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VG7000 Female Threaded Cast Bronze Valve Series with Electric Actuators

Product Bulletin

PB_VG7000 Electric
Issue Date 09 2008

The VG7000 Series electrically operated cast bronze valves with female threaded fittings are designed primarily to regulate the flow of water and steam in response to the demand of a controller, in heating, ventilating and air conditioning systems. These valves are available in two-way PDTC, two-way PDTO and three-way mixing configurations.

For pneumatically operated valves see product bulletin "VG7000 Female Threaded Cast Bronze Valve Series with Pneumatic Actuators".



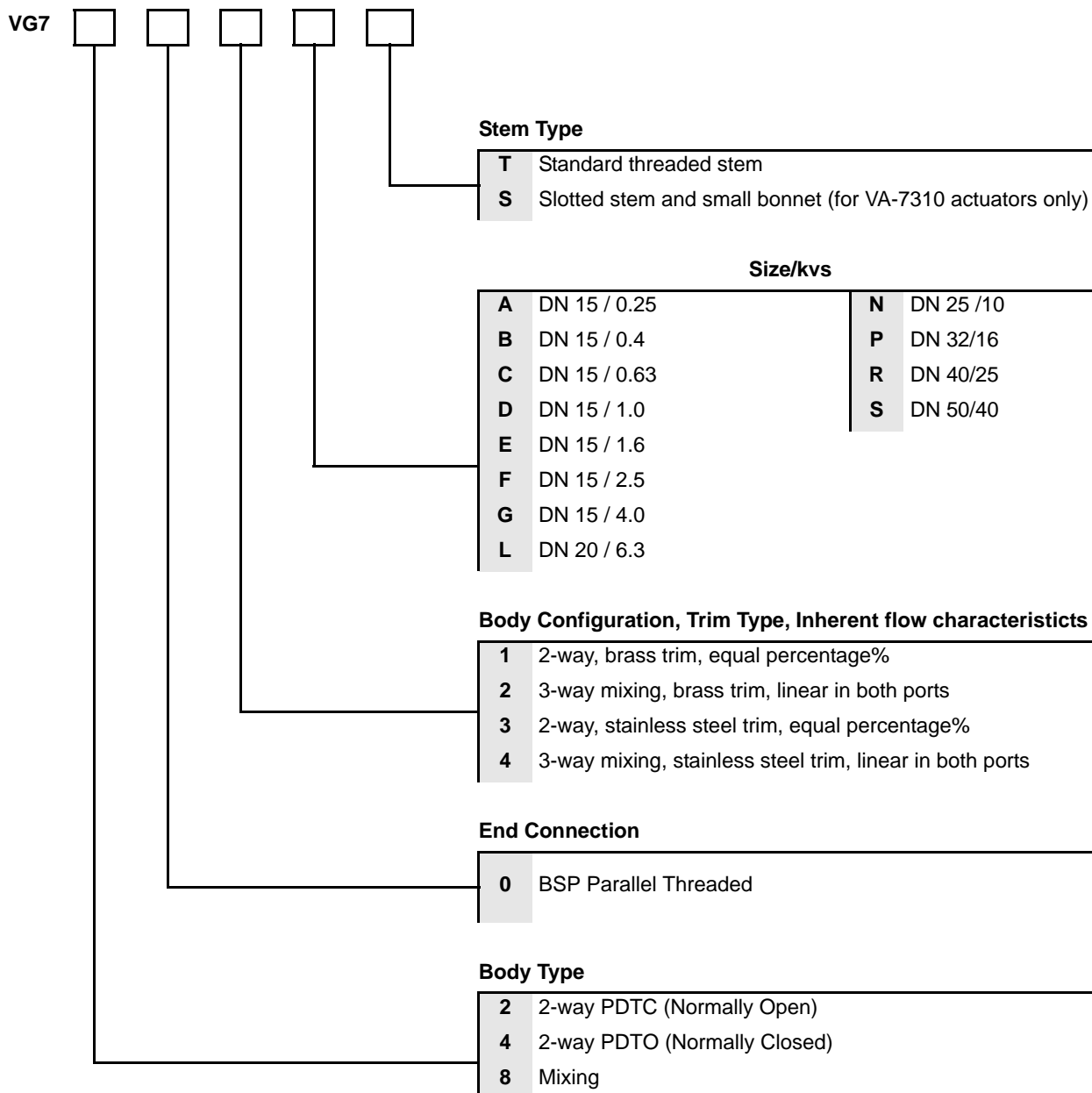
**VG7000 two-way and three-way Valve
with VA-77xx and VA78xx electric actuators**

