VG7000 Female Threaded Bronze Valve Series with Electric Actuators

Product Bulletin

Code No. 10.246 E
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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 VG7000 p, order No. 10.248 E

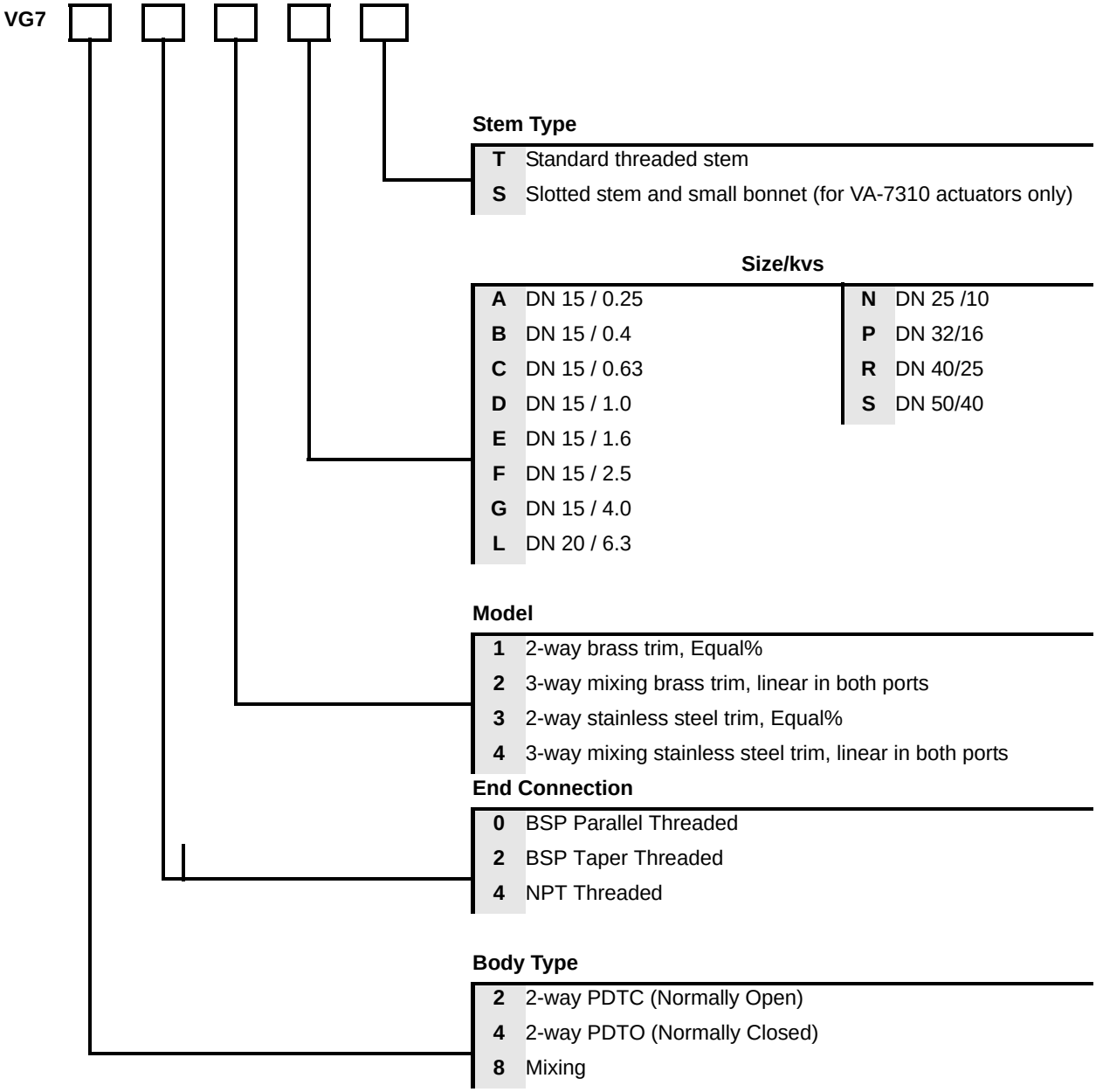
Figure 1: VG7000 two-way and three-way valve with VA-7700 and VA7810 electric actuators

