

VG1201 / VG1801

2- and 3-way Control Valves with Brass Ball

Application

The VG1000 series ball valves are used for the water control of air treatment systems in ventilation and air conditioning units as well as heating system.

They are operated by direct or remote mounted Spring Return and Non Spring Return actuators of Johnson Controls.

Ordering Codes

See tables of valve actuator assemblies



Technical Specifications

Product	VG1201	VG1801
Valve Type	2-way	3-way mixing*
Service	Hot and cold water -30...95 °C (-5...95 °C with VA9104) Water with glycol to max 50% volume Steam to max 100 kPa at 120 °C	
Body pressure rating	PN 40	
Close-off pressure Δps	1380 kPa	
Differenzial pressure Δpmax	600 kPa at 2-way valves without flow disk 340 kPa for all the others 240 kPa for low noise operation	
Flow characteristics	Equal percentage at 2-way valve Equal percentage at 3-way valve (control port) Linear at 3-way valve in bypass (bypass port)	
Leakage rate	< 0.01% from the Kvs, < 1% for bypass port	
Rangeability	> 500 : 1 (EN60534-2-4)	
Material	<ul style="list-style-type: none"> - Body device Forged brass body - Ball Nickel Chrome Plated Brass - Stem Nickel Plated Brass - Valve seat PTFE with graphite part and EPDM O-ring - Spindle gasket 2 x EPDM O-ring - Flow characterisation disk AMODEL® AS 1145HS 	
End Connections	British Standard Pipe Parallel (BSPP) - (Rp, ISO 7/1)	
CE Compliance	PED (Pressure Equipment Directive) 97/23/EC, Category II for Fluid Group 1 Notified Body Code: 0036	

* The valve without flow disc can also be used as diverting.

Legende

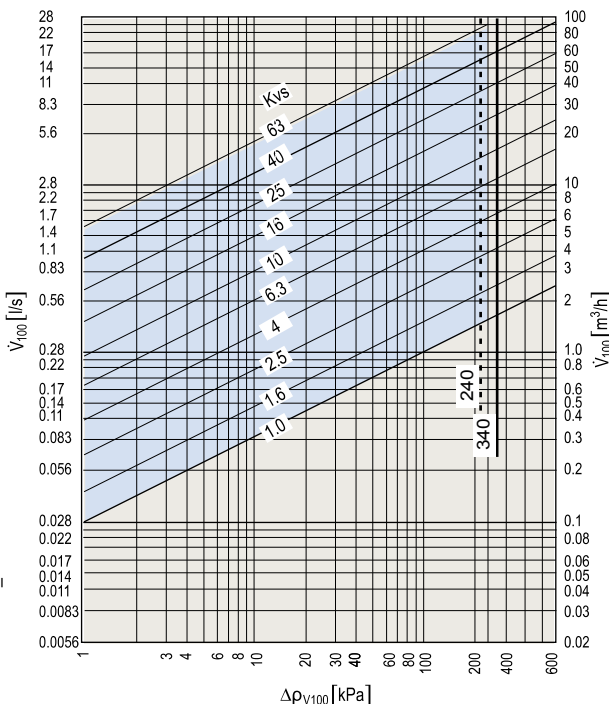
- Δp_{max} = Maximum permitted differential pressure for a long service life
- - - - Δp_{max} = For low-noise operation.
- Δp_{v100} = Pressure difference with ball valve fully open.
- V₁₀₀ = Nominal flow rate with Δp_{v100}

Formula kvs for water

$$k_{vs} = \sqrt{\frac{V_{100}}{\frac{\Delta p_{v100}}{100}}} \quad \begin{matrix} k_{vs} & [\text{m}^3/\text{h}] \\ V_{100} & [\text{m}^3/\text{h}] \\ \Delta p_{v100} & [\text{kPa}] \end{matrix}$$

Definition of Δps

Closing pressure at which the actuator can still seal the valve tightly allowing for the appropriate leakage rate.