Features and Benefits

Features	Benefits
DN 15 through DN 50 bronze valves, in two-way PDTC, PDTO and three-way mixing configurations	Covers all common HVAC applications
Wide range of actuators available for all valves	Allows choice of best suited and most cost-effective actuator
Every valve tested for tight shutoff	Provides maximum energy efficiency and ensures occupant comfort
Uses Standard Johnson Controls U-cup Packing	Provides reliability and durability
Flexible features-and-options ordering template	Easy to select the right valve combination for your specific application
Standard Bonnet and stem design	Allows on-site installation and servicing, and interchange-ability of actuators

Ordering Data

Ordering codes for valve bodies



Ordering of factory mounted 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:

VG7201LT

(2-way PDTTC, BSP parallel, brass equal%, DN 20, kvs 6.3, standard threaded stem)

VA-7746-1001+M

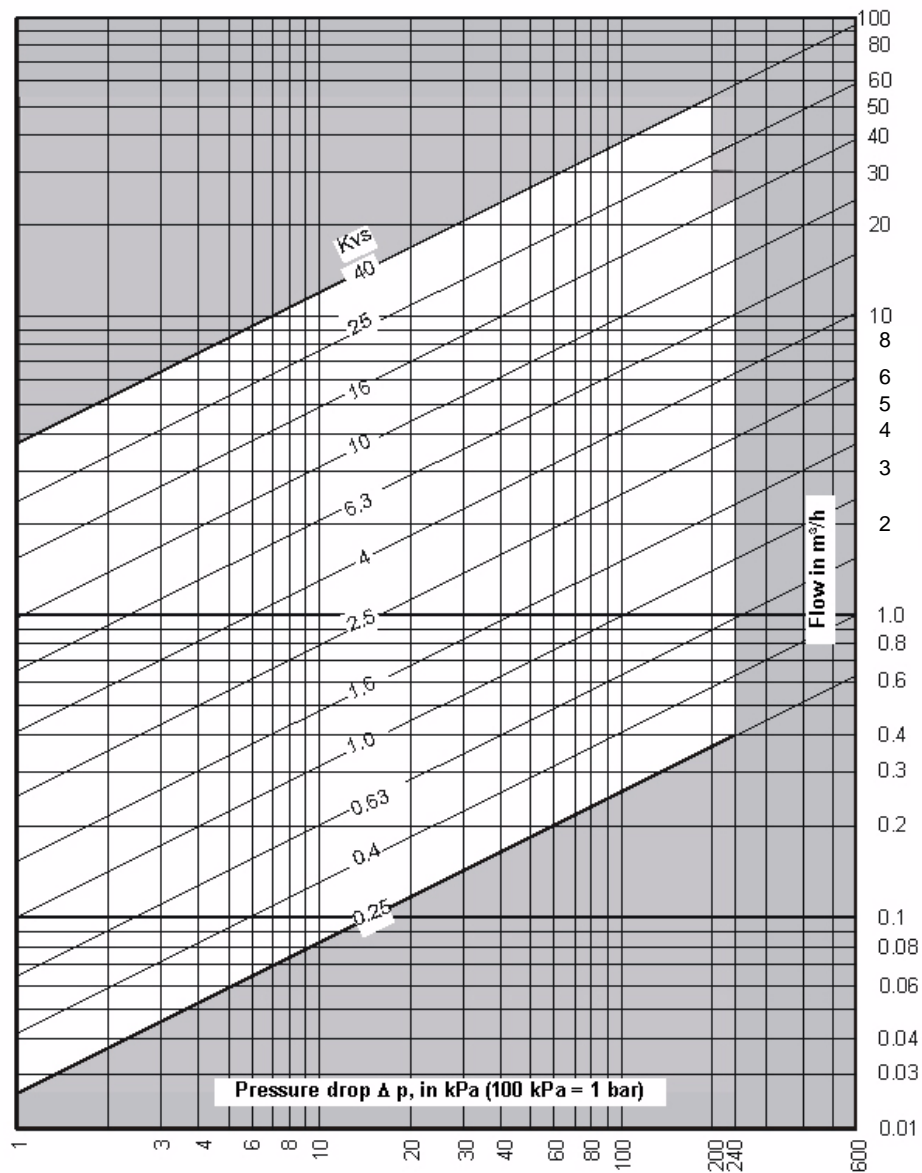
(Proportional model with auto-calibration, 0...10 V DC / 0(4)...20 mA control signal, 24 V AC power supply)

