

VG8300N & H Series PN 16 & PN 25, DN 40 - DN 150 Balanced Pressure Nodular Iron Flanged Valves

Introduction

The VG8300N PN 16 and VG8300H PN 25 valve series 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 two-way Push-Down-To-Close, nodular cast iron valves have a specially designed plug, which through specific balancing of pressures allows higher close-off pressures with standard actuator combinations.

The VG8300N and VG8300H valves can be used with a variety of Johnson Controls pneumatic and electric actuators.



VG8300N and VG8300H Valves
(With PA and RA Actuators)

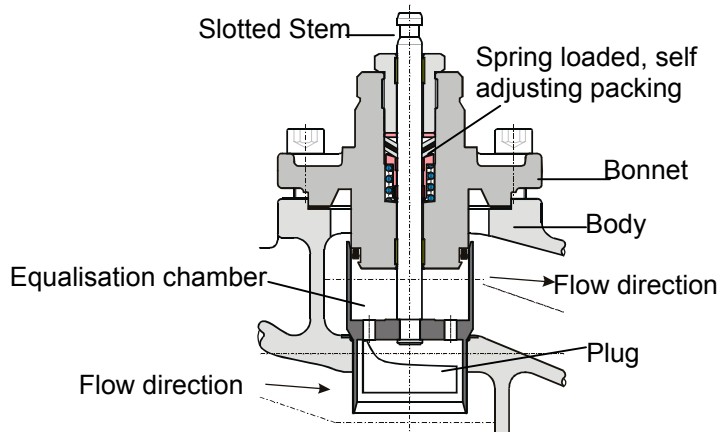
Features and Benefits

☐ Balanced pressure valve.	Cost saving technology, expensive high thrust actuators no longer necessary.
☐ PN 16 & PN 25 rated valves available.	Johnson Controls flanged valve program covers a wide range of applications (body ratings PN 6, PN 10, PN 16, & PN 25).
☐ Nodular iron valve bodies.	Compact, lighter and more ductile than ordinary cast iron (EN-GJS-400-15-LT: PN 16) (EN-GJS-400-18-LT: PN 25).
☐ Stainless steel stem-plug-welded seat area combination.	Provides stability and durability.
☐ Pneumatic and electric actuators available.	Allows optimum choice of actuator.
☐ 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.
☐ Low leakage rate.	Provides maximum energy efficiency.
☐ Slotted stem for Johnson Controls coupler.	Simple and robust quick-fit coupler system reduces installation costs.
☐ Valves are silicon free.	No silicon particles floating free.

Application Overview

Valve bodies are made of nodular cast iron and are available in sizes from 40 mm 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 VG8300N & H Bonnet



The valve design incorporates a pressure equalisation chamber above the valve plug. A connection between the chamber and the area beneath the plug allows fluid pressures on both sides of the plug to find a balance. This means that with higher close-off pressures, the actuator required to close the valve need not be of as high a thrust as would be necessary for a normal valve under similar conditions.

The VG8300N and VG8300H valve series are available in two-way PDTTC configuration.

These two-way valves have an equal percentage flow characteristic. An arrow is embossed on one side of the valve body indicating the direction of flow for correct installation.

The upper operating fluid temperature range limit of the VG8300N is 180°C and 200°C for the VG8300H.

Models where packing includes an optional cup for glycerine anti-freeze are available for fluid temperatures as low as -10°C for the VG8300N and -20 °C for the VG8300H.

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

A variety of electric actuators are available and can be ordered as a factory fitted valve/actuator combination or as a single item for on site installation.

Ordering codes for Valve Bodies

Two-Way PDTTC

VG83 S1

Body Type

N	PN 16
H	PN 25

	Size	k _{vs}
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

For ordering a valve with **Glycerine cup** packing, add suffix **"20"** to the ordering code: i.e. VG8xxxS1H20.

Reduced k_{vs} coefficients are available on request a longer delivery time should be taken into account.

