

# VG3000

## Globe Valves Series for Terminal Units

### Product Bulletin

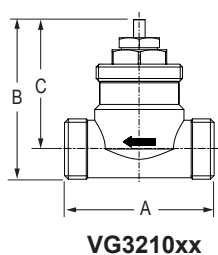
The VG3000 brass valve series is primarily designed to regulate the flow of water in response to the demand of a controller in zone and terminal unit applications and can be used in combination with VA-708x Thermal ON/OFF Actuators, VA-709x Thermal 0...10 V Actuators and VA-748x Electric Terminal Unit Valve Actuators.

The valves are available in 2-way, 3-way mixing and 3-way mixing with built-in bypass configurations.

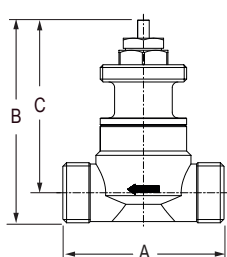


- **2-way PDTC (NO) with 6 bar close off pressure**  
Allow valve operating when high pump head is available
- **Extend range of  $K_{VS}$**   
Wide range of application
- **Forged brass body, stainless steel stem and spring**  
Ensure long life and it is compact
- **Actuator can be field installed after piping**  
Simplifies installation in confined location
- **Commissioning Cap available as accessory**  
Easy commissioning and manual operation without actuator

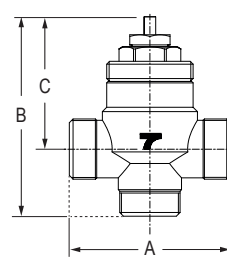
## Ordering Codes and Dimensions (in mm)



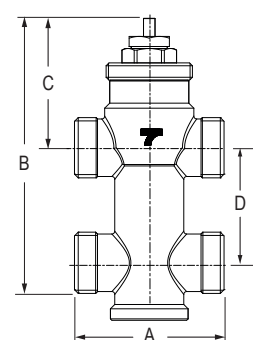
VG3210xx



VG3211xx



VG3310xx

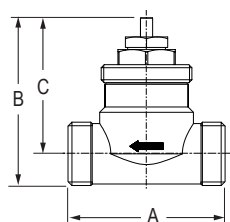


VG3410xx

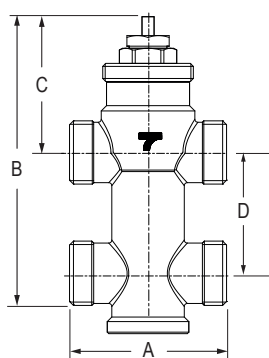
### Threaded Male Connection

Ordering Codes	Body Type	Body Size	Connections	K <sub>v</sub> Control Port (Cv Control Port)	K <sub>v</sub> Bypass Port (Cv Bypass Port)	Close-Off Pressure (kPa)	Dimensions (mm)			
							A	B	C	D
VG3210BS	2-way PDTC (NO)	DN10	G 1/2"	0.4 (0.43)	---	250	52	55	45	---
VG3210CS				0.63 (0.70)						
VG3210DS				1.0 (1.12)						
VG3210ES				1.6 (1.9)						
VG3210FS		2.5 (2.9)	200	56		58				
VG3210JS		2.5 (2.9)								
VG3210KS		4.0 (4.7)								
VG3210LS		6.3 (7.4)								
VG3210LS	DN20	G 1"	6.3 (7.4)	100	80	61.5	45.5			
VG3211BS	2-way PDTC (NO)	DN10	G 1/2"	0.4 (0.43)	---	600	52	70	60	---
VG3211CS				0.63 (0.70)						
VG3211DS				1.0 (1.12)						
VG3211ES				1.6 (1.9)						
VG3211FS		2.5 (2.9)	200	56		73				
VG3211JS		2.5 (2.9)								
VG3211KS		4.0 (4.7)								
VG3211LS		6.3 (7.4)								
VG3211LS	DN20	G 1"	6.3 (7.4)	100	80	74				
VG3310BS	3-way Mixing	DN10	G 1/2"	0.4 (0.43)	0.25 (0.29)	250	52	66	45	---
VG3310CS				0.63 (0.70)	0.4 (0.43)					
VG3310DS				1.0 (1.12)	0.63 (0.70)					
VG3310ES				1.6 (1.9)	1.0 (1.12)					
VG3310FS		2.5 (2.9)	1.6 (1.9)	200	56	67	46			
VG3310JS		2.5 (2.9)	1.6 (1.9)							
VG3310KS		4.0 (4.7)	2.5 (2.9)							
VG3310LS		6.3 (7.4)	4.0 (4.7)							
VG3310LS	DN20	G 1"	6.3 (7.4)	100	80	85				
VG3410BS	3-way with built-in by-pass Mixing	DN10	G 1/2"	0.4 (0.43)	0.25 (0.29)	250	52	95.5	45	40
VG3410CS				0.63 (0.70)	0.4 (0.43)					
VG3410DS				1.0 (1.12)	0.63 (0.70)					
VG3410ES				1.6 (1.9)	1.0 (1.12)					
VG3410FS		2.5 (2.9)	1.6 (1.9)	200	56	96.5	46			
VG3410JS		2.5 (2.9)	1.6 (1.9)							
VG3410KS		4.0 (4.7)	2.5 (2.9)							
VG3410LS		6.3 (7.4)	4.0 (4.7)							
VG3410LS	DN20	G 1"	6.3 (7.4)	100	80	125	72			

