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VG8000N Series PN 16, DN 15 - DN 150 Nodular Iron Flanged Valves

Introduction

The VG8000N series electrically and pneumatically operated nodular iron valves 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. Two-way, three-way mixing and diverting valve configurations can be ordered. A variety of electric and pneumatic actuators are available.



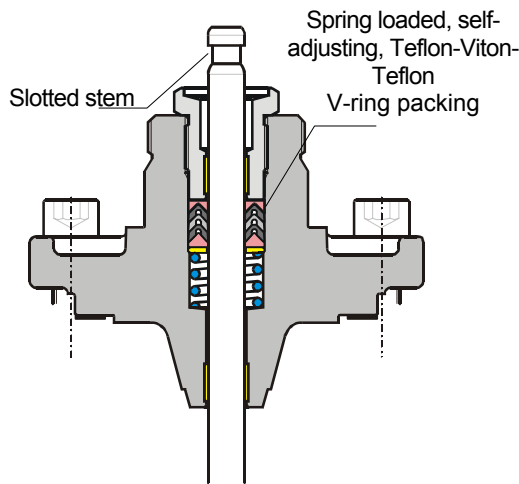
**VG8000N Series Valves with VA1000
Electric Actuator**

Features and Benefits

<input type="checkbox"/> Valves in two-way, three-way mixing and diverting configurations.	Covers all common HVAC applications.
<input type="checkbox"/> PN 16 rated nodular iron valve bodies.	Compact, lighter and more ductile than ordinary cast iron.
<input type="checkbox"/> Stainless steel stem-plug-seat combination.	Provides stability and durability.
<input type="checkbox"/> Use of standard Johnson Controls spring loaded, self-adjusting Teflon- Viton- Teflon V-ring packing.	Reliable, field-proven seal applicable to wide operating temperature range. No readjustment required.
<input type="checkbox"/> Low leakage rate for two- and three-way valves.	Provides maximum energy efficiency.
<input type="checkbox"/> Electric and pneumatic actuators available, either factory mounted or for in-situ installation, for all valve configurations.	Allows optimum actuator selection.
<input type="checkbox"/> Slotted stem with coupler for simple actuator attachment.	Quick-fit coupler system reduces installation costs.
<input type="checkbox"/> Valves are silicon free	No silicon particles floating free

Application Overview

VG8000N valves are available in sizes from 15 to 150 mm. Flanged connections comply with EN and DIN standards. These valves also comply with Pressure Equipment Directives (PED). Information regarding the CE mark can be found on the valve ID plate. The valve trim and seat edge are made of stainless steel. The valve packing consists of spring loaded Viton-Teflon V-rings.



The VG8000N valves are available in two-way configuration for Push-Down-To-Close operation and in three way configurations. The two-way valves DN 15 to 40 are also available for Push-Down-To-Open operation. The three-way valves are available as mixing or diverting valves.

Two-way valves have equal percentage relationship between valve stroke and flow at a constant pressure drop. Three-way valves have a combination of equal percentage and linear characteristic. An arrow is on one side of the valve body indicating the direction of flow for correct installation.

The upper operating temperature range limit is 180°C. The Model option where packing includes a cup for glycerine anti-freeze is available for fluid temperatures as low as -10 °C.

Note: This option is imperative where fluid temperatures can fall below 0°C.

A variety of electric and pneumatic actuators is available and can be ordered as factory fitted combination or for in-situ installation.

Refer to this and following pages for ordering data and additional details.

Ordering example:

For a two-way valve, DN65, k_{vs} 63, PN16, the ordering code is: **VG82G1S1N**

For ordering a valve with Glycerine cup packing, add suffix "**20**" to the ordering code: i.e. VG8xxxS1N**20**.

Teflon free model available on request

Ordering codes for Valve Bodies

Two-way PDTO configuration*

VG84  S1N

	Size	k_{vs}
A6	DN 15	0.4
A5	DN 15	0,63
A4	DN 15	1.0
A3	DN 15	1.6
A2	DN 15	2.5
A1	DN 15	4.0
C2	DN 25	6.3
C1	DN 25	10
E2	DN 40	16
E1	DN 40	25

* To be discontinued in October 2006

Two-way PDTC, three-way mixing- and three-way diverting configurations

VG8  S1N

	Size	k_{vs}
A9	DN 15	0,1*
A8	DN 15	0.16*
A7	DN 15	0.25*
A6	DN 15	0.4
A5	DN 15	0.63
A4	DN 15	1.0
A3	DN 15	1.6
A2	DN 15	2.5
A1	DN 15	4.0
B2	DN 20	4.0
B1	DN 20	6.3
C2	DN 25	6.3
C1	DN 25	10
D2	DN 32	10
D1	DN 32	16
E2	DN 40	16
E1	DN 40	25
F1	DN 50	40
G1	DN 65	63
H1	DN 80	100
J1	DN 100	160
K1	DN 125	250
L1	DN 150	350

Valve Body Type

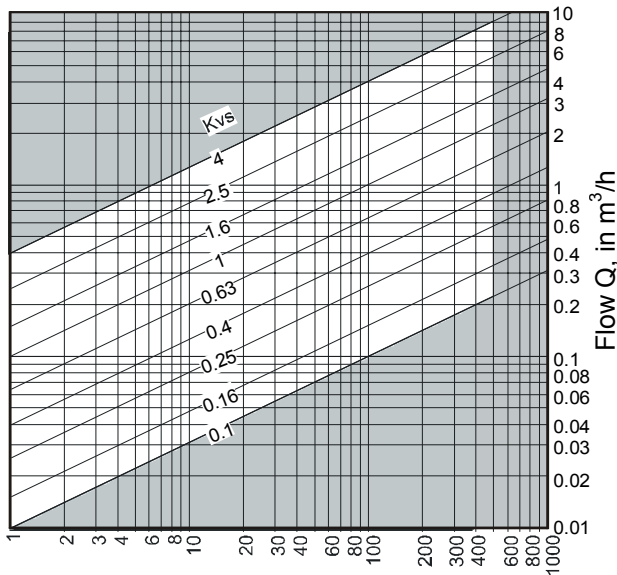
2	2-way Valve PDTC
8	3-way Mixing valve
9	3-way Diverting valve

*) Only available with 2-way PDTC valves
Reduced k_{vs} coefficients are available on request

Valve Selection

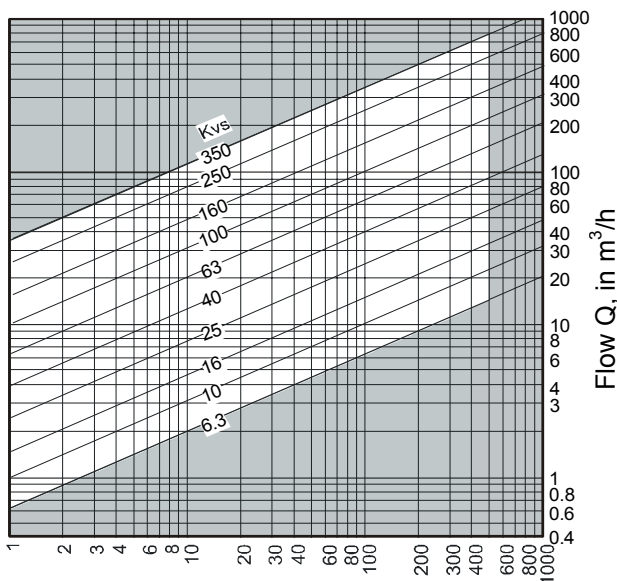
The valve size for water applications can be defined using the diagrams below, where the intersection of the pressure drop across the valve and the flow must be within the white area.

k_v selection diagram for DN 15 valves:



Pressure drop Δp in kPa (100 kPa = 1 bar)

k_v selection diagram for DN 20...150 valves:



