

VG7010 Series Male Threaded Bronze Valves

Introuduction

The VG7010 Series electrically and pneumatically operated bronze valves with male threaded connection are designed primarily to regulate the flow of water and low pressure steam in response to the demand of a controller, in heating, ventilating, and air conditioning systems. These valves are available in normally open (N.O.) "push down to close" (N.C.) "push down to open", and three way mixing configurations. Both electric and pneumatic actuators are available.



**VG7010 2-way with VA-7150 electric actuator
and VG7010 3-way with
VA-7310 electric actuator**

Features and Benefits	
<input type="checkbox"/> Complete family of DN15 through DN20 Bronze Valves, in two-way N.O., N.C. and three-way mixing configurations	Covers all common HVAC applications
<input type="checkbox"/> Electric and pneumatic actuators available for all valves	Allows applications of the best suited and most cost-effective actuator
<input type="checkbox"/> Every valve tested for tight shut-off	Provides maximum energy efficiency and ensures occupant comfort
<input type="checkbox"/> Uses Standard Johnson Controls Ring Packing	Provides industry-leading reliability and operating life
<input type="checkbox"/> Flexible features and options ordering template	Easy-to-select the right valve combination for your specific application
<input type="checkbox"/> Standard Bonnet and stem design	Allows easy field retrofit, easy field mounting, and interchangeability of actuators.

Ordering data

Ordering code for valve bodies

Item Code	Kvs	Body Size (DN)	Valve configuration
VG7211Ax	0,25	DN15	2 way PDTC (N.O.)
VG7211Bx	0,4		
VG7211Cx	0,63		
VG7211Dx	1		
VG7211Ex	1,6		
VG7211Fx	2,5		
VG7211Gx	4		
VG7211Lx	6,3	DN20	
VG7411Ax	0,25	DN15	2 way PDTO (N.C.)
VG7411Bx	0,4		
VG7411Cx	0,63		
VG7411Dx	1		
VG7411Ex	1,6		
VG7411Fx	2,5		
VG7411Gx	4		
VG7411Lx	6,3	DN20	
VG7815Ax	0,25	DN15	3 way mixing
VG7815Bx	0,4		
VG7815Cx	0,63		
VG7815Dx	1		
VG7815Ex	1,6		
VG7815Fx	2,5		
VG7815Gx	4		
VG7815Lx	6,3	DN20	

Valve Stem

x = **S** Slotted,
for VA-7310 electric and V-3801 pneumatic
actuators

x = **T** Threaded,
for VA-7150, VA7700 electric and V-3001 pneumatic
actuators

Ordering of factory mounted assemblies of valves and electric actuators

The valves and actuators can be ordered separately or factory mounted.
When factory mounted, please add “**+M**” to the order code for the actuator.

For example:

VG7211LT (2way N.O., BSP parallel , brass equal%, DN20, k_{vs} 6.3, standard threaded stem)
VA-7150-1001+M (VA-7150-1001 incremental type actuator with standard 24VAC supply)