Table 1: 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 electric 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 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:

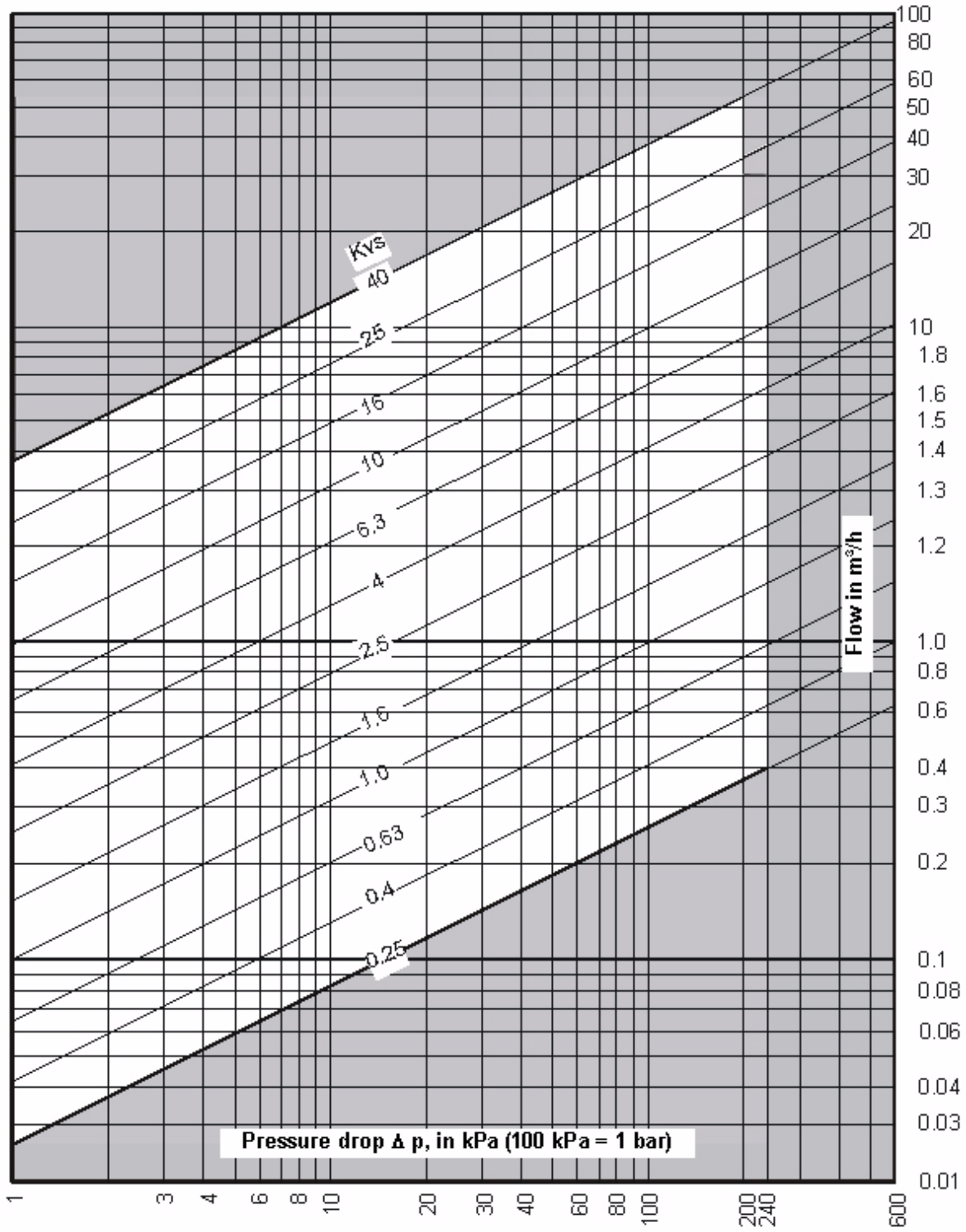
VG7201LT (2-way PDTC, BSP parallel, brass equal%, DN 20, kvs 6.3, standard threaded stem)