Pressure drop Δp in kPa (100 kPa = 1 bar)

Valve - Actuator Combinations

The VG8000N series nodular iron flanged valves can be combined with the following series pneumatic and electric actuators:

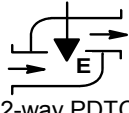




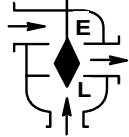




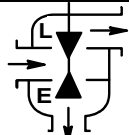




- MP-8000 pneumatic actuators (DN 15 ...40)
- PA-2000 pneumatic actuators (DN 15 ...150)
- VA7810 electric self-adjusting actuators (DN 15 ...40)
- VA1000 electric non-spring & spring return actuators (DN 15*... DN150)
- RA-3000 electric actuators (DN 15 ...150)
- FA-2000 electric spring return actuators (DN 25 ...150)
- FA-3300 heavy duty electric actuators (DN 100, 125 and 150)

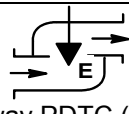




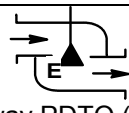




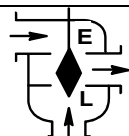




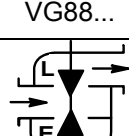




* *k_{vs}* coefficient starts at 2.5

Please see the relevant product bulletin for more details.

Actuator Selection

Flow through the valve is dependent on the position of the plug, as indicated in the tables below. The function of the control valve is dependent upon the action of the actuator and the type of valve used.

Pneumatic actuator →	Direct Acting pneumatic actuators MP-822xxxx0 and PA-2xx0-3x1x		Reverse Acting pneumatic actuators MP-832xxxx0 and PA-2xx0-3x2x	
	Air pressure extends stem	Spring-return retracts stem	Air pressure retracts stem	Spring-return extends stem
 2-way PDTC VG82...				
 3-way mixing VG88...				
 3-way diverting VG89...				

Electric actuator →	Control mode		Fail safe position (spring return only)	
	Actuator extends stem	Actuator retracts stem	Power failure (spring force) retracts stem	Power failure (spring force) extends stem
	VA7810-xxx-12, VA1225-GGA-1, RA-3xxx-7x2x, RA-3100-8x2x, FA-2xxx-7x1x and FA-33xx-741x		VA1220-GGA-1 FA-25xx-751x FA-26xx-741x FA-27xx-711x	VA1420-GGA-1 FA-22xx-751x FA-23xx-741x FA-24xx-711x
 2-way PDTC (NO) VG82...				
 2-way PDTO (NC) VG84...				
 3-way mixing VG88...				
 3-way diverting VG89...				

E = Equal percentage control characteristic ▲ = Flow
 L = Linear control characteristic △ = No flow

Pneumatic Actuator Selection

The pneumatic actuators can be combined with two-way PDTC and three-way valve configurations.

All actuators are reversible for Normally Closed or Normally Open operation on a two-way PDTC (NO) valve body.

The actuators can also be optionally equipped with a factory fitted positioner and/or a hand wheel. The positioner PY-1010 is direct acting and can be used with D.A. or R.A. actuators of the MP8000 and PA-2000 series.

The actuators are available for valve sizes:

Valves DN 15 – 40 : MP8000 series

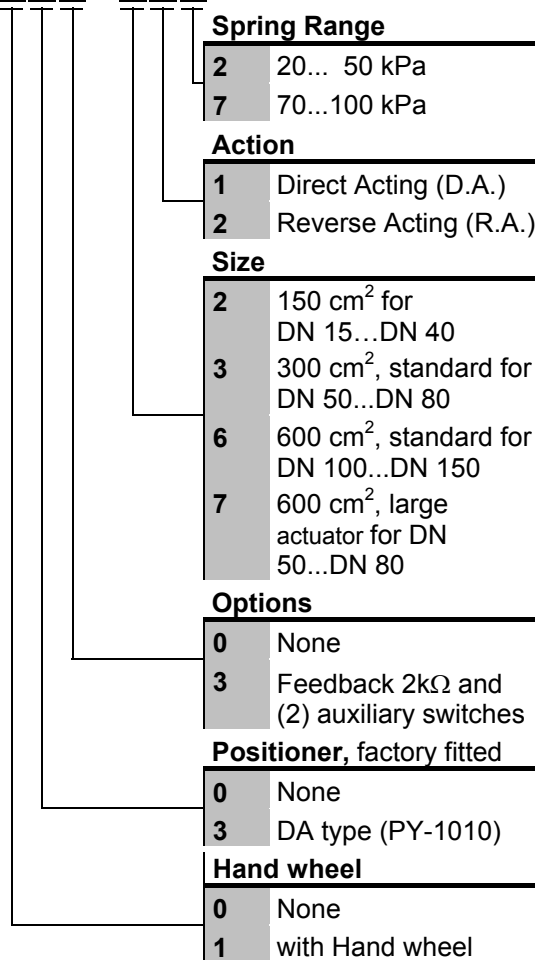
Valves DN 15 – 150 : PA-2000 series

Mounting kits for in-situ installation: hand wheel, feedback assembly and auxiliary switches are available on request.

Ordering codes for Pneumatic Actuators

PA-2000 series

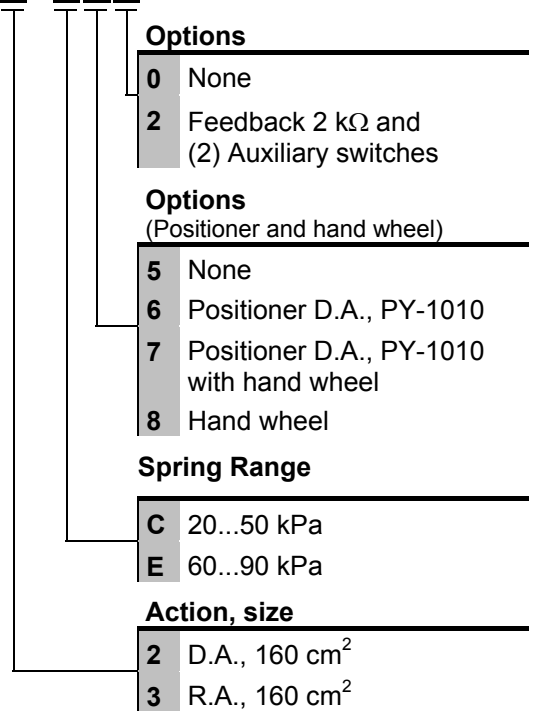
PA-2 -3



(The PA-2000 can be specially ordered as a Teflon-free model, in conjunction with the VG8000N series.) Please contact your Johnson Controls distributor.

MP8000 series

MP8 2 20



Electric Actuator Selection

Non Spring Return Actuators

VA7810 Electric Actuators

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. Proportional models are **self-calibrating**. The actuator is intended for use with Johnson Controls VG8000N flanged valves.

It provides 1000 N nominal stem force and can be used with DN 15...DN 40 valves in accordance with the max. close-off pressure ratings specified.

Ordering codes for VA7810 Electric Actuators

Ordering code	Actuator Description
Floating Control	
VA7810-ADA-12	AC 230 V
VA7810-AGA-12	AC 24 V
VA7810-AGC-12	AC 24 V, 2 aux. switches
VA7810-AGH-12	AC 24 V, 2k Ω Feedback pot.
Proportional Control	
VA7810-GGA-12	AC 24 V DC 0(2)...10 V or 0(4)... 20 mA
VA7810-GGC-12	AC 24 V 2 Aux. switches DC 0(2)...10 V or 0(4)... 20 mA

VA1000 Electric self-adjusting actuators

The VA1000 2500N thrust non-spring return valve-actuators are self-adjusting and therefore have a greatly reduced installation and commissioning time. They are of modular construction so that for instance, the required type of control signal is achieved simply by fitting a module with the required function in-situ.