## Ordering Codes and Dimensions (in mm)



VG3290xx

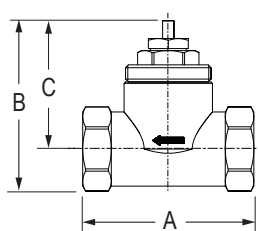


VG3490xx

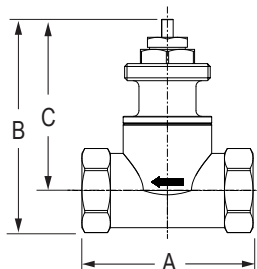
### Compression Fitting

Ordering Codes	Body Type	Body Size	Connections	K <sub>v</sub> Control Port (Cv Control Port)	K <sub>v</sub> Bypass Port (Cv Bypass Port)	Close-Off Pressure (kPa)	Dimensions (mm)			
							A	B	C	D
VG3290BS	2-way PDTC (NO)	DN10	Compression fitting 1/2"	0.4 (0.43)	---	250	52	55	45	---
VG3290CS				0.63 (0.70)						
VG3290DS				1.0 (1.12)						
VG3290ES				1.6 (1.9)						
VG3290FS				2.5 (2.9)						
VG3490BS	3-way with built-in by-pass Mixing			0.4 (0.43)	0.25 (0.29)		52	95.5	40	
VG3490CS				0.63 (0.70)	0.4 (0.43)					
VG3490DS				1.0 (1.12)	0.63 (0.70)					
VG3490ES				1.6 (1.9)	1.0 (1.12)					
VG3490FS				2.5 (2.9)	1.6 (1.9)					

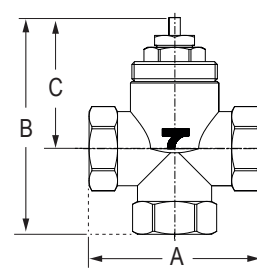
## Ordering Codes and Dimensions (in mm)