Repair Parts

Description	Code Number
U-cup packing kits for valves with brass trim:	
Single pack for DN 15 or DN 20 Valves	VG7000-6001
Single pack for DN 25 through DN 50 Valves	VG7000-6002
PTFE V-ring packing kits for valves with stainless steel trim:	
Single Pack for DN 15 or DN 20 Valves	VG7000-6011
Single Pack for DN 25 through DN 50 Valves	VG7000-6012

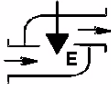


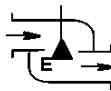


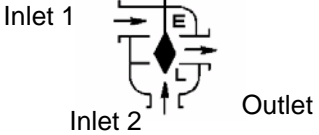
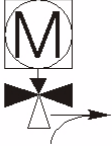

Valve selection

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.



Kvs selection diagram

Operation

Valve function	Stem Position	
2-way PDTC 	Actuator extends stem 	Actuator retracts stem 
2-way PDTO 	Actuator extends stem 	Actuator retracts stem 
3-way mixing Inlet 1 Inlet 2 Outlet 	Actuator extends stem 	Actuator retracts stem 

L = Linear **E** = Equal percent
▶ = Open **◀** = Closed

Valve actuator combinations

The VG7000 series female threaded cast bronze valve can be combined with following electric actuator series:

VA-731x actuators: Synchronous motor driven actuator, IP42 protection class, 150 N force, floating or proportional control.

Item Code	Power Supply	Control	Feedback or Aux. Switches	Manual Override
VA-7310-8001	24 VAC	Floating	No	Yes
VA-7312-8001		Proportional 0...10 VDC	No	No



VA-731x actuators require VG7000 Series valves with slotted stem (VG7xxxxS)

VA-715x actuators: Synchronous motor driven actuator, IP42 protection class, 500 N force, floating or proportional control

Item Code	Power Supply	Control	Feedback or Aux. Switches	Manual Override
VA-7150-1001	24 VAC	Floating	No	No
VA-7152-1001		Proportional 0...10 VDC	No	No



VA-77xx actuators: Synchronous motor driven actuator, IP54 protection class, 500 N force, floating or self-calibrating proportional control with 0-10 VDC position feedback

Item Code	Power Supply	Control	Feedback or Aux. Switches	Manual Override
VA-7700-1001	24 VAC	Floating	No	No
VA-7700-1003	230 VAC			Yes
VA-7740-1001	24 VAC			
VA-7740-1003	230 VAC	Proportional 0...10 VDC / 0(4)...20 mA	0...10 VDC	No
VA-7706-1001	24 VAC			Yes
VA-7746-1001	24 VAC			



VA-720x actuators: Synchronous motor driven actuator, IP42 protection class, 1000 N force, floating or proportional control

Item Code	Power Supply	Control	Feedback or Aux. Switches	Manual Override
VA-7200-1001	24 VAC	Floating	No	No
VA-7202-1001		Proportional control (0...10 VDC / 0(4)...20 mA)	No	No



VA78xx Non Spring Return and Spring Return actuators: Brushless motor driven actuator, IP54 protection class, 1000 N force, ON/OFF, floating or self-calibrating proportional control

Item Code	Power Supply	Control	Feedback or Aux. Switches	Manual Override	Return Spring Action	
VA7810-ADA-11	230 VAC	ON / OFF or Floating	No	Yes	No	
VA7810-ADC-11		ON / OFF or Floating	2 aux. switches			
VA7810-AGA-11	24 VAC	ON/OFF or Floating	No			
VA7810-AGC-11			2 aux. switches			
VA7810-AGH-11			2 kOhm feedback			
VA7810-GGA-11		ON/OFF or floating or proportional 0(2)...10 VDC / 0(4)...20 mA	0..10 VDC			
VA7810-GGC-11			0..10 VDC and 2 aux switches			
VA7820-GGA-11			0..10 VDC			Actuator stem retracts on Power Cut Off
VA7820-GGC-11			0..10 VDC and 2 aux switches			
VA7830-GGA-11			0..10 VDC			Actuator stem extends on Power Cut Off
VA7830-GGC-11	0..10 VDC and 2 aux switches					