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Assemblies of valves with PROPORTIONAL ACTUATORS

Spring return function	---		■	
Supply voltage	24 VAC			
Torque	4 Nm	8 Nm	6 Nm	16 Nm
Running time	72 s	30 s	25 - 40 s	90 - 120 s
Spring return time Power off	---		35 s (max 70 s)	10 s
Control signal	VDC	0 - 10 / 2 - 10		
	mA	0 - 20 / 4 - 20		
Switches	---	2 x SPDT	---	1 x SPDT
		---		2 x SPDT
Feedback	VDC	0 - 10 / 2 - 10		0 - 10
Close-off pressure	1380 kPa			
Actuator code	VA9104-GGA-5S	VA9104-GGA-1S	M9108-GGA-5	M9108-GGC-5
			M9206-GGA-5S	M9206-GGB-5S
			M9216-HGA-1	M9216-HGC-1
Linkage code	---		M9000-525-5	M9000-520-5
				M9000-510-5
Ordering code suffix for assemblies	+5T4GGA	+5A4GGA	+5A8GGA	+5A8GGC
				+536GGA (Spring Opens)
				+556GGA (Spring Closes)
				+536GGB (Spring Opens)
				+556GGB (Spring Closes)
				+526HGA (Spring Opens)
				+546HGA (Spring Closes)
				+526HGC (Spring Opens)
				+546HGC (Spring Closes)

Ordering Codes

Valve code*	Body size	Kvs (Control Port)	Kvs (Bypass Port)**	Disc	Valid combinations of valves, linkages and actuators							
VG1x01AD	DN15	1.0	0.63	■	■	■	---	■	■	■	---	---
VG1x01AE		1.6	1.0		■	■	---	■	■	■	---	---
VG1x01AF		2.5	1.6		■	■	---	■	■	■	---	---
VG1x01AG		4.0	2.5		■	■	---	■	■	■	---	---
VG1x01AL		6.3	4.0		■	■	---	■	■	■	---	---
VG1x01AN		10	5.0		---	■	■	---	■	■	■	---
VG1x01BG	DN20	4.0	2.5	■	■	---	■	■	■	---	---	
VG1x01BL		6.3	4.0	■	■	---	■	■	■	---	---	
VG1x01BN		10	5.0	---	■	■	---	■	■	■	---	---
VG1x01CL	DN25	6.3	4.0	■	■	---	■	■	■	---	---	
VG1x01CN		10	6.3	■	■	---	■	■	■	---	---	
VG1x01CP		16	8.0	---	■	■	---	■	■	■	---	---
VG1x01DN	DN32	10	6.3	■	---	---	■	■	■	---	---	
VG1x01DP		16	10.0	■	---	---	■	■	■	---	---	
VG1x01DR		25	12.5	---	■	■	---	■	■	■	---	---
VG1x01EP	DN40	16	10	■	---	---	■	■	■	---	---	
VG1x01ER		25	16	■	---	---	■	■	■	---	---	
VG1x01ES		40	20	---	■	■	---	■	■	■	---	---
VG1x01FR	DN50	25	16.0	■	---	---	■	■	---	---	■	■
VG1x01FS		40	25.0	■	---	---	■	■	---	---	■	■
VG1x01FT		63	31.5	---	■	■	---	■	■	---	---	■

Note *:

x = 2 2-way
x = 8 3-way

Note **:

only 3-way valves

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Assemblies of valves with FLOATING and ON/OFF ACTUATORS