VG3200xx - VG3240xx



VG3201xx - VG3241xx



VG3300xx - VG3340xx

### Threaded Female Connection

Ordering Codes	Body Type	Body Size	Connections	K <sub>v</sub> Control Port (Cv Control Port)	K <sub>v</sub> Bypass Port (Cv Bypass Port)	Close-Off Pressure (kPa)	Dimensions (mm)		
							A	B	C
VG3200FS	2-way PDTC (NO)	DN15	G 1/2"	2.5 (2.9)	---	250	60	58	45
VG3200KS		DN20	G 3/4"	4.0 (4.7)	---	200	65	60	45
VG3200LS		DN25	G 1"	6.3 (7.4)	---	100	80	64	45.5
VG3201FS	2-way PDTC (NO)	DN15	G 1/2"	2.5 (2.9)	---	600	60	73	60
VG3201KS		DN20	G 3/4"	4.0 (4.7)	---	600	65	75	60
VG3201LS		DN25	G 1"	6.3 (7.4)	---	600	80	77	58
VG3300FS	3-way Mixing	DN15	G 1/2"	2.5 (2.9)	1.6 (1.9)	250	60	76	46
VG3300KS		DN20	G 3/4"	4.0 (4.7)	2.5 (2.9)	200	65	80	46
VG3300LS		DN25	G 1"	6.3 (7.4)	4.0 (4.7)	150	80	85.5	46
VG3240FS	2-way PDTC (NO)	DN15	NPT 1/2"	2.5 (2.9)	---	250	60	58	45
VG3240KS		DN20	NPT 3/4"	4.0 (4.7)	---	200	65	60	45
VG3240LS		DN25	NPT 1"	6.3 (7.4)	---	100	80	64	45.5
VG3241FS	2-way PDTC (NO)	DN15	NPT 1/2"	2.5 (2.9)	---	600	60	73	60
VG3241KS		DN20	NPT 3/4"	4.0 (4.7)	---	600	65	75	60
VG3241LS		DN25	NPT 1"	6.3 (7.4)	---	600	80	77	58
VG3340FS	3-way Mixing	DN15	NPT 1/2"	2.5 (2.9)	1.6 (1.9)	250	60	76	46
VG3340KS		DN20	NPT 3/4"	4.0 (4.7)	2.5 (2.9)	200	65	80	46
VG3340LS		DN25	NPT 1"	6.3 (7.4)	4.0 (4.7)	100	80	85.5	46

### Accessory (order separately)

Accessory Code	Description
VG3000-CAP	Plastic commitioning cap

## Valve - Actuators Combinations

The VG3000 series valves are designed to be used with following actuators:

### VA-708x Thermal ON/OFF Actuators

Item Codes	Action	Supply voltage
VA-7087-21	<b>Direct Acting</b> (stem extends when actuator is energized)	24 VAC
VA-7088-21	<b>Reverse Acting</b> (stem retracts when actuator is energized)	
VA-7087-23	<b>Direct Acting</b> (stem extends when actuator is energized)	230 VAC
VA-7088-23	<b>Reverse Acting</b> (stem retracts when actuator is energized)	

### VA-748x Electric Actuators



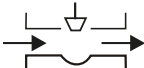


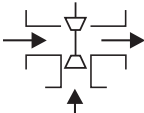


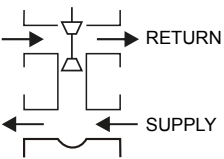
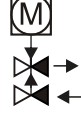
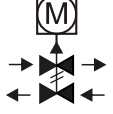
Item Codes	Control Type	Supply voltage
VA-7480-0001	Floating	24 VAC
VA-7481-0001		
VA-7480-0003		230 VAC
VA-7481-0003		
VA-7482-2001	<b>Proportional Direct Acting</b> (stem extends when increased input signal)	24 VAC / DC
VA-7482-8xxx	<b>Autostroke Proportional Direct Acting</b> (stem extends when increased input signal)	24 VAC / DC

### VA-709x Thermal 0...10 V Actuators

Item Codes	Action	Supply voltage
VA-7097-21	<b>Normally Open</b> (stem extends when actuator is energized)	24 VAC
VA-7098-21	<b>Normally Close</b> (stem retracts when actuator is energized)	

See “VA-708x Thermal ON/OFF Actuators”, “VA-709x Thermal 0...10 V Actuators” and “VA-748x Electric Terminal Unit Valve Actuator” Product Bulletins for more information.

## Operation

Valve Type	Stem Movement / Flow  = flow  = no flow	
	Actuator Stem down	Actuator Stem up
 2-Way PDTC (NO)		
 3-Way MIXING		
 3-Way + bypass		

## Operation

These valves are used for hot or cold water and for water glycol mixtures up to 50%.

**Note:** These valves are intended to control equipment under normal operating conditions.

Where failure or malfunction of the valves could lead to an abnormal operating condition that could cause personal injury or damage to the equipment or other property, other devices (limit or safety controls) or systems (alarm or supervisory systems) intended to warn of or protect against failure or malfunction of the valves must be incorporated into and maintained as part of the control system.

