cylindrical thread to ISO 7/1