Spring return function	---										■								
Supply voltage	24 VAC					230 VAC					24 VAC								
Torque	4 Nm				8 Nm				6 Nm		16 Nm								
Running time	72 s				30 s				60 - 90 s		90 - 120 s								
Spring return time Power off	---										35 s (max 70 s)		10 s						
Control signal	Floating		Floating with time-out and ON/OFF						Floating										
Switches	---					2 x SPDT		---		2 x SPDT		---		1 x SPDT		---		2 x SPDT	
Feedback	---																		
Close-off pressure	1380 kPa																		
Actuator code	VA9104-AGA-5S	VA9104-AGA-1S	VA9104-IGA-5S	VA9104-IGA-1S	M9108-AGA-5	M9108-AGC-5	M9108-ADA-5	M9108-ADC-5	M9206-AGA-5S	M9206-AGB-5S	M9216-AGA-1	M9216-AGC-1							
Linkage code	---				M9000-525-5				M9000-520-5				M9000-510-5						
Ordering code suffix for assemblies	+5T4 AGA	+5A4 AGA	+5T4 IGA	+5A4 IGA	+5A8 AGA	+5A8 AGC	+5A8 ADA	+5A8 ADC	+536 AGA (Spring Opens)	+536 AGB (Spring Opens)	+526 AGA (Spring Opens)	+526 AGC (Spring Opens)							
									+556 AGA (Spring Closes)	+556 AGB (Spring Closes)	+546 AGA (Spring Closes)	+546 AGC (Spring Closes)							

Ordering Codes

Valve code*	Body size	Kvs (Control Port)	Kvs (Bypass Port) **	Disc	Valid combinations of valves, linkages and actuators											
VG1x01AD	DN15	1.0	0.63	■	■	■	■	■	---	■	■	■	■	■	---	---
VG1x01AE		1.6	1.0		■	■	■	■	---	■	■	■	■	■	---	---
VG1x01AF		2.5	1.6		■	■	■	■	---	■	■	■	■	■	---	---
VG1x01AG		4.0	2.5		■	■	■	■	---	■	■	■	■	■	---	---
VG1x01AL		6.3	4.0		■	■	■	■	---	■	■	■	■	■	---	---
VG1x01AN		10	5.0		---	■	■	■	■	---	■	■	■	■	■	---
VG1x01BG	DN20	4.0	2.5	■	■	■	■	■	---	■	■	■	■	■	---	---
VG1x01BL		6.3	4.0		■	■	■	■	---	■	■	■	■	■	---	---
VG1x01BN		10	5.0		---	■	■	■	■	---	■	■	■	■	■	---
VG1x01CL	DN25	6.3	4.0	■	■	■	■	■	---	■	■	■	■	■	---	---
VG1x01CN		10	6.3		■	■	■	■	---	■	■	■	■	■	---	---
VG1x01CP		16	8.0		---	■	■	■	■	---	■	■	■	■	■	---
VG1x01DN	DN32	10	6.3	■	---	---	---	---	■	■	■	■	■	■	---	---
VG1x01DP		16	10.0		---	---	---	---	■	■	■	■	■	■	---	---
VG1x01DR		25	12.5		---	---	---	---	■	■	■	■	■	■	---	---
VG1x01EP	DN40	16	10	■	---	---	---	---	■	■	■	■	■	■	---	---
VG1x01ER		25	16		---	---	---	---	■	■	■	■	■	■	---	---
VG1x01ES		40	20		---	---	---	---	■	■	■	■	■	■	---	---
VG1x01FR	DN50	25	16.0	■	---	---	---	---	■	■	■	■	---	---	■	■
VG1x01FS		40	25.0		---	---	---	---	■	■	■	■	---	---	■	■
VG1x01FT		63	31.5		---	---	---	---	---	■	■	■	■	---	---	■

Note *:

x = 2 2-way
x = 8 3-way

Note **:

only 3-way valves

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Assemblies of valves with ON/OFF ACTUATORS