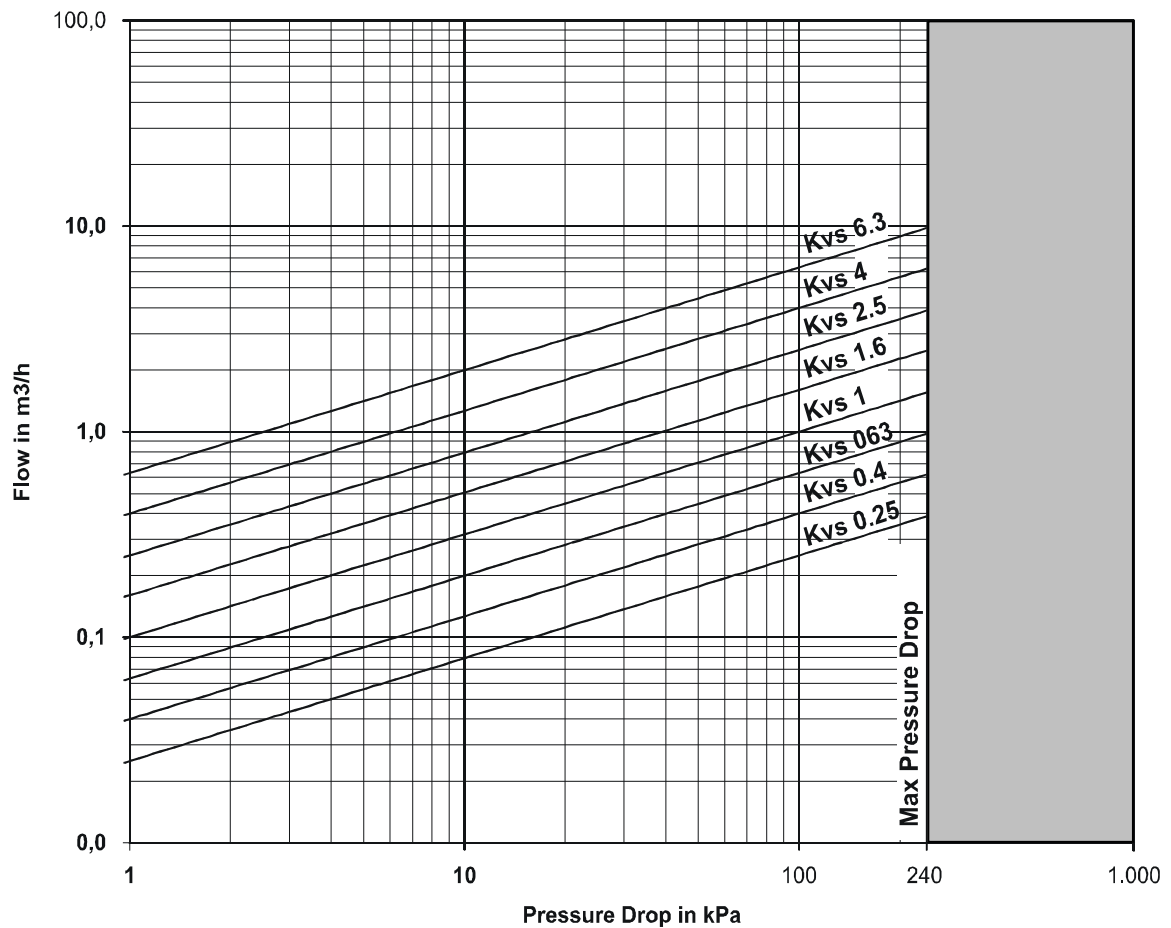
Ordering of factory mounted assemblies of valves and pneumatic actuators

For the valves with slotted stem, factory mounted assemblies of valves and V-3801 pneumatic actuators can be ordered.

Item Code	Spring Range
VG7xxxxS + 3801B	21-42 kPa (3-6 PSI) recommended for 2-way PDTTC valves
VG7xxxxS + 3801E	63-91 kPa (9-13 PSI) recommended for 2-way PDTTO and 3-way valves
VG7xxxxS + 3801B	21-42 kPa (3-6 PSI) recommended for 2-way PDTTC valves
VG7xxxxS + 3801E	63-91 kPa (3-13 PSI) recommended for 2-way PDTTO and 3-way valves

Valve selection










The valve size for water applications can be defined using the diagrams below, where the maximum pressure drop is not to be exceeded.



K_v selection diagram

Operation

When the stem of the valve is moved down by the actuator, it opens the PDTO port or closes the PDTC port of a valve.

Valve Type	Stem movement / flow	
	▶ = flow	▷ = no flow
 2-way NO, PDTC*	 Actuator spindle down	 Actuator spindle up
 2-way NC, PDTO*	 Actuator spindle down	 Actuator spindle up
 3-way, mixing	 Actuator spindle down	 Actuator spindle up

*) PDTC = Push down to close
 PDTO = Push down to open

Valve actuator combinations

(see pertinent actuator bulletins)

The VG7010 series male threaded cast bronze valve can be combined with following pneumatic and electric actuator series:

VA-7310 electric actuator series

Item code	Power supply	Manual override
Incremental model		
VA-7310-8001	24 VAC	Yes
Proportional model		
VA-7312-8003	24 VAC	Yes