This actuator can be used with DN15... DN150 valves with the k_{vs} coefficient starting at 2.5.

24V Actuator ordering codes

Ordering code	Description
VA1125-GGA-1	2500N; Non-spring return

Accessory modules for in-situ installation

VA1000-M230	AC 230V module
VA1000-P2	2k Ω feedback potentiometer
VA1000-S2	2 SPDT aux. switches
VA1000-SRU	Split range unit module for proportional actuators only
VA1000-EP	Extension kit for applications with temperatures greater than 140°C up to 200°C
111 6348 011	Cable adaptor M20x1.5
111 6349 011	Cable adaptor M16x1.5

Note: Either feedback potentiometer or aux. switches can be fitted not both.

RA-3000 Electric Actuators

The RA-3000-7x2x series, synchronous motor-driven actuator is available for 3-point (floating) or 0...10 VDC proportional control. It features factory calibrated pressure switches to provide specified close-off ratings.

This actuator is available in three models: The RA-3000-712x with **1600 N** thrust (approx. 82 sec. running time, 50 Hz, DN 15...40, 13 mm stroke), the RA-3000-722x with **1800 N** thrust (approx. 140 sec. running time, 50 Hz, DN 50...80, 25 mm stroke) and the RA-3000-732x with **3000 N** thrust (approx. 185 sec running time, 50 Hz, DN 50...150, 42 mm stroke), in accordance with the max. close-off pressure ratings specified. Factory fitted options, such as a 2kΩ feedback potentiometer, auxiliary switches and manual override are also available.

Ordering codes for standard RA-Electric Actuators

RA-3 -7

Thrust & Supply Voltage	
126	1600 N 24 V, 50/60 Hz
127	1600 N 230 V, 50/60 Hz
226	1800 N 24 V, 50/60 Hz
227	1800 N 230 V, 50/60 Hz
325	3000 N 24 V, 60 Hz
326	3000 N 24 V, 50 Hz
327	3000 N 230 V, 50 Hz
328	3000 N 230 V, 60 Hz
Options, factory mounted	
00	None
03	(2) aux. switches and 2 kΩ feedback potentiometer
05	(2) aux. switches and 135 Ω feedback pot.
41	Positioner 0...10 VDC and (2) aux. switches (only 24 VAC models)
Manual Operation	
0	None
1	With hand wheel

The RA-3100-8x2x series, synchronous motor-driven fast running actuator is available for 3-point (floating) or 0...10 VDC proportional control. It features factory calibrated pressure switches to provide specified close-off ratings. A hand wheel for manual operation is a standard feature.

This actuator is available in two models: The RA-3100-8126 with **1200 N** nominal thrust (approx. 23.4 sec. running time, 50Hz, DN 15...DN 40, 13 mm stroke) and the RA-3100-8226 with **1700 N** nominal thrust (approx. 17.5 sec. running time, 50 Hz, DN 50...DN 80, 25 mm stroke and approx. 29.4 sec. running time, 50 Hz, DN 100...DN 150, 42 mm stroke), in accordance with the max. close-off pressure ratings specified. A 2kΩ feedback potentiometer and auxiliary switches are available as factory fitted options.

Ordering codes for fast running RA-Electric Actuators

RA-31 -8

Thrust & Supply Voltage	
126	1200 N 24 V, 50 Hz
226	1700 N 24 V, 50/60 Hz
Options, factory mounted	
00	None
03	(2) aux. switches and 2 kΩ feedback potentiometer
41	Positioner 0...10 VDC and (2) aux. switches (only 24 VAC models)

FA-3300 Electric Actuators

The FA-3300 motor-driven heavy duty actuators provide **6000 N** thrust and are available for 3-point (floating) or 0...10 V / 0(4)...20mA control. They feature a manual override and factory calibrated pressure switches that provide specified close-off ratings.

These actuators can be used in conjunction with DN 100...150 VG8000N valve bodies.

Ordering codes for FA-3300 Actuators

FA-33 -741

Supply Voltage

1	230 V, 50 Hz
6	24 V, 50 Hz

Options, factory mounted

00	None
03	(2) Aux. switches E and 2 k Ω feedback pot. R2
04	135 Ω feedback pot.
40	Pos. 0...10 V / 0(4)...20 mA
41	Pos. 0...10 V / 0(4)...20 mA and (2) Aux. switches

Spring Return Actuators

VA1000 Electric self-adjusting actuators

The VA1000 2000N thrust spring return valve-actuators self-adjusting and therefore have a greatly reduced installation and commissioning time. They are of modular construction so that for instance, the required type of control signal is achieved simply by fitting a module with the required function in-situ.

This actuator can be used with DN15... DN150 valves with the k_{vs} coefficient starting at 2.5.

24V Actuator ordering code

Ordering code	Description
VA1220-GGA-1	2000N; Spring return retracts
VA1420-GGA-1	2000N; Spring return extends

Accessory modules for in-situ installation

VA1000-M230	AC 230V module
VA1000-P2	2k Ω feedback potentiometer
VA1000-S2	2 SPDT aux. switches
VA1000-SRU	Split range unit module for proportional actuators only
VA1000-EP	Extension kit for applications with temperatures greater than 140°C up to 200°C
111 6348 011	Cable adaptor M20x1.5
111 6349 011	Cable adaptor M16x1.5

Note: Either feedback potentiometer or aux. switches can be fitted not both.

FA-2000 Electric Spring Return Actuators

The FA-2000 series synchronous motor-driven S.R. actuators are available for 3-point (floating) or with electronic positioner for 0...10 V / 0(4)...20 mA control. It provides a fully variable aperture, a power failure spring return safety mechanism and an electrical manual-override (two spring-loaded push buttons).

On power failure, the actuator returns to normal position.

For example on power failure:

- The FA-2200, FA-2300 and FA-2400 models extend the stem, thus, when mounted on a two-way PDTC valve, normal position closes the valve.
- The FA-2500, FA-2600 and FA-2700 models retract the stem, thus, when mounted on a two-way PDTC valve, normal position opens the valve.

Factory fitted auxiliary switches and 2kΩ-feedback potentiometer are order options.

This actuator series can be used in conjunction with DN 25...150 VG8000N valve bodies.

Ordering Procedure

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

For example:

For a 2-way valve, DN 65, k_{vs} 63, PN16 plus actuator with electric positioner 0...10 V input, 24 VAC 50 Hz supply, please order:

- Item 1 **VG82G1S1N** (valve body)
- Item 2 **RA-3041-7326** (actuator)

Alternatively if order is for factory mounted option:

- Item 1 **VG82G1S1N** (valve body)
- Item 2 **RA-3041-7326 +M** (actuator)

Electric Spring Return Actuator Ordering Codes for:

FA-2xxx-711x with 13 mm stroke and 2000 N thrust

FA-2 -7 11

Voltage supply type

- 1** 230V, 50 Hz
- 6** 24 V, 50 Hz

Factory fitted accessories

- 00** None
- 01** (2) Auxiliary switches
- 02** 2 kΩ feedback pot.
- 03** (2) Auxiliary switches and 2 kΩ feedback pot.
- 04** 135 Ω feedback pot.
- 40** Built-in electronic positioner 0...10 V / 0...20 mA *
- 41** Built-in electronic positioner 0...10 V / 0...20 mA and (2) Auxiliary switches

Spring return function

- 4** “Pre-set” direction: stem fully extends; DN 25...40
- 7** “Pre-set” direction: stem fully retracts; DN 25...40

* Not for 230 V model

**FA-2xxx-751x electric spring return actuators
with 25 mm stroke and 2400 N thrust**

FA-2 -7 5 1

Voltage supply type

- 1** 230V, 50 Hz
- 6** 24 V, 50 Hz

Factory fitted accessories

- 00** None
- 01** (2) Auxiliary switches
- 02** 2 k Ω feedback pot.
- 03** (2) Auxiliary switches and 2 k Ω feedback pot.
- 04** 135 Ω feedback pot.
- 40** Built-in electronic positioner 0...10 V / 0...20 mA *
- 41** Built-in electronic positioner 0...10 V / 0...20 mA and (2) Auxiliary switches