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Applications

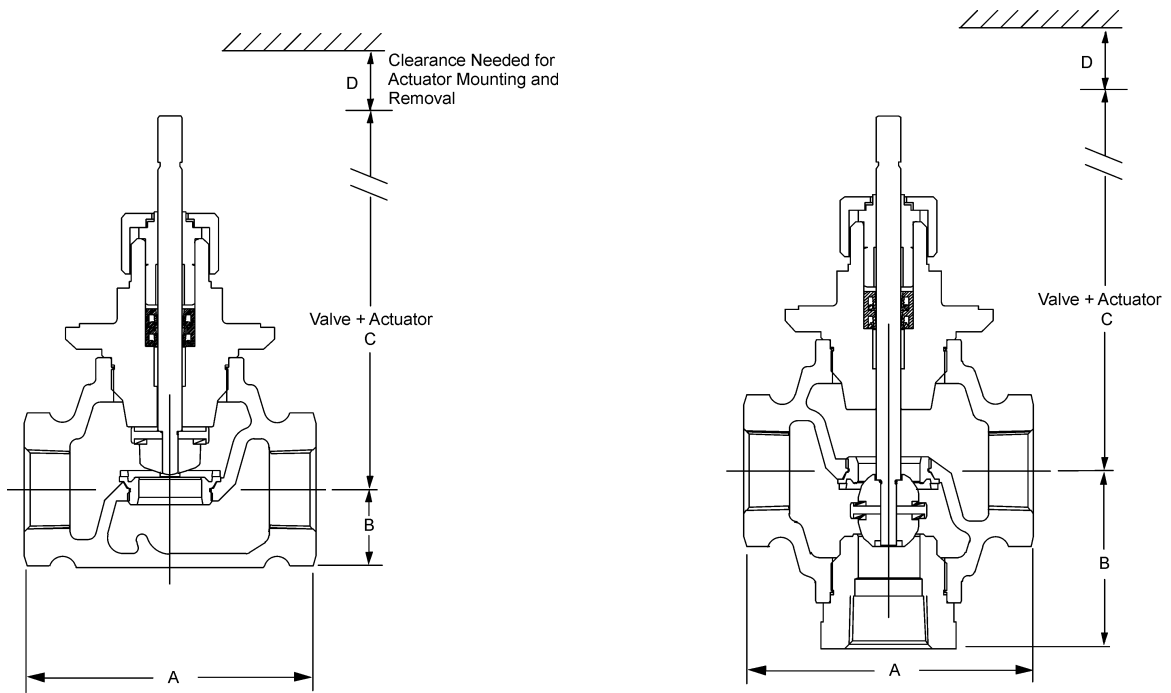
Maximum close-off pressures (in kPa), for valves with brass trim

Size	Max. kvs	VA-731x	VA-715x	VA-77xx	VA-720x	VA78xx
DN 15	0.25 0.4	1600	1600		--	
DN 15	0.63 1.0 1.6	700	1600		--	
DN 15	2.5 4.0	400	1490		--	
DN 20	6.3	250	950		--	
DN 25	10	--	595		1235	
DN 32	16	--	360		750	
DN 40	25	--	235		480	
DN 50	40	--	145		310	

Maximum close-off pressures (in kPa), for valves with stainless steel trim

Size	Max. kvs	VA-731x	VA-715x	VA-77xx	VA-720x	VA78xx
DN 15	0.25 0.4	--	1600		1600	
DN 15	0.63 1.0 1.6	--	1600		1600	
DN 15	2.5 4.0	--	930		1600	
DN 20	6.3	--	595		1220	
DN 25	10	--	370		770	
DN 32	16	--	230		470	
DN 40	25	--	145		300	
DN 50	40	--	90		190	

Dimensions - Valve Body



Dimensions for brass trim valves (VG7x01xx and VG7802xx) in mm

Valve Size	A	B			C					
		2-way PDTC (VG72..)	2-way PDO (VG74..)	3-way Mixing (VG78..)	with VA-731x	with VA-715x	with VA-770x	with VA-774x	with VA-720x	with VA78xx
DN 15	75	21	39	46	127	185	192	209	--	--
DN 20	80	24	41	54	127	185	192	209	--	--
DN 25	105	29	44	65	--	210	217	234	253	286
DN 32	120	34	51	70	--	213	220	237	256	289
DN 40	130	55	70	85	--	227	234	251	270	303
DN 50	150	53	72	95	--	237	244	261	270	313