VA-7150 electric actuator series

Item code	Power supply	Manual override
Incremental models		
VA-7150-1001	24 VAC	No
VA-7150-1003	230 VAC	
Proportional model		
VA-7152-1001	24 VAC	No

VA-77xx-100x electric actuator series

Item code	Power supply	Manual override
Incremental models (3-point)		
VA-7700-1001	24 VAC	No
VA-7700-1003	230 VAC	No
VA-7740-1001	24 VAC	Yes
VA-7740-1003	230 VAC	Yes
Proportional models (0...10 VDC / 0...20mA)		
VA-7706-1001	24 VAC	No
VA-7746-1001	24 VAC	Yes

V-3801 pneumatic actuator series

For field mounting the housing and piston and the mounting kit have to be ordered.

V-3801-8001 housing and piston (without spring)**Mounting kit for pneumatic actuator**

(upper spring seat, spring stem extension, set screw)

Item code	Spring Range
VG7000-1010	21-42 kPa (3-6 psi)
VG7000-1012	63-91 kPa (9-13 psi)

Maintenance Parts

Description	Ordering Code
Packing Kit	VG7000-6001

Accessories (order separately)

		Ordering Code
For DN15 body size	Soldering socket kit for copper pipe of 12 mm external diameter (up to k_{vs} 1.6)	VB-7040-8901
	Soldering socket kit for copper pipe of 16 mm external diameter (up all k_{vs})	VB-7040-8902
	Welding socket kit for iron pipe of 18 mm external diameter (up all k_{vs})	VB-7040-8903
For DN20 body size	Welding socket kit for iron pipe of 26 mm external diameter (up all k_{vs})	VB-7040-8910

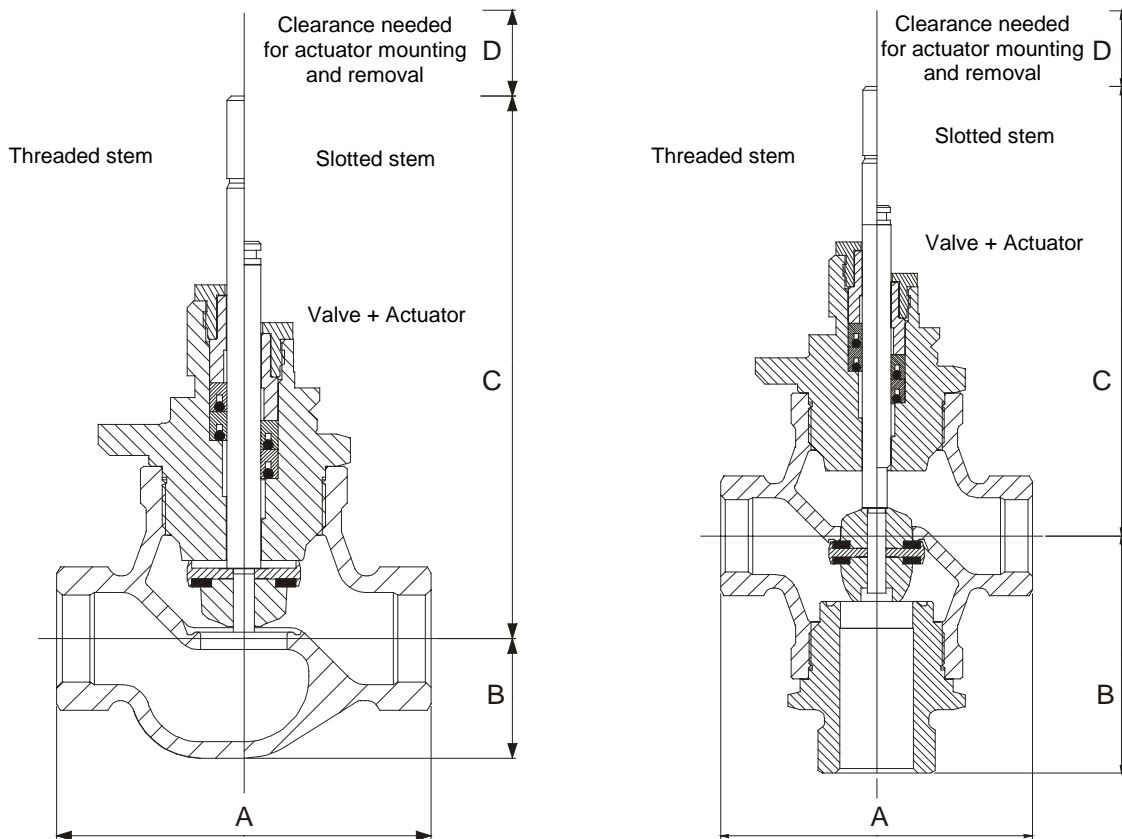
Applications**Maximum Close-Off Pressures in kPa, for electric valves & actuators assemblies**

