



CONTROL VALVES

BALL VALVES VG1000 SERIES

DESCRIPTION

The **Johnson Controls VG1000 Series ball valves** are available with two- and three-way body patterns with a characterized insert for equal percentage flow control and Cv ratings in the range of traditional globe valves. They are available in connection sizes from 1/2" to 2" (Cv's from 1.2 to 73.7). The **VG1000 Series** valves are used in combination with spring return and non-spring return direct-coupled actuators from Johnson Controls. The **VG1000 Series** are designed to control chilled water, hot water, 50% glycol, and 15 psig steam (stainless trim models only).

FEATURES

- **Minimum 200,000 full cycle life expectancy**
- **Compatible with water, glycol, and low-pressure steam**
- **Equal percentage flow characteristics**
- **Assembled or ordered separately**



VG124xFx



VG184xFx

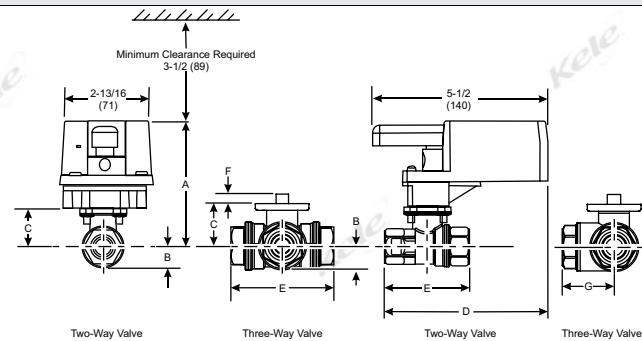


SPECIFICATIONS

Size	1/2" to 2" FNPT
Cv Range	1.2 to 73.7
Life Expectancy	200,000 leak-free cycles
Body Pattern	Two-way and three-way mixing or diverting
Flow Characteristic	Equal percentage
Leakage Rating	ANSI Class IV (0.01% of Cv)
Maximum Closeoff Pressure	200 psid (1378 kPa)
Pressure Drop	50 psid (345 kPa) maximum; full port valves up to 150 psid (1034 kPa)
Pressure Rating	580 psig (3996 kPa), PN40
Materials Of Construction	
Body	Forged Brass
Ball	
VG1XX1	Chrome Plated Brass
VG1XX5	300 Series Stainless Steel
Stem	
VG1XX1	Nickel Plated Brass
VG1XX5	300 Series Stainless Steel

Seats	Graphite-reinforced PTFE with EPDM O-Ring
Seals	EPDM Double O-Rings
Media Compatibility	Hot or chilled water, <50% glycol, <15 psi steam (stainless trim models only)
Media Temperature Range	Stainless trim 250°F (121°C) @ 15 PSI Steam, -22° to 284°F (-30° to 140°C) Water 23° to 203°F (-5° to 95°C)
Brass trim	
Compatible Actuators	
Non-spring return	VA9104 (integral linkage) or M9109 w/ M9000-520 linkage; VA9203, VA9208 (integral linkage)
Spring return	
Operating Temperature	
Minimum	-22°F (-30°C)*
Maximum	140°F (60°C)
	*Varies by Actuator model
Warranty	1 year

DIMENSIONS



DIMENSIONS in(cm) (For Non-Spring Return Actuators; see notes below regarding Spring Return Actuators)							
Valve Size	A ^{1,3}	B	C	D ^{2,4}	E	F	G
1/2" (DN15)	3.9 (9.8)	.65 (1.7)	1.2 (3.1)	5.1 (12.9)	2.5 (6.4)	.34 (9.0)	1.3 (3.2)
3/4" (DN20)	3.9 (9.8)	.65 (1.7)	1.2 (3.1)	5.2 (13.3)	2.8 (7.1)	.34 (9.0)	1.4 (3.6)
1" (DN25)	3.7 (10.0)	.75 (1.9)	1.3 (3.3)	5.6 (14.1)	3.4 (8.7)	.34 (9.0)	1.7 (4.3)
1-1/4" (DN32)	6.8 (17.3)	1.0 (2.6)	1.7 (4.4)	7.5 (19.0)	3.9 (9.8)	.34 (9.0)	2.0 (5.1)
1-1/2" (DN40)	6.8 (17.3)	1.1 (2.9)	1.9 (4.8)	7.7 (19.5)	4.3 (11.0)	.34 (9.0)	2.1 (5.4)
2" (DN50)	7.2 (18.2)	1.5 (3.7)	2.1 (5.3)	7.9 (20.1)	4.8 (12.3)	.34 (9.0)	2.6 (6.5)

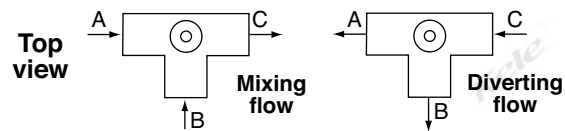
1. Add .38" (.95 cm) to dimension A, for VA9203 actuators (1/2" to 1" valves)
2. Add 1.6" (4.1 cm) to dimension D, for VA9203 actuators (1/2" to 1" valves)
3. Add 0.9" (2.3 cm) to dimension A, for VA9208 actuators (1-1/4" to 2" valves)
4. Subtract .03" (.76 cm) from dimension D, for VA9208 actuators (1/2" to 1" valves)
5. Add approximately 1.5" (3.8 cm) to dimension A when adding thermal varrier to VA9XXX actuators.