VA-7746-1001+M (Proportional model with auto-calibration, 0…10 V DC / 0(4)…20 mA control signal, 24 V AC power supply)

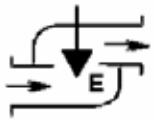
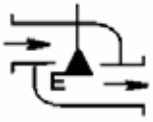
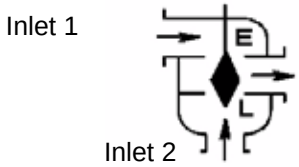
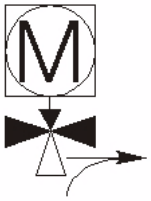
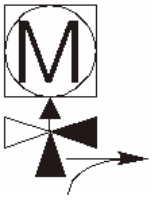
Valve selection

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 for DN 15…50 valves:



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 	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:

The FA-1000 series electro-hydraulic spring return actuators are available with 3-point (floating) or 0…10 V / 0…20 mA control.

FA-10☐☐-110☐

Supply voltage type

- **1** 230VAC, 50/60 Hz
- **6** 24 VAC, 50/60 Hz

Accessories, factory fitted

- **00** None
- **03** Two auxiliary switches and 2 k* feedback potentiometer
- **05** Two auxiliary switches and 130 * feedback potentiometer
- **40** Built-in electronic positioner 0…10 V / 0…20 mA (only 24 VAC models)

VA-7310 actuator: Available with 150 N thrust, as 3 point (floating) or proportional control.

VA-731☐-8001

Supply voltage type

- **0** Floating
- **2** Proportional

VA-7150 actuator: Synchronous motor driven actuator, 500 N thrust with 3 point (floating) or proportional control.

VA-715☐-100☐

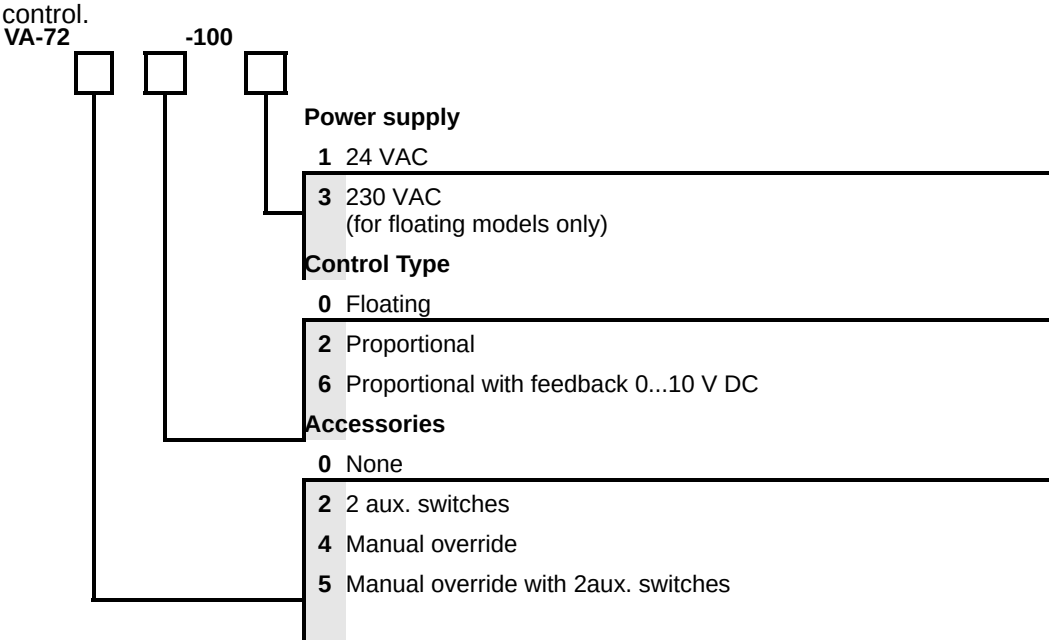
Power supply and switches

- **1** AC 24V
- **3** AC 230 V (for floating models only)

Control Type

- **0** Floating
- **2** Proportional
- **5** Floating with one adjustable aux. switch

VA-7200 actuator: Synchronous motor driven actuator, 1000 N thrust with 3 point (floating) or proportional control.