Valve		Actuator Series	
DN	K_{vs}	VA-731x	VA-715x VA-77xx
15	0.25	1600	1600
	0.4	1600	1600
	0.63	700	1600
	1.0	700	1600
	1.6	700	1600
	2.5	400	1500
	4.0	400	1500
20	6.3	250	950

Maximum Close-Off Pressures in kPa, for pneumatic valves/actuators assemblies

Actuator Series	Valve		2-way PDTO or 3-way PDTTC Port (with 138 kPa Supply) Spring Range		2-way PDTO or 3-way PDTTC Port (with 0 kPa Supply) Spring Range	
	DN	k _{vs}	21 to 42 kPa (3 to 6 psi)	63 to 91 kPa (9 to 13 psi)	21 to 42 kPa (3 to 6 psi)	63 to 91 kPa (9 to 13 psi)
V-3801	15	0.25	1600	1600	580	1600
		0.4	1600	1600	580	1600
		0.63	1180	530	165	720
		1	1180	530	165	720
		1.6	1180	530	165	720
		2.5	670	305	90	405
		4.0	670	305	90	405
	20	6.3	430	195	55	255

Dimensions (in mm)



Valve Body

Valve size	Connection size	A		B	
		2-way and 3-Way	2-way N.O. (PDTC)	2-way N.C. (PDTO)	3-Way
DN15	¾"	69	22	37	53
DN20	1"	75	25	40	62

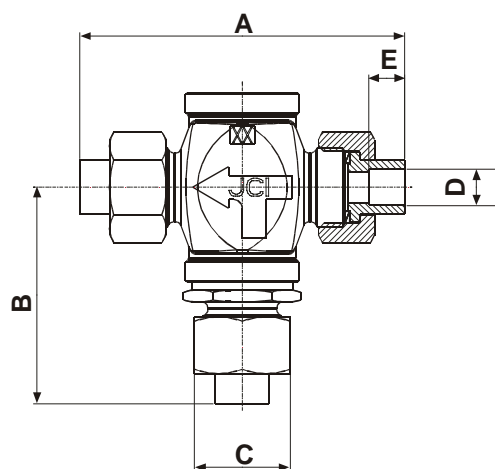
Valve and actuator assemblies

Actuator Series	C	D
VA-7310	127	80
VA-7150	195	80
VA-770x	200	20
VA-774x	220	40
V-3801	102	90

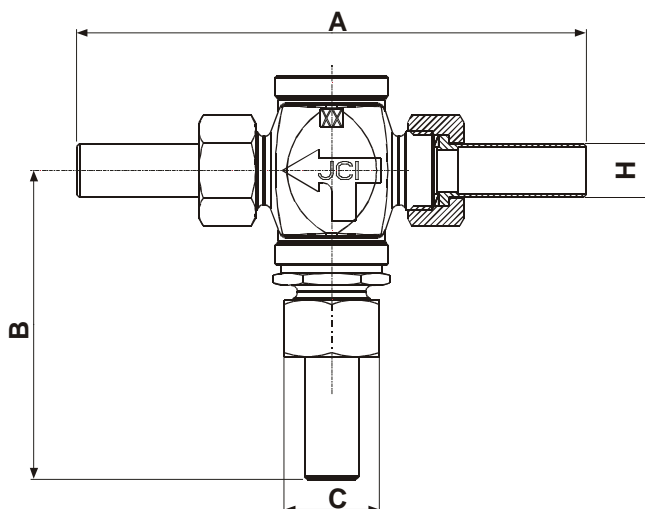
Valves weight (Kg)