Spring return function

- 2** Pre-set direction: stem fully extends; DN 50...80
- 5** Pre-set direction: stem fully retracts; DN 50...80

* Not for 230 V model

**FA-2xxx-741x electric spring return actuators
with 42 mm stroke and 2200N thrust**

FA-2 -7 4 1

Voltage supply type

- 1** 230V, 50 Hz
- 6** 24 V, 50 Hz

Factory fitted accessories

- 00** None
- 01** (2) Auxiliary switches
- 02** 2 k Ω feedback pot.
- 03** (2) Auxiliary switches and 2 k Ω feedback pot.
- 04** 135 Ω feedback pot.
- 40** Built-in electronic positioner 0...10 V / 0...20 mA *
- 41** Built-in electronic positioner 0...10 V / 0...20 mA and (2) Auxiliary switches

Spring return function

- 3** Pre-set direction: stem fully extends; DN 100...150
- 6** Pre-set direction: stem fully retracts; DN 100...150

* Not for 230 V model

C lose-off pressures

Maximum Close-off Pressures for Pneumatic and Electric Valve-actuators (kPa)

Actuator model		DN	k _{vs}	2-way PDTC with Reverse Acting actuator (spring-return closes valve) or 3-way valve See Table "Actuator Selection"		2-way PDTC with Direct Acting actuator (actuator supply air pressure closes valve) or 3-way valve See Table "Actuator Selection"					
				0 kPa		120 kPa		140 kPa		160 kPa	
Stroke	Diaph. area										
(mm)	(cm ²)										
				20 - 50	70 - 100; (60-90)*	20 - 50	70 - 100; (60-90)*	20 - 50	70 - 100; (60-90)*	20 - 50	70 - 100; (60-90)*
				Identification No.		Identification No.		Identification No.		Identification No.	
				23	63	23	63	23	63	23	63
MP8000		15	0.1 - 1.6	1600	1600	1600	1600	1600	1600	1600	1600
13	160	15	2.5 - 4	600	1600	1600	1600	1600	1600	1600	1600
		20	4, 6.3	200	1600	1600	890	1600	1600	1600	1600
		25	6.3, 10	80	1600	1600	560	1600	1510	1600	1600
		32	16,10	-	1000	1250	230	1600	740	1600	1250
		40	16, 25	-	580	740	100	1060	420	1380	740
PA-2000-3200		15	2.5, 4	440	1600	1600	1600	1600	1600	1600	1600
13	150	15	0.4 - 1.6	1600	1600	1600	1600	1600	1600	1600	1600
		15	0.1 - 0.25	1600	1600	1600	1600	1600	1600	1600	1600
		20	4, 6.3	1200	1600	1600	120	1600	1390	1600	1600
		25	6.3, 10	30	1600	1600	30	1600	920	1600	1600
		32	16,10	-	1140	1140	-	1600	420	1600	900
		40	16, 25	-	670	670	-	970	220	1280	520
PA-2000-3300		50	40	40	850	850	400	1180	370	1500	690
25	300	65	63	20	650	650	200	910	270	1160	530
		80	100	-	300	300	-	430	100	550	230
PA-2000-3600		100	160	40	480	480	40	650	220	820	390
42	600	125	250	10	290	290	10	400	120	510	240
		150	350	-	170	170	-	240	70	310	140
PA-2000-3700		50	40	370	1600	1600	370	1600	1000	1600	1600
25	600	65	63	270	1550	1550	270	1600	780	1600	1290
		80	100	100	750	750	100	1000	360	1260	620

* (For MP8000)

Maximum Close-off Pressures Electric Valve-actuators (kPa)

Actuator	Stroke (mm)	Thrust (N)	Body Size DN										
			15	20	25	32	40	50	65	80	100	125	150

Non Spring Return Actuators

VA7810-xxx-12	25	1000	1600				1570	770	440	-	-	-	-	-
VA1125-GGA-1		2500	1600						1080	830	390	230	140	75
RA-3000-712x	13	1600	1600					1250	-	-	-	-	-	-
RA-3000-722x	25	1800	-	-	-	-	-	700	540	240	-	-	-	
RA-3000-732x	42	3000	-	-	-	-	-	1350	1050	500	310	190	110	
FA-3300-741x	42	6000	-	-	-	-	-	-	-	-	740	460	280	

Spring Return Actuators

VA1x20-GGA-1		2000	1600					800	630	380	160	90	40
FA-2000-711x	13	2000	-	-	1600			-	-	-	-	-	-
FA-2000-751x	25	2400	-	-		-	1030	790	370	-	-	-	
FA-2000-741x	42	2200	-	-		-	-	-	-	190	110	50	

Actuator	Stroke (mm)	Thrust (N)	Body Size DN										
			15	20	25	32	40	50	65	80	100	125	150

Non-Spring Return Actuators

RA-3100-8126	13	1200	1600	1600	1600	1410	850	-	-	-	-	-	-
RA-3100-8226	25 & 42	1700	-	-	-	-	-	650	500	220	120	-	-

Installation and Servicing

When mounting the VG8000N series valves please follow the instructions below:

- It is recommended that the valves be mounted at angles not greater than 90° from the upright position, in a conveniently accessible location.
- Do not cover the actuator with insulating material.
- Sufficient clearance must be allowed for actuator removal (refer to the dimension drawings).
- Install the valve as indicated by the arrow(s) on the valve body so that the plug seats against the flow.
- Johnson Controls must approve use of the VG8000N series valves with fluids other than specified.
- On electrically actuated valve assemblies, all wiring must be in accordance with applicable electrical codes and ordinances.
- Input lines to the actuator must be wired correctly to open or close the valve as is functionally required.

When servicing the VG8000N series valves, make sure that:

- The pneumatic or electrical power to the actuator is isolated.
- You do not touch or attempt to connect or disconnect wires when electrical power is on.

 **WARNING**

Shock Hazard

Disconnect the power supply before wiring connections are made to prevent personal injury.

Equipment Damage Hazard

Make and check all wiring connections before applying power to the system. Short circuited or improperly connected wires may result in permanent damage to the unit.

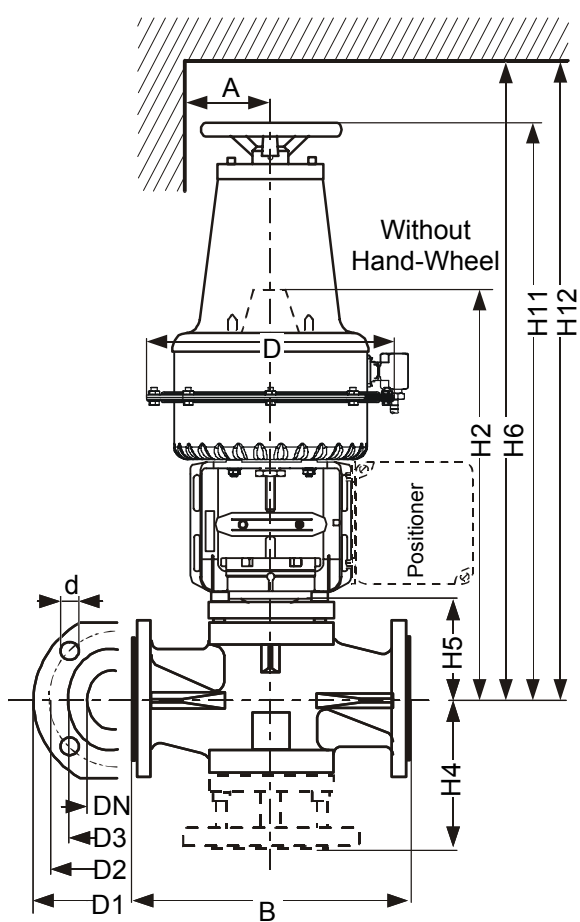
- No air pressure is applied to the piping system when servicing the valve.
- No attempt is made to remove the spring of a pneumatic actuator from its housing.