VA-7700 Actuator ordering codes:
Synchronous, motor driven actuator, 500 N thrust, 3-point (floating) control or proportional control with 0-10 V position feedback. Proportional models have auto-calibration. This actuator responds to a variety of control signals

Table 2:

Device code	Power supply	Manual override
Floating models (3-point)		
VA-7700-1001	24 V AC	None
VA-7700-1003	230 V AC	None
VA-7740-1001	24 V AC	Mechanical
VA-7740-1003	230 V AC	Mechanical
Proportional models (0…10 V DC / 0 (4)…20 mA)		
VA-7706-1001	24 V AC	Electrical
VA-7746-1001	24 V AC	Electrical and mechanical

The VA7810 non-spring return actuator with 1000N thrust for valves in heating, ventilation and air conditioning applications is available for floating (3-point) control or proportional control.

All models have manual override as standard and provide stroke capabilities of 7 mm to 25 mm. Proportional models are self-calibrating. The actuator is intended for use with VG7000 valves

VA7810 Actuator ordering codes:

Table 3:

Ordering code	Actuator Description
	Floating Control
VA7810-ADA-11	230 V AC
VA7810-AGA-11	24 V AC
VA7810-AGC-11	24 V AC, 2 Auxiliary switches
VA7810-AGH-11	24 V AC, 2kW Feedback potentiometer
	Proportional Control
VA7810-GGA-11	24 V AC 0(2)…10 V DC or 0(4)… 20 mA
VA7810-GGC-11	24 V AC 2 Aux. switches 0(2)…10 V DC or 0(4)… 20 mA

Applications

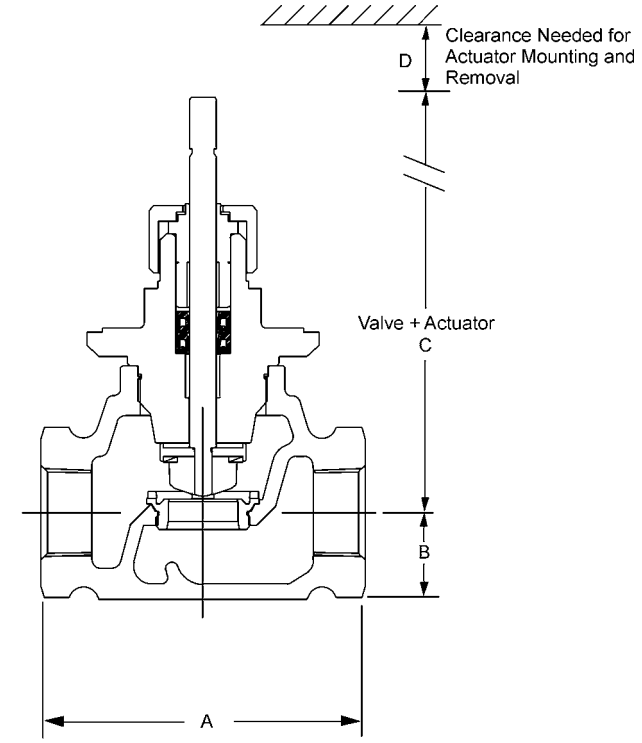
Table 4: Maximum close-off pressures (in kPa), for valves with brass trim

Size	Max. kvs	Non-spring return actuator series				
		VA-731x	VA-715x	VA-77xx	VA-720x	VA7810
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	

Table 5: Maximum close-off pressures (in kPa), for valves with stainless steel trim

Size	Max. kvs	Non-spring return actuator series				Spring return actuator series
		VA-715x	VA-77xx	VA-720x	VA7810	FA-1000
DN 15	0.25 0.4	1600		1600		1600
DN 15	0.63 1.0 1.6	1600		1600		1600
DN 15	2.5 4.0	930		1600		1600
DN 20	6.3	595		1220		1065
DN 25	10	370		770		672
DN 32	16	230		470		410
DN 40	25	145		300		-
DN 50	40	90		190		-