Valve Size	2-way N.O. (PDTC)	2-way N.C. (PDTO)	3-way
DN15	0.6	0.8	0.8
DN20	0.7	1.0	1.0

Dimensions (in mm)



Valve with soldering socket
(VB-7040-8901; VB-7040-8902)



Valve with welding socket
(VB-7040-8903; VB-7040-8910)

Valve Body with socket

Body size	Ordering Code of Socket	A	B (3-way only)	C	E	D (int. diam. Ø)	H (ext. diam. Ø)
DN15	VB-7040-8901	110	74	32	12	12	18
	VB7040-8902					16	
	VB-7040-8903	152	95		-	-	
DN20	VB-7040-8910	158	105	40	-	-	26

Specifications

Product	VG7010
Models	2-way PDT0, 2-way PDTc and 3-Way Mixing
Service*	Hot Water, Chilled Water, Glycol Solutions, or Steam for HVAC Systems
Valve Body Size/k_v	DN15: 0.25, 0.4, 0.63, 1.0, 1.6, 2.5 and 4.0 DN20: 6.3
Body Thread	Gas BSP Parallel (DIN 259, ISO 228/1, BS 2779)
Valve Stroke	8 mm
Valve Body Rating	PN 16
Leakage	0.01% of Maximum Flow class IV, EN60534-4
Inherent Flow Characteristics	2-way valves: Equal Percentage 3-way valves: Equal Percentage in N.C. port and linear in N.O. port
Rangeability**	25:1 for All Sizes
Spring Range	21 to 42 kPa (3 to 6 psi)
Pneumatic Actuators	63 to 91 kPa (9 to 13 psi)
Maximum Recommended Operating Pressure Drop	240 kPa
Maximum Closeoff Pressures	See Tables on page 6 and 7
Body Material	Cast Bronze
Bonnet Material	Brass
Trim Material	Stem: Stainless Steel Plug: Brass Seat: Brass on Molded Elastomeric Disc
Packing Material	Self-adjusting EPR (Ethylene Propylene Rubber) Ring Pack U-cups
Fluid Temperature Limits	VA-7310 and V-3801: 100 kPa Saturated Steam +2 to 120°C water VA-7150 and VA-77xx: 100 kPa Saturated Steam +2 to 140°C water
Ambient Temperature Limits	2 to 65°C

* Proper water treatment is recommended (refer to technical rule VDI 2035 part1 and 2).

** Rangeability is defined as the ratio of maximum flow to minimum controllable flow.

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.



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Specifications

Models	2-way PDTO, 2-way PDTC and 3-Way Mixing	
Service*	Hot Water, Chilled Water, Glycol Solutions, or Steam for HVAC Systems	
Valve Body Size/k_v	DN15	0.25, 0.4, 0.63, 1.0, 1.6, 2.5 and 4.0
	DN20	6.3
Body Thread	Gas BSP Parallel (DIN 259, ISO 228/1, BS 2779)	
Valve Stroke	8 mm	
Valve Body Rating	PN 16	
Leakage	0.01% of Maximum Flow class IV, EN60534-4	
Inherent Flow Characteristics	2-way valves	Equal Percentage
	3-way valves	Equal Percentage in N.C. port and linear in N.O. port
Rangeability**	25:1 for All Sizes	
Spring Range	21 to 42 kPa (3 to 6 psi)	
Pneumatic Actuators	63 to 91 kPa (9 to 13 psi)	
Maximum Recommended Operating Pressure Drop	240 kPa	
Maximum Closeoff Pressures	See Tables on page 5 and 6	
Body Material	Cast Bronze	
Bonnet Material	Brass	
Trim Material	Stem	Stainless Steel
	Plug	Brass
	Seat	Brass on Molded Elastomeric Disc
Packing Material	Self-adjusting EPR (Ethylene Propylene Rubber) Ring Pack U-cups	
Fluid Temperature Limits	VA-7310	100 kPa Saturated Steam
	and V-3801, V-3000	+2 to 120°C
	VA-7150	+2 to 140°C
Ambient Temperature Limits	2 to 65°C	

* Proper water treatment is recommended (refer to technical rule VDI 2035 part1 and 2).

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