Spring return function	■							
Supply voltage	24 VAC				230 VAC			
Torque	6 Nm		16 Nm		6 Nm		16 Nm	
Running time	10 - 40 s		90 - 120 s		10 - 40 s		90 - 120 s	
Spring return time Power off	30 s ±20%		10 s		30 s ±20%		10 s	
Control signal	ON/OFF							
Switches	---	1 x SPDT	---	2 x SPDT	---	1 x SPDT	---	2 x SPDT
Feedback	---							
Close-off pressure	1380 kPa							
Actuator code	M9206- BGA-5S	M9206- BGB-5S	M9216- BGA-1	M9216- BGC-1	M9206- BDA-5S	M9206- BDB-5S	M9216- BDA-1	M9216- BDC-1
Linkage code	M9000-520-5		M9000-510-5		M9000-520-5		M9000-510-5	
Ordering code suffix for assemblies	+536 BGA (Spring Opens) +556 BGA (Spring Closes)	+536 BGB (Spring Opens) +556 BGB (Spring Closes)	+526 BGA (Spring Opens) +546 BGA (Spring Closes)	+526 BGC (Spring Opens) +526 BGC (Spring Closes)	+536 BDA (Spring Opens) +556 BDA (Spring Closes)	+536 BDB (Spring Opens) +556 BDB (Spring Closes)	+526 BDA (Spring Opens) +546 BDA (Spring Closes)	+526 BDC (Spring Opens) +546 BDC (Spring Closes)

Ordering Codes

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VG1x01AD	DN15	1.0	0.63	■	■	■	---	---	■	■	---	---	
VG1x01AE		1.6	1.0		■	■	---	---	■	■	---	---	
VG1x01AF		2.5	1.6		■	■	---	---	■	■	---	---	
VG1x01AG		4.0	2.5		■	■	---	---	■	■	---	---	
VG1x01AL		6.3	4.0		■	■	---	---	■	■	---	---	
VG1x01AN		10	5.0		---	■	■	---	---	■	■	---	---
VG1x01BG	DN20	4.0	2.5	■	■	■	---	---	■	■	---	---	
VG1x01BL		6.3	4.0		■	■	---	---	■	■	---	---	
VG1x01BN		10	5.0		---	■	■	---	---	■	■	---	---
VG1x01CL	DN25	6.3	4.0	■	■	■	---	---	■	■	---	---	
VG1x01CN		10	6.3		■	■	---	---	■	■	---	---	
VG1x01CP		16	8.0		---	■	■	---	---	■	■	---	---
VG1x01DN	DN32	10	6.3	■	■	■	---	---	■	■	---	---	
VG1x01DP		16	10.0		■	■	---	---	■	■	---	---	
VG1x01DR		25	12.5		---	■	■	---	---	■	■	---	---
VG1x01EP	DN40	16	10	■	■	■	---	---	■	■	---	---	
VG1x01ER		25	16		■	■	---	---	■	■	---	---	
VG1x01ES		40	20		---	■	■	---	---	■	■	---	---
VG1x01FR	DN50	25	16.0	■	---	---	■	■	---	---	■	■	
VG1x01FS		40	25.0		---	---	---	■	■	---	---	■	■
VG1x01FT		63	31.5		---	---	---	■	■	---	---	■	■

