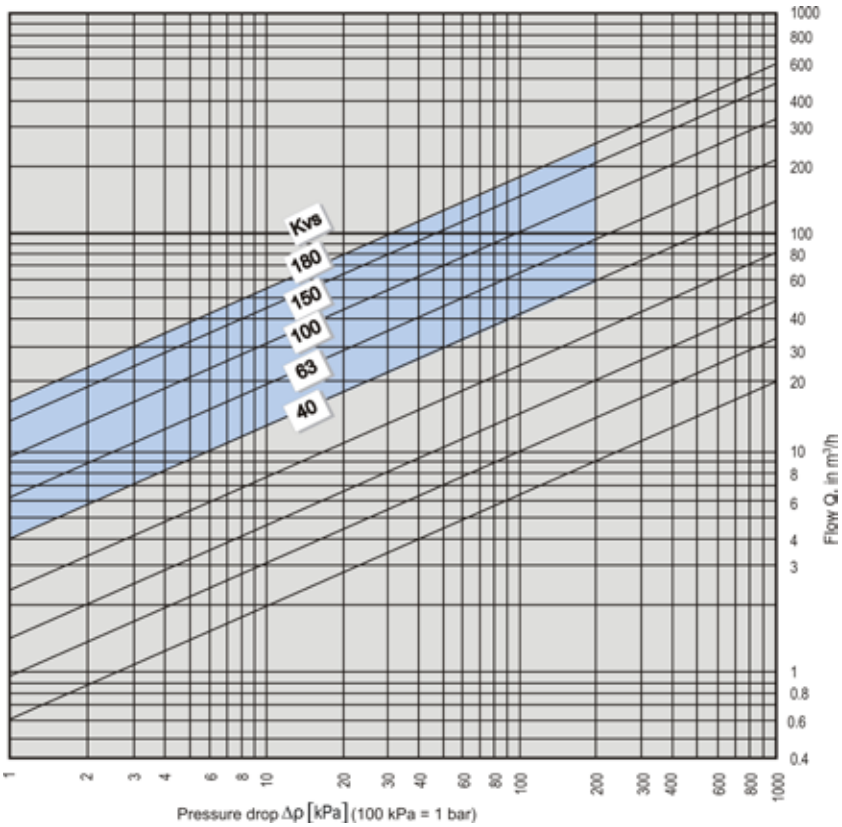
VG1xE5
2- and 3-way Flanged Control Ball Valves

Application
The VG1000 series control 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 remote mounted Spring Return and Non Spring Return actuators of Johnson Controls.

Ordering Codes
See tables of valve actuator assemblies

Features
- Stainless steel ball and stem assembly
- Amodel® flow characterizing disk
- Ethylene Propylene Diene Monomer (EPDM) double o-ring stem seal
- Graphite-Reinforced Polytetrafluoroethylene (PTFE) Seat

Kv Selection Diagram for DN 65 to DN 100 Flanged Control Ball Valves



Building Efficiency
Headquarters: Milwaukee, Wisconsin, USA
Branch Officies: Principal Cities World-wide

VG1xE5
2- and 3-way Flanged Control Ball Valves

Assemblies of valves with PROPORTIONAL ACTUATORS

Spring return function		---		■	
Supply voltage		24 VAC/DC			
Torque		24 Nm		20 Nm	
Running time		125 s		150 s	
Spring return time Power off		---		26 s	
Control signal	***VDC***	0 - 10 / 2 - 10			
	mA	0 - 20 / 4 - 20			
Switches		---	2 x SPDT	---	2 x SPDT
Feedback	***VDC***	0 - 10 / 2 - 10			
Actuator code		**M9124-GGA-1N**	**M9124-GGC-1N**	**M9220-HGA-1**	**M9220-HGC-1**
Linkage code		M9000-518		M9000-519	
Ordering code suffix for assemblies		+ 524GGA	+ 524GGC	+ 530HGA (Spring Opens)	+ 530HGC (Spring Opens)
				+ 550HGA (Spring Closes)	+ 550HGC (Spring Closes)

Ordering Codes

Valve code	Body size	Kvs (Control Port)	Kvs (Bypass Port)	Valid combinations of valves, linkages and actuators			
2-way Models							
VG12E5GT	DN65	63	---	■	■	■	■
VG12E5GU		100	---	■	■	■	■
VG12E5HU	DN80	100	---	■	■	■	■
VG12E5HW		180	---	■	■	■	■
VG12E5JV	DN100	150	---	■	■	■	■
3-way Models							
VG18E5GT	DN65	63	40	■	■	■	■
VG18E5GU		100	63	■	■	■	■
VG18E5HU	DN80	100	63	■	■	■	■
VG18E5HW		180	75	■	■	■	■
VG18E5JV	DN100	150	75	■	■	■	■