FLOW PATTERN

Two-way Flow Pattern



Three-way Flow Pattern



With actuator fully ccw,
port B = closed, Flow = A → C

With actuator fully cw,
port A = closed, Flow = B → C

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ORDERING INFORMATION

VALVE						NON-SPRING RETURN ACTUATOR			SPRING RETURN ACTUATOR		
2-WAY BRASS TRIM	2-WAY SS TRIM (STEAM)	3-WAY BRASS TRIM	3-WAY SS TRIM	SIZE	CV	TWO-POSITION	FLOATING	PROPORTIONAL	TWO-POSITION	FLOATING	PROPORTIONAL
VG1241AD	VG1245AD	VG1841AD	VG1845AD	1/2"	1.2	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241AE	VG1245AE	VG1841AE	VG1845AE	1/2"	1.9	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241AF	VG1245AF	VG1841AF	VG1845AF	1/2"	2.9	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241AG	VG1241AG	VG1841AG	VG1841AG	1/2"	4.7	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241AL	VG1245AL	VG1841AL	VG1845AL	1/2"	7.4	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241AN	VG1245AN	VG1841AN	VG1845AN	1/2"	11.7	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
		VG1841BG	VG1845BG	3/4"	4.7	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241BL	VG1245BL	VG1841BL	VG1845BL	3/4"	7.4	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241BN	VG1245BN	VG1841BN	VG1845BN	3/4"	11.7	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241CL	VG1245CL	VG1841CL	VG1845CL	1"	7.4	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241CN	VG1245CN	VG1841CN	VG1845CN	1"	11.7	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241CP	VG1245CP	VG1841CP	VG1845CP	1"	18.7	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
		VG1841DN	VG1845DN	1-1/4"	11.7	M9106-IGA-2	M9106-AGA-2	M9106-GGA-2	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2
VG1241DP	VG1245DP	VG1841DP	VG1845DP	1-1/4"	18.7	M9106-IGA-2	M9106-AGA-2	M9106-GGA-2	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2
VG1241DR	VG1245DR	VG1841DR	VG1845DR	1-1/4"	29.2	M9106-IGA-2	M9106-AGA-2	M9106-GGA-2	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2
VG1241EP	VG1245EP	VG1841EP	VG1845EP	1-1/2"	18.7	M9106-IGA-2	M9106-AGA-2	M9106-GGA-2	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2
VG1241ER	VG1245ER	VG1841ER	VG1845ER	1-1/2"	29.2	M9106-IGA-2	M9106-AGA-2	M9106-GGA-2	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2
VG1241ES	VG1245ES	VG1841ES	VG1845ES	1-1/2"	46.8	M9106-IGA-2	M9106-AGA-2	M9106-GGA-2	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2
		VG1841FR	VG1845FR	2"	29.2	M9109-AGA-2	M9109-AGA-2	M9109-GGA-2	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2
VG1241FS	VG1245FS	VG1841FS	VG1845FS	2"	46.8	M9109-AGA-2	M9109-AGA-2	M9109-GGA-2	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2
VG1241FT	VG1245FT	VG1841FT	VG1845FT	2"	73.7	M9109-AGA-2	M9109-AGA-2	M9109-GGA-2	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2

Notes:

- Spring return assembly model numbers have either **-NC** (normally closed) or **-NO** (normally open) suffix and will be pre-assembled as such. For 3W valves, "normal" refers to flow to the coil, port A.
- All **M9XXX** actuators include **M9000-520** linkage, which is steam ready.
- For models with switches, change to actuator model number to include "C" instead of "A" at the end of the three letter insert. Example: **VA9203-GGC-2Z**

Refer to actuator pages for wiring diagrams

Example:

MODEL	DESCRIPTION
UG1XXXXX/	Ball valve body 2-way or 3-way
XXXXX	Actuator with linkage
-N.X	N.O. or N.C. (Spring Return Only)

ACCESSORIES

M9000-341
M9000-561

Optional Weather Shield for VA Actuators (NEMA 3R equivalent)
Thermal Barrier for Steam applications using VA Actuator (must be ordered separately for VA actuators)