Ordering Code for Replacement Packing Kits

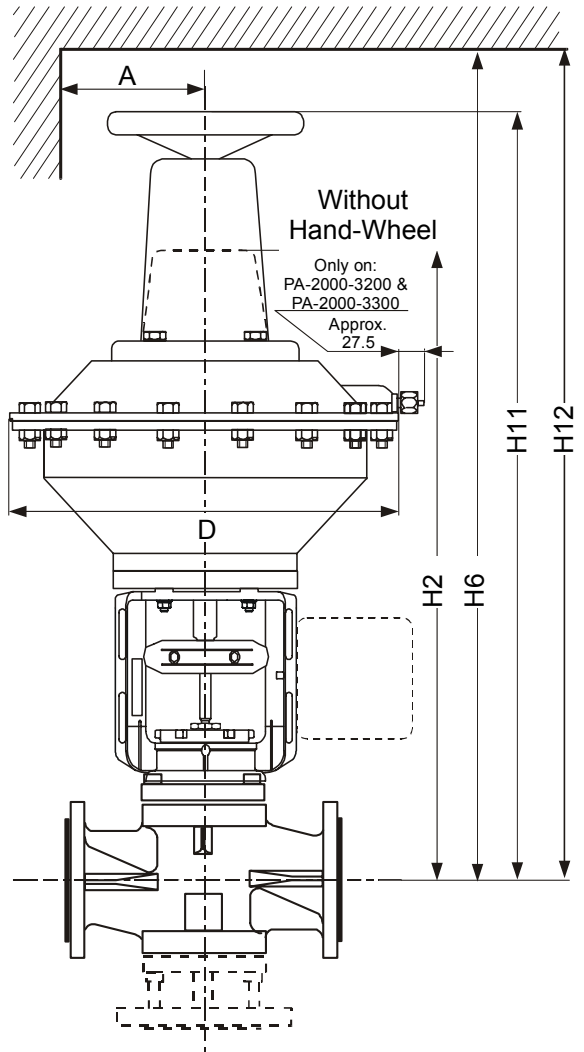
Ordering Code	For valves	Installation kit ordering code
Standard packing kit:		
121 4393 011	DN 15...40	-
121 4409 011	DN 50...80	-
121 4433 011	DN 100...150	-
* Glycerine cup packing kit:		
121 4434 011	DN 15...40	121 4434 111
121 4435 011	DN 50...80	121 4435 111
121 4436 011	DN 100...150	121 4436 111
* Installation kit required		

Dimensions Pneumatic Actuators (in mm)

MP8000 with Hand-Wheel



PA-2000 with Hand-Wheel



Valve and Actuator dimensions

Valve body				MP8200 & MP8300							PA-2000-3200					
DN	B	H4	H5	A	A *)	D	H2	H6	H11	H12	A	D	H2	H6	H11	H12
15	130	100	76	160	220	219	342	492	448	600	220	205	372	522	460	610
20	150	106	76	160	220	219	342	492	448	600	220	205	372	522	460	610
25	160	106	76	160	220	219	342	492	448	600	220	205	372	522	460	610
32	180	123	81	160	220	219	347	497	553	600	220	205	377	527	465	615
40	200	140	78	160	220	219	345	495	551	600	220	205	375	525	463	613

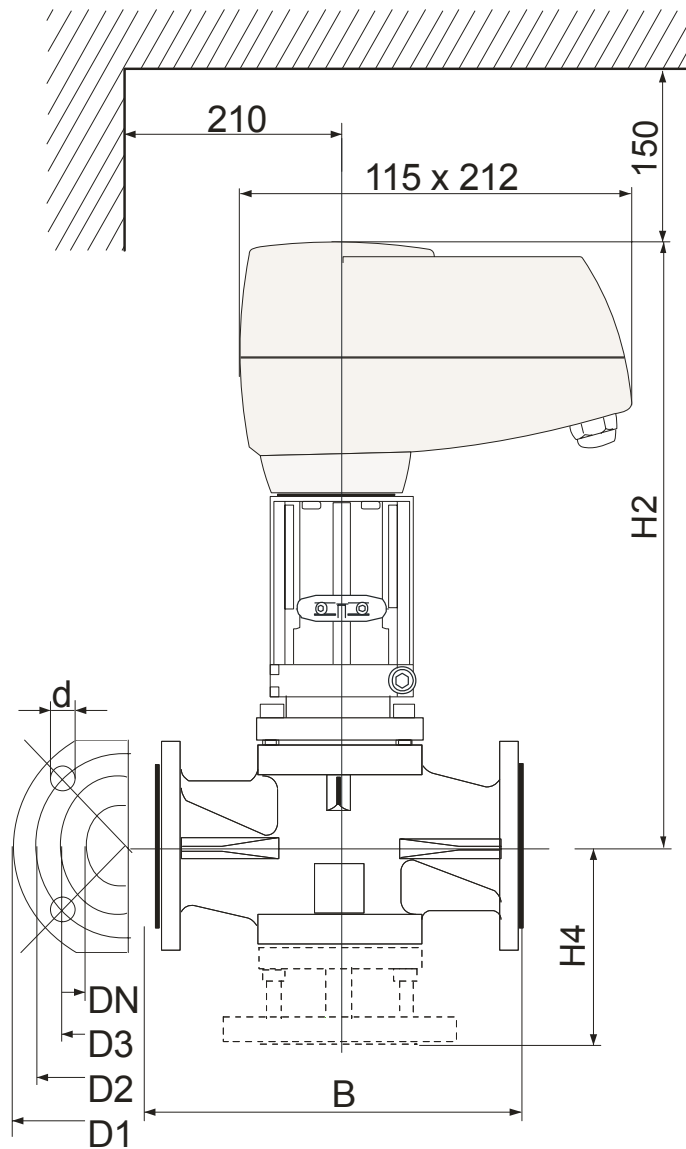
*) For actuator with positioner

Valve body				PA-2000-3300						PA-2000-3600 & PA-2000-3700					
DN	B	H4	H5	A	D	H2	H6	H11	H12	A	D	H2	H6	H11	H12
50	230	145	101	235	290	479	629	593	743	250	384	609	809	767	967
65	290	156	102	235	290	480	630	594	744	250	384	610	810	768	968
80	310	180	108	235	290	486	636	600	750	250	384	616	816	774	974
100	350	225	136	-	-	-	-	-	-	250	384	644	844	802	1002
125	400	255	155	-	-	-	-	-	-	250	384	663	863	821	1021
150	480	290	175	-	-	-	-	-	-	250	384	683	883	841	1041

Flange Dimensions

DN	D1	D2	D3	d	Bolts	Holes	DN	D1	D2	D3	d	Bolts	Holes
15	95	65	45	13.5	M12 x 45	4	80	200	160	138	17.5	M16 x 65	8
20	105	75	58	13.5	M12 x 50	4	100	220	180	158	17.5	M16 x 70	8
25	115	85	68	13.5	M12 x 50	4	125	250	210	188	17.5	M16 x 75	8
32	140	100	78	17.5	M16 x 55	4	150	285	240	212	22	M20 x 75	8
40	150	110	88	17.5	M16 x 55	4							
50	165	125	102	17.5	M16 x 60	4							
65	185	145	122	17.5	M16 x 60	4							

Dimensions in mm - Electric Actuator VA7810 (DN 15 - 40)