VG1xE5
2- and 3-way Flanged Control Ball Valves

Assemblies of valves with FLOATING and ON/OFF ACTUATORS

Spring return function	---				■					
Supply voltage	24 VAC / DC		230 VAC		24 VAC / DC				230 VAC	
Torque	24 Nm				20 Nm					
Running time	125 s				150 s				24 - 57 s	
Spring return time Power off	---				20 s				11...50 s	
Control signal	Floating and ON/OFF						ON/OFF			
Switches	---	2 x SPDT	---	2 x SPDT	---	2 x SPDT	---	2 x SPDT	---	2 x SPDT
Feedback	---									
Actuator code	M9124-AGA-1N	M9124-AGC-1N	M9124-ADA-1N	M9124-ADC-1N	M9220-AGA-1	M9220-AGC-1	M9220-BGA-1	M9220-BGC-1	M9220-BDA-1	M9220-BDC-1
Linkage code	M9000-518				M9000-519					
Ordering code suffix for assemblies	+524AGA	+524AGC	+524ADA	+524ADC	+530AGA (Spring Opens) +550AGA (Spring Closes)	+530AGC (Spring Opens) +550AGC (Spring Closes)	+530BGA (Spring Opens) +550BGA (Spring Closes)	+530BGC (Spring Opens) +550BGC (Spring Closes)	+530BDA (Spring Opens) +550BDA (Spring Closes)	+530BDC (Spring Opens) +550BDC (Spring Closes)

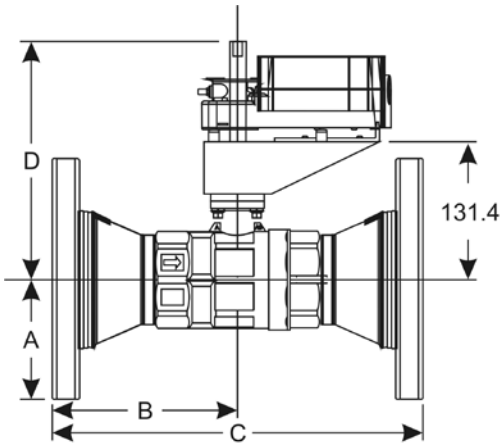
Ordering Codes

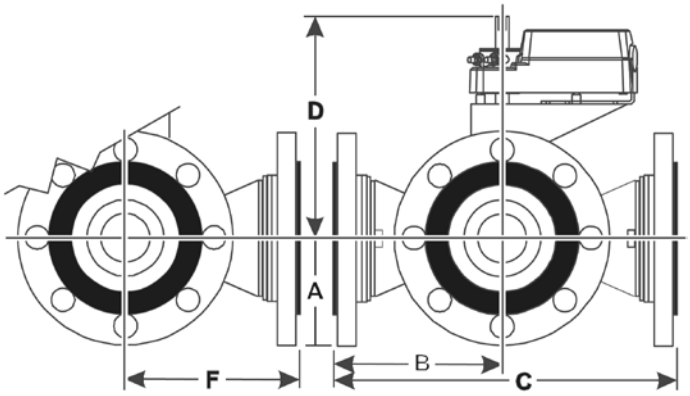
Valve code	Body size	Kvs (Control Port)	Kvs (Bypass Port)	Valid combinations of valves, linkages and actuators									
2-way													
VG12E5GT	DN65	63	---	■	■	■	■	■	■	■	■	■	■
VG12E5GU		100	---	■	■	■	■	■	■	■	■	■	■
VG12E5HU	DN80	100	---	■	■	■	■	■	■	■	■	■	■
VG12E5HW		180	---	■	■	■	■	■	■	■	■	■	■
VG12E5JV	DN100	150	---	■	■	■	■	■	■	■	■	■	■
3-way													
VG18E5GT	DN65	63	40	■	■	■	■	■	■	■	■	■	■
VG18E5GU		100	63	■	■	■	■	■	■	■	■	■	■
VG18E5HU	DN80	100	63	■	■	■	■	■	■	■	■	■	■
VG18E5HW		180	75	■	■	■	■	■	■	■	■	■	■
VG18E5JV	DN100	150	75	■	■	■	■	■	■	■	■	■	■

Non-Spring Return M9124 Actuated VG1xE5 Flanged Ball Valves, Dimensions in mm

Valve Size, DN	A	B	C	D	F*	Holes for Flange	Holes Diameters	Bolt
DN65	92.5	145	290	226	156	4	17.5	M16x60
DN80	100	155	310	226	180	8	17.5	M16x65
DN100	110	175	350	226	225	8	17.5	M16x70