## Mounting Instructions

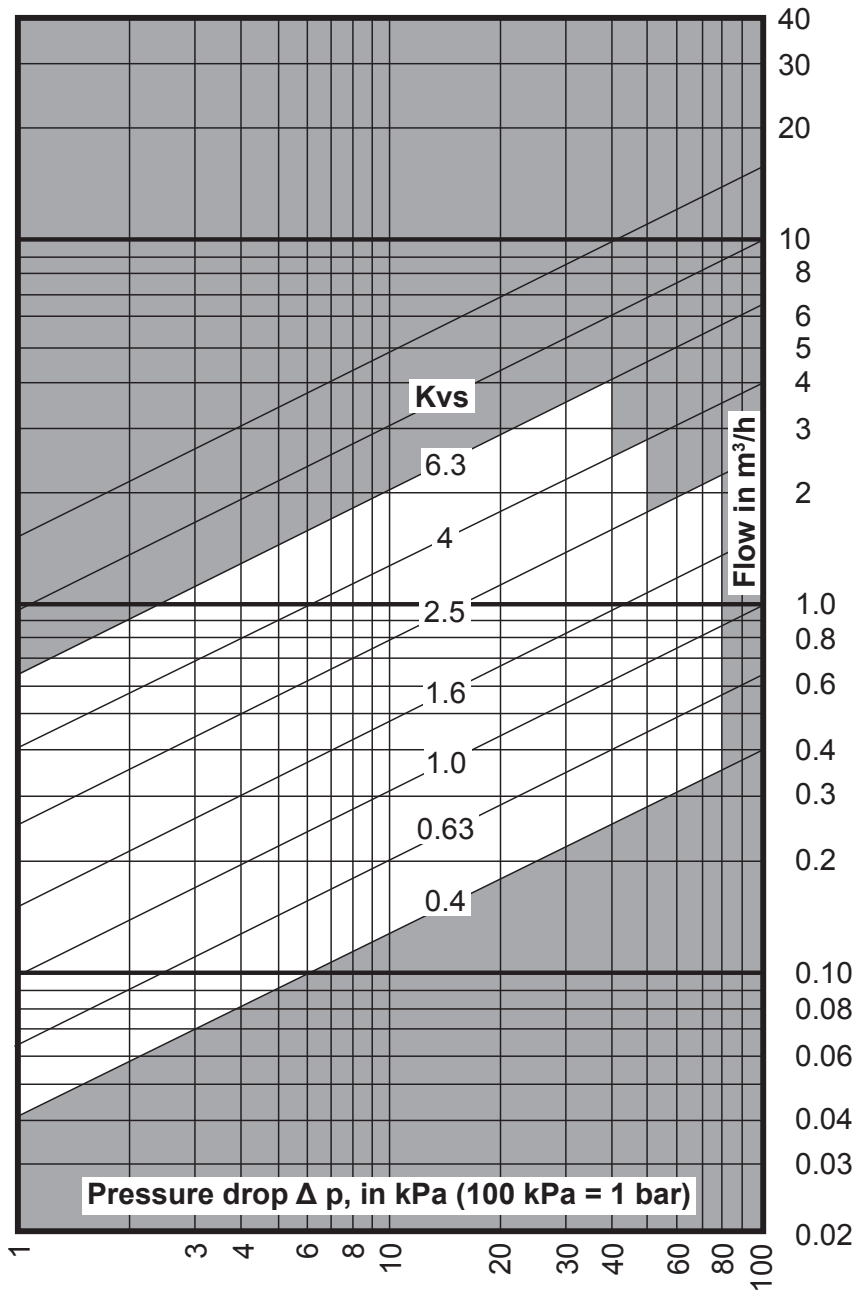
### General Guidelines

In addition to general installation instructions, please observe the following points:

- Ensure that valve body and piping are free of impurities.
- Pay attention to position of the valve relative to the flow direction.
- Note flow symbols on valve body.
- Ensure that threaded connections of valve and piping are tighten.
- Ensure installation without tension and torque.
- Do not use the valve as a step or fixation point. Only piping supports it.
- Protect valve from dust or dirt on construction sites.
- Provide strainer or filter upstream of valve.
- Use compensators to balance thermal expansion of piping.
- Ensure that stem thread and shaft are kept free of paint.