Dimensions - Valve Body



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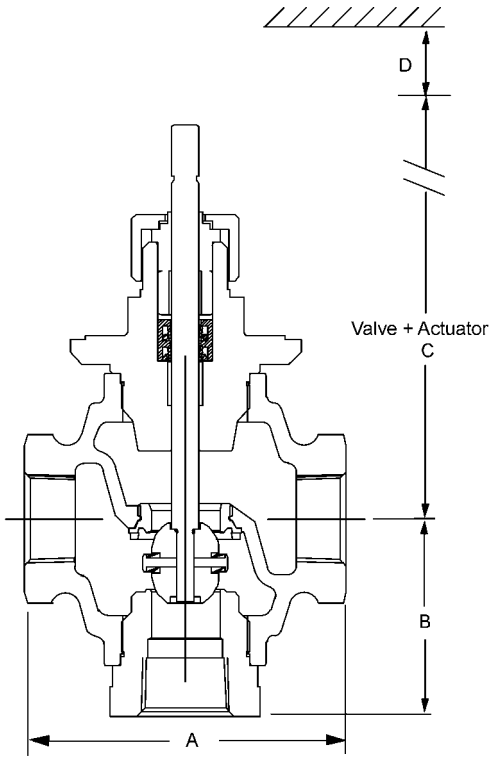

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Table 6: Valve body dimensions (in mm)

Valve Size	A	B		
	2-way PDTC		2-way PDTO	Mixing
DN 15	75	21	39	46
DN 20	80	24	41	54
DN 25	105	29	44	65
DN 32	120	34	51	70
DN 40	130	55	70	85
DN 50	150	53	72	95

Table 7: Actuator dimensions (in mm), as mounted on valves with brass trim

Actuator	C						D
	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	
VA-731x	127	127	--	--	--	--	25
VA-715x	185	185	210	213	227	237	80
VA-770x / VA-774x	192 / 209	192 / 209	217 / 234	220 / 237	234 / 251	244 / 261	50 / 100
VA-720x / VA-724x	--	--	253 / 280	256 / 283	270 / 297	280 / 307	100
VA7810	--	--	286	289	303	313	150

Table 8: Actuator dimensions (in mm), as mounted on valves with stainless steel trim

Actuator	C						D
	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	
VA-715x	205	210	230	240	245	250	80
VA-770x / VA-774x	212 / 229	217 / 234	237 / 254	247 / 264	252 / 269	257 / 274	50 / 100
VA-720x / VA-724x	248 / 275	253 / 280	273 / 300	283 / 310	288 / 315	293 / 320	100
VA7810	281	286	306	316	321	326	150
FA-1000	431	436	456	466	471	476	100

Table 9: Valve weight [Kg]

Trim	Valve Size	2-way PDTC	2-way PDTO	Mixing
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

Table 10:

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

Specifications

Product	**VG7000**		
Models	Two-way PDTC (NO), two-way PDTO (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) BSP Taper (Gas Tapered) (DIN 2999, ISO R7, BS 21) NPT (American Standard Pipe Thread) (ANSI B 1.20.1)		
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…4 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:** **Plug:** **Seat:** **Packing:**	Stainless Steel X5CrNiMo1712 X10CrNiS1809 Brass on Molded Elastomeric Disc Self-adjusting EPR (Ethylene Propylene Rubber) Ring Pack U-cups	
Materials Brass Trim Valves	**Stem:** **Plug:** **Seat:** **Packing:**	Stainless Steel Brass Brass on Molded Elastomeric Disc Self-adjusting EPR (Ethylene Propylene Rubber) Ring Pack U-cups	
Fluid Temperature Limits		**VA-7310**	**All other actuators**
	Brass Trim:	2 to 120°C water or 100 kPa Saturated Steam	2 to 140°C water or 100 kPa Saturated Steam
	Stainless Steel Trim:		2 to 170°C 690 kPa Saturated Steam except VA7810 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 office. The manufacturer shall not be liable for damages resulting from misapplication or misuse of its products.