** for 3-way valves only*

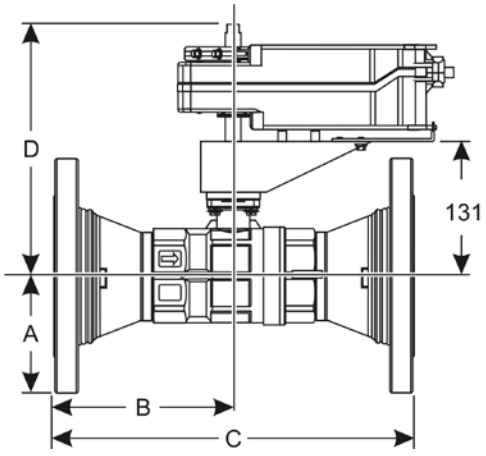


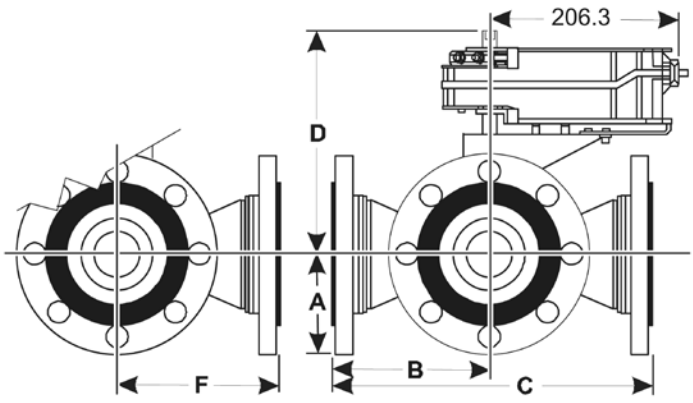


Spring Return M9220 Actuated VG1xE5 Flanged Ball Valves, Dimensions in mm

Valve Size, DN	A	B	C	D	F*	Holes for Flange	Holes Diameters	Bolt
DN65	92.5	145	290	226	156	4	17.5	M16x60
DN80	100	155	310	226	180	8	17.5	M16x65
DN100	110	175	350	226	225	8	17.5	M16x70

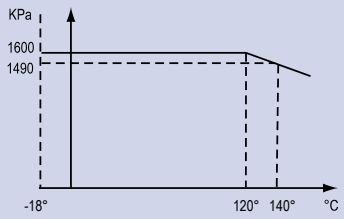
** for 3-way valves only*





VG1xE5
2- and 3-way Flanged Control Ball Valves

Technical Specifications

Product	VG1xE5 Non-Spring Return Flanged Control Ball Valve
Valve Type	2-way & 3-way mixing
Body Rating	PN16
Service*	Hot water, chilled water, 50/50 glycol solutions, and 172 kPa Saturated Steam for HVAC Systems
Valve Fluid Temperature Limits	-18 to 140 °C
Valve Body Pressure / Temperature Rating	
- Water	
- Steam	max 172 kPa
Maximum Closeoff Pressure	
- 2-way	689 kPa
- 3-way	345 kPa
Maximum Recommended Operating Pressure Drop	207 kPa for quiet service
Flow Characteristics	
- 2-way	Equal Percentage (according EN60534-2-4)
- 3-way	Equal Percentage (according EN60534-2-4) Flow Characteristics of Inline Port (Coil) and Linear Percentage Flow Characteristics of Angle Port (Bypass)
Rangeability**	Greater than 500:1
Leakage	
- 2 and 3-way	0.01% of Maximum Flow, Control port, ANSI/FCI 70-2, Class 4
- 3-way	1% of Maximum Flow, Bypass Port
Storage and Transport Temperature	20 °C to +65 °C, dry and free of dirty
End Connections	Flanged, DIN EN 1092, Type 16, Form B sealing strip
Minimum Ambient Operating Temperature	
-20 °C	M9124 Series Non-Spring Return Actuator
-40 °C	M9220 Series Spring Return Actuator
Maximum Ambient Operating Temperature***	
50 °C	M9124 Series Non-Spring Return Actuator
55 °C	M9220 Series Spring Return Actuator
Materials	
- Body	Forged brass EN 12165
- Ball and Blowout-Proof Stem	Stainless Steel x5CrNi1810 EN10088-3
- Flanges & adapters	EN-JL 1040 (cast iron)
- Seat, stem seals	EPDM O-Ring
- Stem bush	PTFE
- Characterizing Disk	A model AS-1145HS
- Ball seat	PTFE graphite filled
Weight	**VG12E5Gx** *DN65* Kg. 15.4 **VG12E5Hx** *DN80* *2-way* Kg. 16.3 **VG12E5Jx** *DN100* Kg. 20 **VG18E5Gx** *DN65* Kg. 18.5 **VG18E5Hx** *DN80* *3-way* Kg. 22.2 **VG18E5Jx** *DN100* Kg. 28.1
CE **Compliance**	Johnson Controls, Inc., declares that these products are in compliance with the essential requirements and other relevant provisions of the PED (Pressure Equipment Directive) 97/23/EC, Category II for Fluid Group 1. Notified Body Code: 0036

* Refer to VDI 2035 Standard for proper water treatment.
** Rangeability is defined as the ratio of maximum controllable flow to minimum controllable flow.
*** In steam applications, install the valve with the stem horizontal to the piping, and wrap the valve and piping with insulation.

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.