## Valve Selection

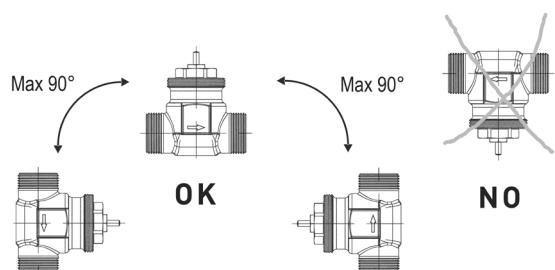
The valve size for water applications can be defined using the diagram below, where the intersection of the pressure drop across the valve and the flow must be within the white area.



K<sub>VS</sub> selection diagram

## Installation Site Information

The valve installation site should be easily accessible and provide sufficient room for service and removal of actuators. Manual shut-off valves should be located up and downstream of the control valve, to facilitate service and repairs without drainage of the piping system. The control valve should preferably be installed in vertical or horizontal position.



Piping should be insulated to protect actuators against high temperatures. Insulation should leave sufficient room for service of stem packing.

To ensure trouble free function of the control valves the pipe immediately upstream of the valve should be straight for the length of at least 2x DN and the pipe immediately downstream straight for the length at least 6x DN.

## Commissioning

Prior to commissioning check information on material, pressure, temperature and flow direction in conjunction with the installation piping system plan. Impurities in the piping system and valves, such as dirt, welding beads etc. will cause the system to leak. Prior to commissioning a new installation or re-commissioning after repairs or service, ensure that:

- Correct installation and assembly work has been completed.
- Only qualified personnel carry out commissioning.
- Correct functional position of the valve is ascertained.
- Maintenance of existing protective facilities is carried out.

## Valve Removal

In addition to general guidelines the following points should be observed:

- Pressure free piping system
- Cooled fluid
- Drained piping system
- With corrosive or aggressive fluids, the piping system should be vented.

Work to be performed by qualified personnel only.



## Technical Specifications VG3000

### Threaded Male Connection

Models	VG3210xx	VG3211xx	VG3310xx	VG3410xx	
Body Type	2-way PDTC (NO)	2-way PDTC (NO)	3-way mixing	3-way mixing with built-in by-pass	
Body Rating	PN16 Nominal, maximum rated pressure				
Inherent Flow Characteristic	Linear				
Service	Water, glycol solutions (max 50%) for HVAC applications. Fluid Group 1 according 67/548/EEC. (proper water treatment is recommended, refer to VDI 2035)				
Body Size	DN10 - DN15 - DN20				
Max Pressure drop $\Delta p$	<b>DN10</b>	70 kPa	80 kPa	70 kPa	70 kPa
	<b>DN15</b>	50 kPa	60 kPa	50 kPa	50 kPa
	<b>DN20</b>	40 kPa	50 kPa	40 kPa	40 kPa
$K_{vs}$ and max. close-off pressure	See "Ordering Code and Dimensions" on page 2				
Body Connection	Gas (ISO 228/1)				
Nominal Stroke	4.0 mm				
Connection to Actuator	M30 x 1.5				
Materials	<p><b>Body:</b> EN12165 CW617 Brass CuZn40Pb2</p> <p><b>Trim:</b> Stem: AISI 303 stainless steel (X10CrNiS1809) Spring: AISI 302 stainless steel (X10CrNi1809) Plug: EPDM</p>				
Leakage	Max 0,01% of $K_{vs}$ , Class IV for ANSI FCI 70-2 and EN60534-4 modif. 1				
Fluid Temperature Limits	2...110 °C				
Ambient Temperature Limits	2...50 °C				
Max weight packaging excluded	<b>2-way NO</b>	<b>2-way NO</b>	<b>3-way mixing</b>	<b>3 way mixing + built-in bypass</b>	
	<b>DN10</b>	200 g	215 g	200 g	350 g
	<b>DN15</b>	200 g	215 g	250 g	400 g
<b>DN20</b>	500 g	515 g	550 g	800 g	
Compliance	Johnson Controls declares that these products are in compliance with the essential requirements and other relevant provisions of the PED (Pressure Equipment Directive) 2014/68/UE (Paragraph 4, comma 3). CE marking is not applicable. ROHS (95/2002/CE)				