Note *:
x = 2 2-way
x = 8 3-way

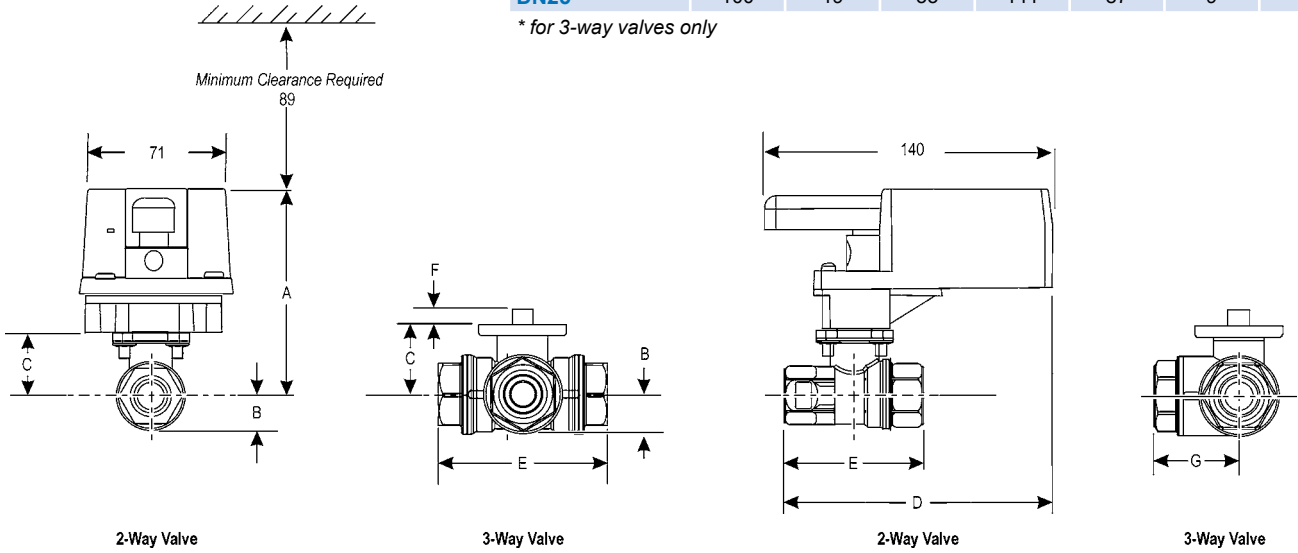
Note **:
only 3-way valves

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Non-Spring Return VA9104 Actuated VG1000 Series Ball Valve Linkage, Dimensions in mm

Valve Size, DN	A	B	C	D	E	F	G*
DN15	98	17	31	129	64	9	32
DN20	98	17	31	133	71	9	36
DN25	100	19	33	141	87	9	43

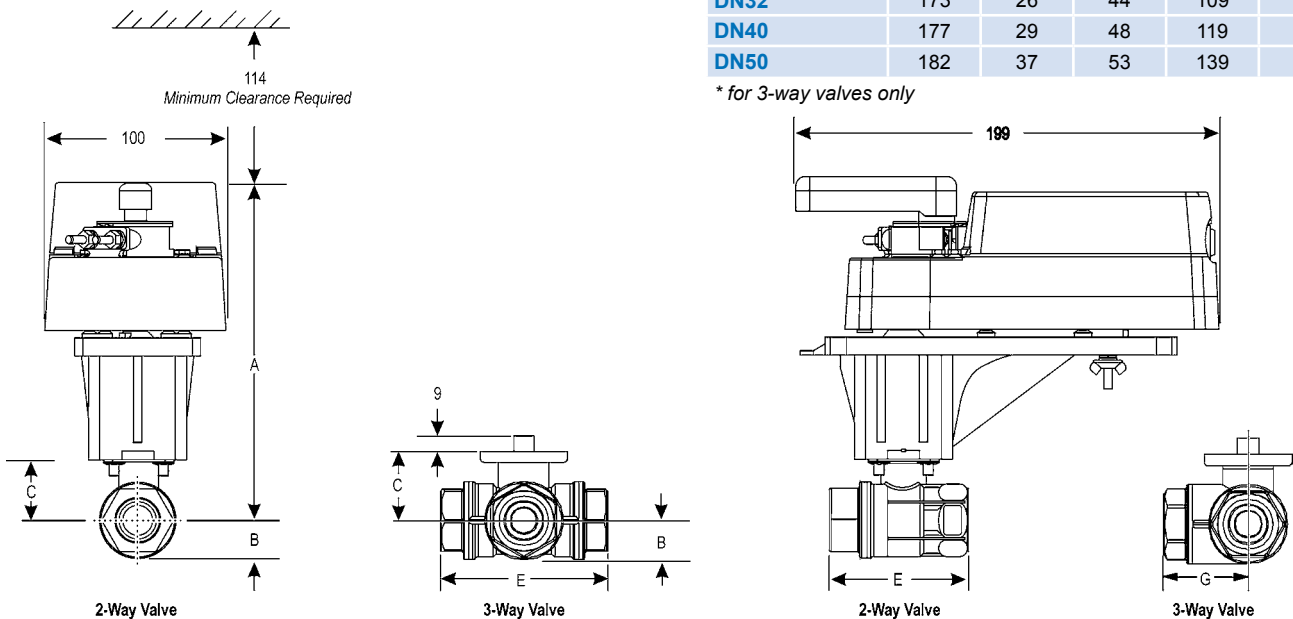
* for 3-way valves only



Non-Spring Return M9108 Actuated VG1000 Series Ball Valve with M9000-525-5 Linkage, Dimensions in mm