Dimensions for stainless steel trim valves (VG7x03xx and VG7804xx) in mm

Valve Size	A	B			C					
		2-way PDTC	2-way PDO	3-way Mixing	with VA-731x	with VA-715x	with VA-770x	with VA-774x	with VA-720x	with VA78xx
DN 15	75	21	39	46	--	205	212	229	248	281
DN 20	80	24	41	54	--	210	217	234	253	286
DN 25	105	29	44	65	--	230	237	254	273	306
DN 32	120	34	51	70	--	240	247	264	283	316
DN 40	130	55	70	85	--	245	252	269	288	321
DN 50	150	53	72	95	--	250	257	274	293	326

Clearance for actuator mounting and removal in mm

Actuator	D
VA-731x	25
VA-715x	80
VA-770x	100
VA-774x	100
VA-720x	100
VA-78xx	150

Valve weight (kg)

Trim	Valve Size	2-way PDTC (VG72..)	2-way PDO (VG74..)	Mixing (VG78..)
Brass	DN 15	0.8	0.9	1.0
	DN 20	1.0	1.2	1.3
	DN 25	1.8	2.2	2.4
	DN 32	2.5	2.8	3.1
	DN 40	3.6	4.2	4.6
	DN 50	5.6	6.1	7.1
Stainless Steel	DN 15	0.9	1.1	1.1
	DN 20	1.2	1.4	1.5
	DN 25	2.1	2.4	2.6
	DN 32	2.9	3.4	3.7
	DN 40	3.8	4.2	5.0
	DN 50	5.8	6.4	7.3

Technical Specifications

Product	VG7000	
Models	Two-way PDTC (NO), two-way PDT0 (NC) and three-way mixing	
Service	Water, glycol solutions (max 30%) or steam for HVAC applications. Fluid Group 1 according 67/548/EEC - (proper water treatment is recommended, refer to VDI 2035)	
Valve Body Size	DN: DN15, DN20, DN25, DN32, DN40, DN50 K_{vs}: 0.25, 0.4, 0.63, 1.0, 1.6, 2.5, 4.0, 6.3, 10, 16, 25 and 40	
Body Thread	BSP Parallel (Gas Parallel) (DIN 259, ISO 228/1, BS 2779)	
Valve Stroke	8 mm for DN15 and DN20 -13 mm for DN25 and DN32 - 19 mm for DN40 and DN50	
Valve Body Rating	Meets Requirements of ANSI B16.15, Class 250 and PN 16 (EN 12360)	
Leakage	Brass Trim 0.01% of Maximum Flow per EN60534-4, Class IV Stainless Steel Trim 0.05% of Maximum Flow	
Inherent Flow Characteristics	Equal Percentage 2-way Valves Linear 3-Way Valves in compliance with IEC 534	
Rangeability	25:1 at 0.25...1 kvs and 100:1 at 1.6...40 kvs In accordance with EN 60534-2-4	
Maximum Recommended Operating Pressure Drop	240 kPa for DN15 and DN32 - 200 kPa for DN40 to DN50	
Material Body	Cast Bronze	
Material Bonnet	Brass	
Materials Stainless Steel Trim Valves	Stem Stainless Steel X5CrNiMo1712 Plug X10CrNiS1809 Seat Brass on Molded Elastomeric Disc Packing Self-adjusting EPR (Ethylene Propylene Rubber) Ring Pack U-cups	
Materials Brass Trim Valves	Stem Stainless Steel Plug Brass Seat Brass on Molded Elastomeric Disc Packing Self-adjusting EPR (Ethylene Propylene Rubber) Ring Pack U-cups	
Fluid Temperature Limits	VA-7310 Brass Trim 2 to 120°C water Stainless Trim or 100 kPa Saturated Steam	All other actuators 2 to 140°C water or 100 kPa Saturated Steam 2 to 170°C 690 kPa Saturated Steam except VA78xx which is 2 to 140°C
Ambient Temperature Limits	2 to 65°C	
Compliance	DN15...DN25: PED (Pressure Equipment Directive) 97/23/EC (Paragraph 3, 3). CE marking is not applicable. DN32...DN50: PED (Pressure Equipment Directive) 97/23/EC (Category 1, mod. A). Subject to CE marking.	

The performance specifications are nominal and conform to acceptable industry standard. 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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