Flange Dimensions

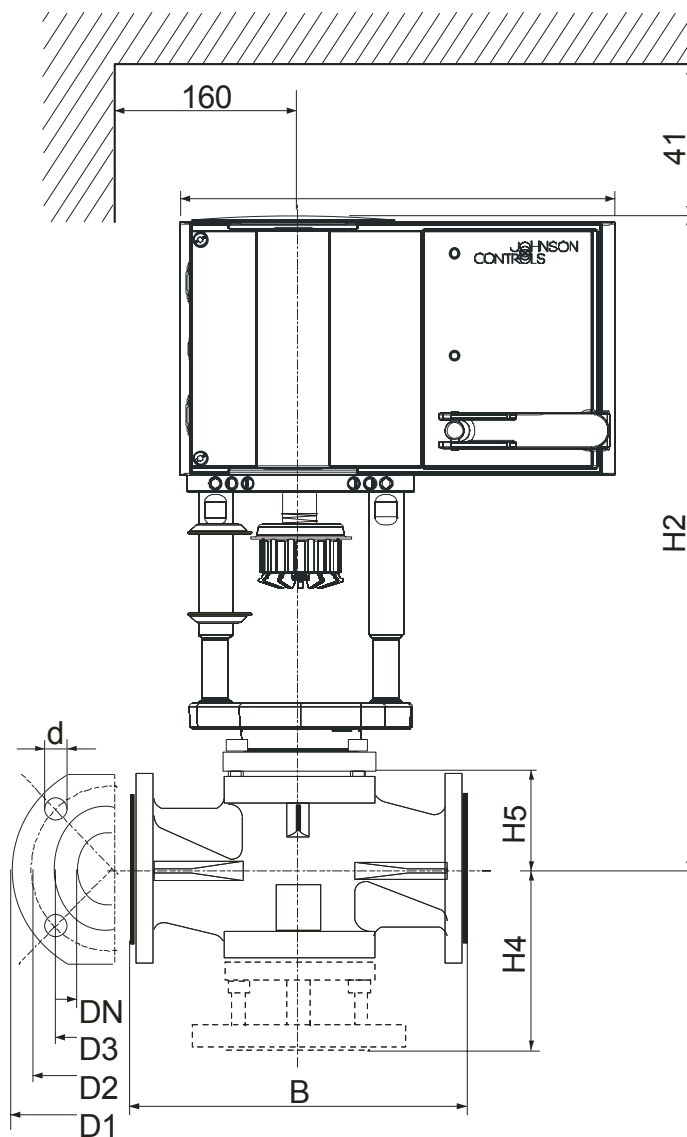
DN	D1	D2	D3	d	Bolts	Holes
15	95	65	45	13.5	M12 x 45	4
20	105	75	58	13.5	M12 x 50	4
25	115	85	68	13.5	M12 x 50	4
32	140	100	78	17.5	M16 x 55	4
40	150	110	88	17.5	M16 x 55	4

Valve and Actuator dimensions

DN	Valve body			VA7810
	B	H4	H5	H2
15	130	100	76	383
20	150	106	76	383
25	160	106	76	383
32	180	123	81	388
40	200	140	78	386

D

Dimensions in mm, VA1125-GGA-1 Electric Actuator
(DN 15 – 40 k_{vs} coefficient starting at 2.5)



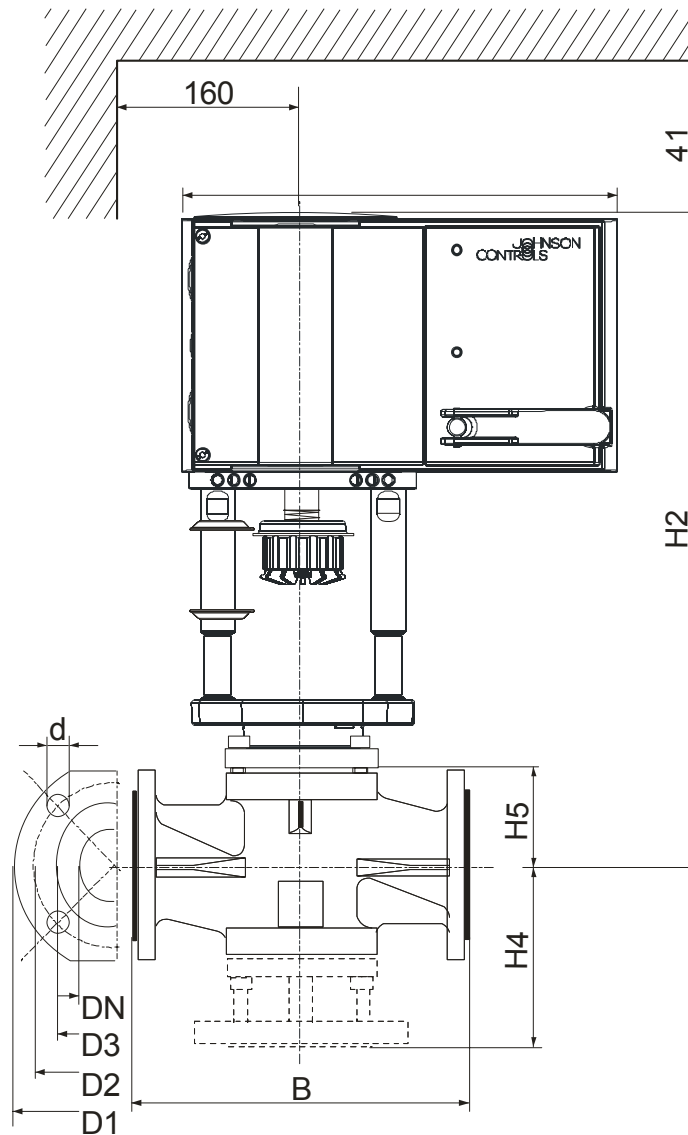
Flange Dimensions

DN	D1	D2	D3	d	Bolts	Holes
15	95	65	45	13.5	M12 x 45	4
20	105	75	58	13.5	M12 x 50	4
25	115	85	68	13.5	M12 x 50	4
32	140	100	78	17.5	M16 x 55	4
40	150	110	88	17.5	M16 x 55	4

Valve and Actuator dimensions

DN	Valve body			VA1000
	B	H4	H5	H2
15	130	100	76	359
20	150	106	76	359
25	160	106	76	359
32	180	123	81	364
40	200	140	78	364

Dimensions in mm, VA1220-GGA-1 VA1420-GGA-1 Electric Spring-Return Actuators (DN 50 – 150)