Valve Size, DN	A	B	C	E	G*
DN15	160	17	31	67	33
DN20	160	17	31	75	38
DN25	161	19	33	92	46
DN32	173	26	44	109	54
DN40	177	29	48	119	59
DN50	182	37	53	139	74

* for 3-way valves only

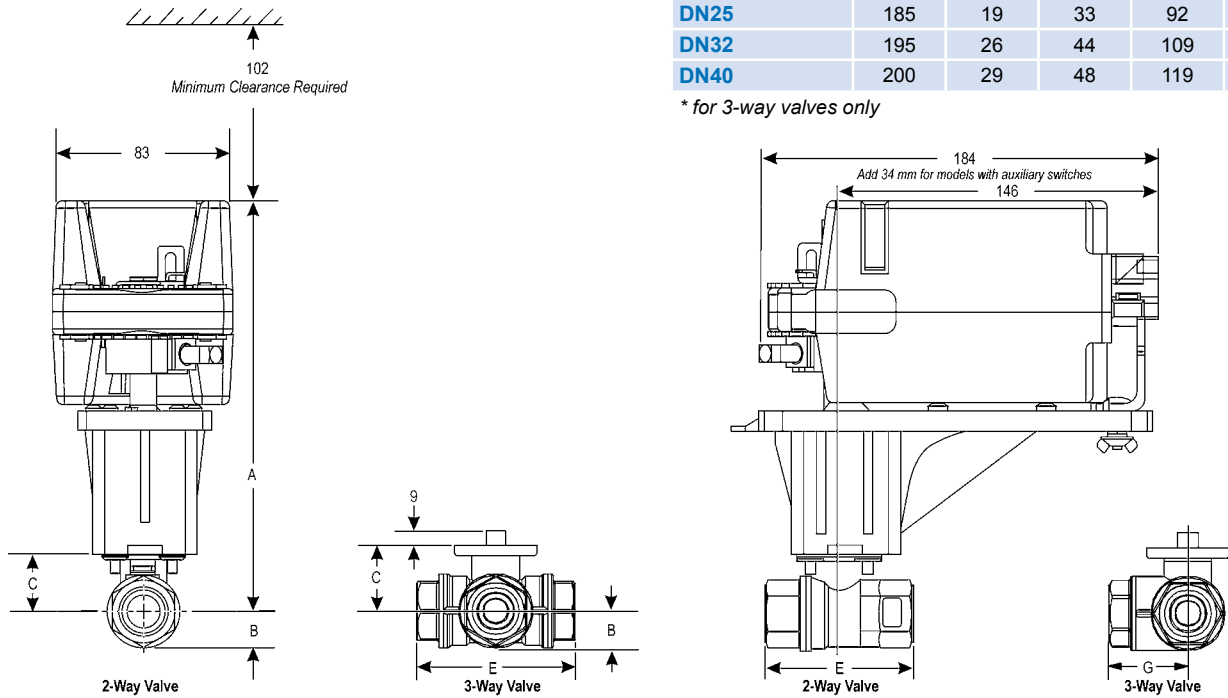


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Spring Return M9206 Actuated VG1000 Series Ball Valve with M9000-520-5 Linkage, Dimensions in mm

Valve Size, DN	A	B	C	E	G*
DN15	183	17	31	67	33
DN20	183	17	31	75	38
DN25	185	19	33	92	46
DN32	195	26	44	109	54
DN40	200	29	48	119	59

*for 3-way valves only



Spring Return M9216 Actuated VG1000 Series Ball Valve with M9000-510-5 Linkage, Dimensions in mm

Valve Size, DN	A	B	C	E	F	G*
DN50	204	37	54	139	55	74

*for 3-way valves only