## Technical Specifications VG3000

### Compression Fitting

Models	VG3290xx	VG3490xx
Body Type	2-way PDTC (NO)	3-way mixing with built-in by-pass
Body Rating	PN16 Nominal, maximum rated pressure	
Inherent Flow Characteristic	Linear	
Service	Water, glycol solutions (max 50%) for HVAC applications. Fluid Group 1 according 67/548/EEC. (proper water treatment is recommended, refer to VDI 2035)	
Body Size	DN10	
Max Pressure drop $\Delta p$	70 kPa	
$K_v_s$ and max. close-off pressure	See "Ordering Code and Dimensions" on page 2	
Body Connection	Compression fitting (EN1254-2)	
Nominal Stroke	4.0 mm	
Connection to Actuator	M30 x 1.5	
Materials	<p><b>Body:</b> EN12165 CW617 Brass CuZn40Pb2</p> <p><b>Trim:</b> Stem: AISI 303 stainless steel (X10CrNiS1809) Spring: AISI 302 stainless steel (X10CrNi1809) Plug: EPDM</p>	
Leakage	Max 0,01% of $K_{VS}$ , Class IV for ANSI FCI 70-2 and EN60534-4 modif. 1	
Fluid Temperature Limits	2...110 °C	
Ambient Temperature Limits	2...50 °C	
Max weight packaging excluded	200 g	350 g
Compliance	Johnson Controls declares that these products are in compliance with the essential requirements and other relevant provisions of the PED (Pressure Equipment Directive) 2014/68/UE (Paragraph 4, comma 3). CE marking is not applicable. ROHS (95/2002/CE)	

## Technical Specifications VG3000

### Threaded Female Connection

Models	VG3200xx VG3240xx	VG3201xx VG3241xx	VG3300xx VG3340xx	
Body Type	2-way PDTC (NO)	2-way PDTC (NO)	3-way mixing	
Body Rating	PN16 Nominal, maximum rated pressure			
Inherent Flow Characteristic	Linear			
Service	Water, glycol solutions (max 50%) for HVAC applications. Fluid Group 1 according 67/548/EEC. (proper water treatment is recommended, refer to VDI 2035)			
Body Size	DN15 - DN20 - DN25			
Max Pressure drop $\Delta p$	<b>DN15</b>	70 kPa	80 kPa	70 kPa
	<b>DN20</b>	50 kPa	60 kPa	50 kPa
	<b>DN25</b>	40 kPa	50 kPa	40 kPa
<b>K<sub>v</sub> and max. close-off pressure</b>	See "Ordering Code and Dimensions" on page 3			
Body Connection	Gas (ISO 228/1) and NPT			
Nominal Stroke	4.0 mm			
Connection to Actuator	M30 x 1.5			
Materials	<p><b>Body</b> EN12165 CW617 Brass CuZn40Pb2</p> <p><b>Trim</b> Stem: AISI 303 stainless steel (X10CrNiS1809) Spring: AISI 302 stainless steel (X10CrNi1809) Plug: EPDM</p>			
Leakage	Max 0,01% of K <sub>vS</sub> , Class IV for ANSI FCI 70-2 and EN60534-4 modif. 1			
Fluid Temperature Limits	2...110 °C			
Ambient Temperature Limits	2...50 °C			
Max weight packaging excluded	<b>2-way NO</b>	<b>2-way NO</b>	<b>3-way mixing</b>	
	<b>DN15</b>	279 g	318 g	273 g
	<b>DN20</b>	383 g	428 g	383 g
<b>DN25</b>	509 g	539 g	509 g	
Compliance	Johnson Controls declares that these products are in compliance with the essential requirements and other relevant provisions of the PED (Pressure Equipment Directive) 2014/68/UE (Paragraph 4, comma 3). CE marking is not applicable. ROHS (95/2002/CE)			