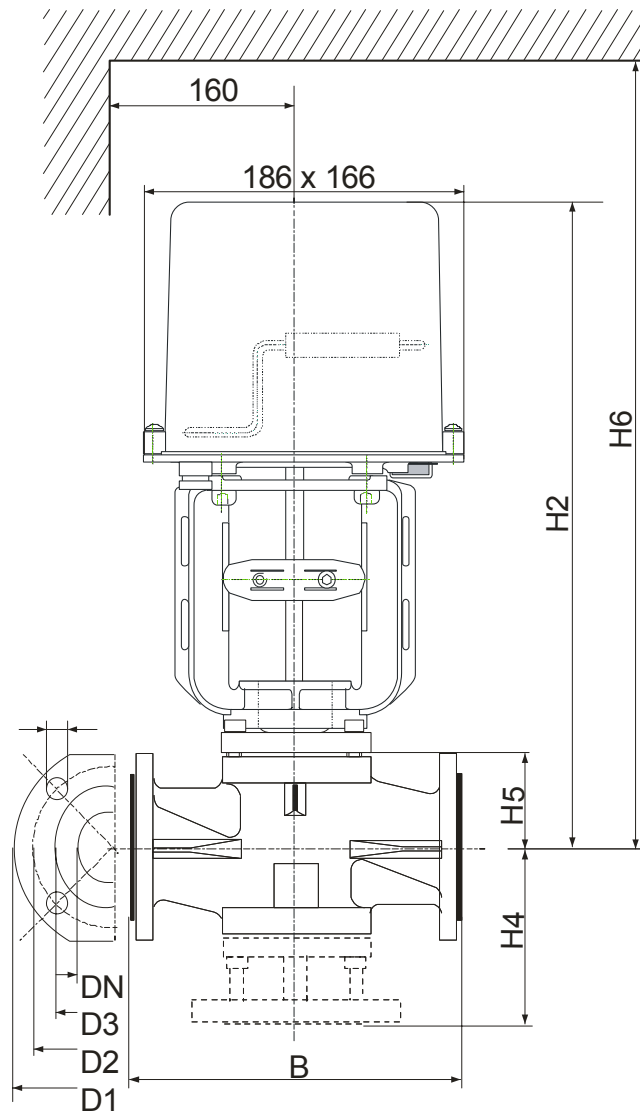
Flange Dimensions

DN	D1	D2	D3	d	Bolts	Holes
50	165	125	102	17.5	M16 x 60	4
65	185	145	122	17.5	M16 x 60	4
80	200	160	138	17.5	M16 x 65	8
100	220	180	158	17.5	M16 x 70	8
125	250	210	188	17.5	M16 x 75	8
150	285	240	212	22	M20 x 75	8

Valve and Actuator dimensions

DN	Valve body			VA1000
	B	H4	H5	H2
50	230	145	101	384
65	290	156	102	385
80	310	180	108	391
100	350	225	136	419
125	400	255	155	438
150	480	290	175	458

Dimensions in mm, RA-3000 Electric Actuator (DN 15 – 40)



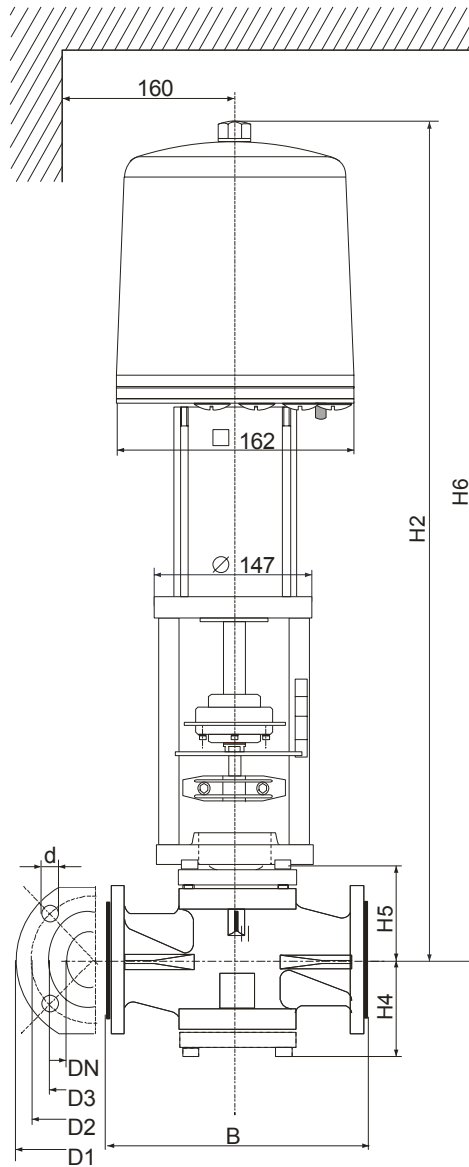
Flange Dimensions

DN	D1	D2	D3	d	Bolts	Holes
15	95	65	45	13.5	M12 x 45	4
20	105	75	58	13.5	M12 x 50	4
25	115	85	68	13.5	M12 x 50	4
32	140	100	78	17.5	M16 x 55	4
40	150	110	88	17.5	M16 x 55	4

Valve and Actuator dimensions

DN	Valve body			RA-3000	
	B	H4	H5	H2	H6
15	130	100	76	383	550
20	150	106	76	383	550
25	160	106	76	383	550
32	180	123	81	388	550
40	200	140	78	388	550

Dimensions - Electric Actuator FA2000-7110 in mm (DN 15 - 40)



Flange Dimensions

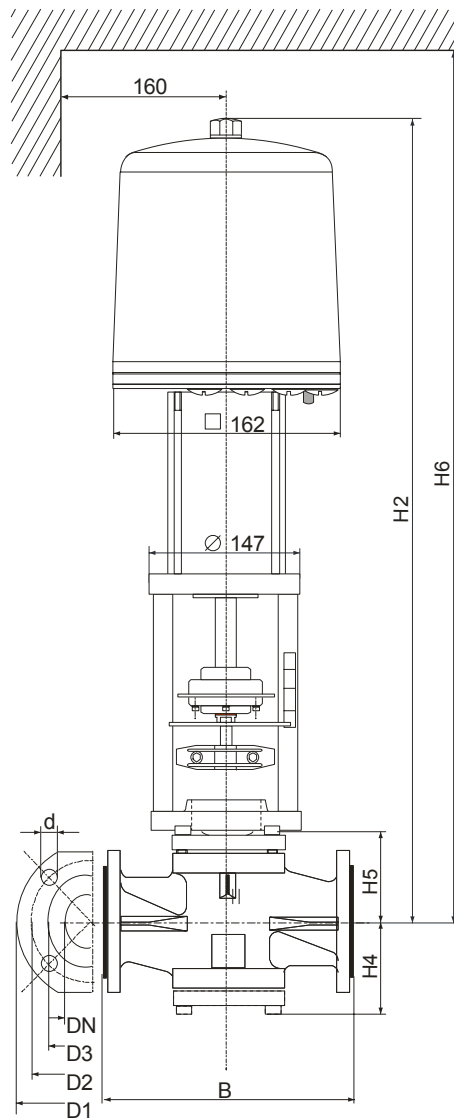
DN	D1	D2	D3	d	Bolts	Holes
15	95	65	45	13.5	M12 x 45	4
20	105	75	58	13.5	M12 x 50	4
25	115	85	68	13.5	M12 x 50	4
32	140	100	78	17.5	M16 x 55	4
40	150	110	88	17.5	M16 x 55	4

Valve and Actuator dimensions

DN	Valve body				FA-2000	
	B	H4	H5	H13	H2*)	H6*)
15	130	100	76	70	587	830
20	150	106	76	-	587	830
25	160	106	76	72	587	830
32	180	123	81	-	592	830
40	200	140	78	89	590	830

*) For models with positioner add 40 mm

Dimensions - Electric Actuator FA-2000-7510 & -7410 (in mm) (DN 50 - 150)



Flange Dimensions

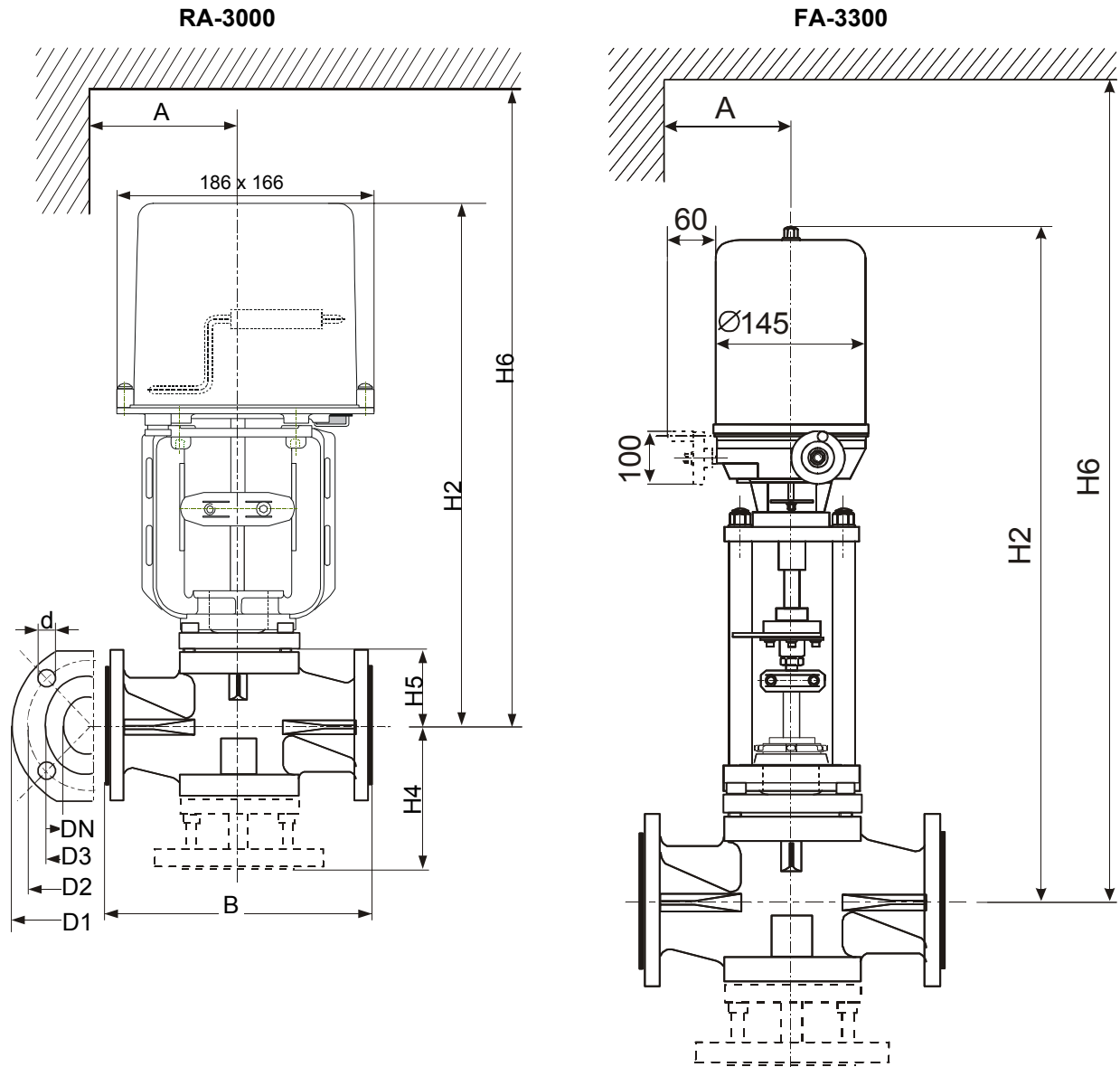
DN	D1	D2	D3	d	Bolts	Holes
50	165	125	102	17.5	M16 x 60	4
65	185	145	122	17.5	M16 x 60	4
80	200	160	138	17.5	M16 x 65	8
100	220	180	158	17.5	M16 x 70	8
125	250	210	188	17.5	M16 x 75	8
150	285	240	212	22	M20 x 75	8

Valve and Actuator dimensions

Valve body				FA-2000	
DN	B	H4	H5	H2 *)	H6 *)
50	230	145	101	642	880
65	290	156	102	643	880
80	310	180	108	649	880
100	350	225	136	711	950
125	400	255	155	730	970
150	480	290	175	750	990

*) Add 40 mm for models with positioner

Dimensions - Electric Actuators RA-3000 and FA-3300 in mm (DN 50 - 150)



Flange Dimensions

DN	D1	D2	D3	d	Bolts	Holes
50	165	125	102	17.5	M16 x 60	4
65	185	145	122	17.5	M16 x 60	4
80	200	160	138	17.5	M16 x 65	8
100	220	180	158	17.5	M16 x 70	8
125	250	210	188	17.5	M16 x 75	8
150	285	240	212	22	M20 x 75	8

Valve and Actuator dimensions

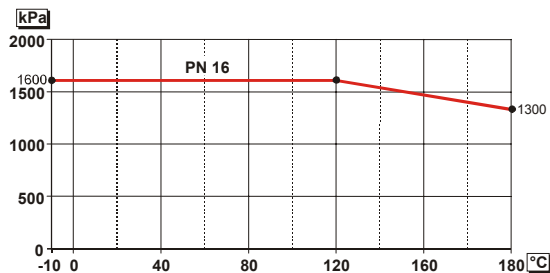
DN	Valve body			FA-3300			RA-3000		
	B	H4	H5	A	H2 **)	H6 **)	A	H2	H6
50	230	145	101	-	-	-	160	408	580
65	290	156	102	-	-	-	160	409	580
80	310	180	108	-	-	-	160	415	580
100	350	225	136	300	608	820	160	443	600
125	400	255	155	300	626	840	160	462	630
150	480	290	175	300	637	860	160	482	640

**) Add 15 mm for models with positioner

Specifications

Product	VG8000N Series flanged valves											
Models	2-way (PDTC) DN 15...150, 2-way (PDTO) DN 15, 25 & 40, 3-way mixing DN 15...150 3-way diverting DN 15...150											
Service	Water, glycol solutions (max 50%) or steam for HVAC applications (proper water treatment is recommended, refer to VDI 2035)											
Valve body data:	DN	15	20	25	32	40	50	65	80	100	125	150
	k_{vs}	(*)	6.3	10	16	25	40	63	100	160	250	350
Weight (kg):	2-way	4.9	6.3	6.3	7.4	10.6	13.5	18	23.5	33.5	50	73.5
	3-way	5.4	7.5	7.5	10.6	13	17.5	24	31	42.5	67	96.5
Nominal stroke	13 mm						25 mm			42 mm		

Pressure / Temperature characteristics



Fluid temperature limits 2°C... 180 °C (DN 125 & DN 150 limitations as per DIN 4747 and DIN 4752)
-10 °C when optional glycerine cup is used. See SDI 121 4349 050

Material

Body Nodular cast iron EN-GJS-400-15, Mat. spec. No. EN-JS1030
Stem / Plug / Seat edge Stainless steel, Mat. spec. No. 1.4305
Packing Teflon-Viton-Teflon V-ring combination, spring loaded and self adjusting

Flange dimensions DIN 2526 C form seal strip, DIN 3202 F1 / DIN 2533. See SDI 121 4349 050
(Pre-welded flange, recommended in accordance with DIN 2633 – PN16)

Face to face dimensions: In accordance with DIN EN558-1

Flow characteristics **Two-way valves and 3-way control port** **3-way valves by-pass port**

Characteristic Equal percentage Linear

Practical rangeability (k_{vs} / k_{v1}) 100:1

Sensitivity n_{gl} (ideal rangeability) 4.5 for k_{vs} ≥ 1
3.2 for k_{vs} 0.1...0.63

Max. Δp_{v100} 500 kPa by water, 800 kPa by super heated steam

Leakage Max. 0.05 % of k_{vs} in accordance with DIN 32730; test process with water as per DIN EN1349

Type of device Pressure accessory conforms to the 97/23/EU as per module D1 for DN 32...DN 125

Notified body TÜV Süddeutschland Bau & Betrieb GmbH; ID No. 0036

Standards and specifications DIN EN60534-1, DIN EN558-1, DIN EN1092-2 and DIN EN 1349

(*) k_{vs} values for DN 15 valves (see also "Ordering codes for valve bodies")

0.1**	0.16**	0.25**	0.4	0.63	1.0	1.6	2.5	4
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**Needle plug (0.1...0.25) for two-way PDTC valves only.

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. is not liable for damages resulting from misapplication or misuse of its products.



Johnson Controls International, Inc.

Headquarters:

European Customer Service Centre:

European Factories:

Branch Offices

Milwaukee, Wisconsin, USA

Westendhof 3, D-45143 Essen, Germany

Essen (Germany), Leeuwarden (The Netherlands) and Lomagna (Italy)

Principal European Cities.

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