Ordering Example:

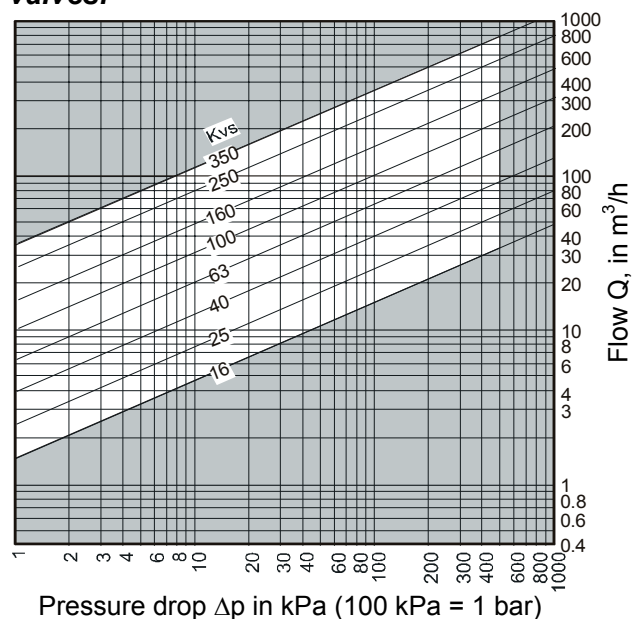
For a DN 65, k_{vs} 63, PN 16 valve, the ordering code is: **VG83G1S1N**

Special models (heavy duty, special coating) 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 40...150 valves:



Valve - Actuator Combinations

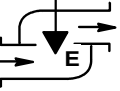
The VG8300N and VG8300H series nodular iron flanged valves can be combined with the following series of pneumatic and electric actuators:

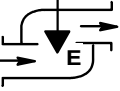
- MP-8000 pneumatic actuators (DN 40)
- PA-2000 pneumatic actuators (DN 40 ...150)
- VA-7200 electric actuators (DN 40)

- RA-3000 electric actuators (DN 40 ...150)
- FA-2000 electric spring return actuators (DN 40...150)

Please see the relevant product bulletin for more details.

Actuator Selection

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

Electric actuator →	Control mode		Fail safe position (spring return only)	
	VA-72xx-820x, RA-3xxx-7x2x, RA-3100-8x2x and FA-2xxx-7x1x		FA-25xx-751x FA-26xx-741x FA-27xx-711x	FA-22xx-751x FA-23xx-741x FA-24xx-711x
↓ Valve type	Actuator extends stem	Actuator retracts stem	Power failure (spring force) retracts stem	Power failure (spring force) extends stem
 2-way PDTC VG82..				

E = Equal percentage control characteristic
L = Linear control characteristic

▲ = Flow
△ = No flow

Pneumatic Actuator Selection

All actuators are reversible for Normally Closed or Normally Open operation on the 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 40 : MP8000 series

Valves DN 40 – 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

Spring Range

- | | |
|---|--------------|
| 2 | 20...50kPa |
| 7 | 70...100 kPa |

Action

- | | |
|---|-----------------------|
| 1 | Direct Acting (D.A.) |
| 2 | Reverse Acting (R.A.) |

Size

- | | |
|---|--|
| 2 | 150 cm ² for DN 15...DN 40 |
| 3 | 300 cm ² , standard for DN 50...DN 80 |
| 6 | 600 cm ² , standard for DN 100...DN 150 |

Options

- | | |
|---|---|
| 0 | None |
| 3 | Feedback 2kΩ and (2) auxiliary switches |

Positioner, factory fitted

- | | |
|---|-------------------|
| 0 | None |
| 3 | DA type (PY-1010) |

Hand wheel

- | | |
|---|-----------------|
| 0 | None |
| 1 | With Hand wheel |

MP8000 series

MP8 2 20

Options

- | | |
|---|--|
| 0 | None |
| 2 | Feedback 2 kΩ and (2) Auxiliary switches |

Options

(Positioner and hand wheel)

- | | |
|---|---|
| 5 | None |
| 6 | Positioner D.A. PY-1010 |
| 7 | Positioner D.A. PY-1010 with hand wheel |
| 8 | Hand wheel |

Spring Range

- | | |
|---|-------------|
| C | 20...50 kPa |
| E | 60...90 kPa |

Action, size

- | | |
|---|---------------------------|
| 2 | D.A., 160 cm ² |
| 3 | R.A., 160 cm ² |

The PA-2000 can be specially ordered as a Teflon-free model, in conjunction with the VG8300N and the VG8300H series. Please contact your Johnson Controls distributor.

Electric Actuator Selection

Non Spring Return Actuators

VA-7200 Electric Actuators

The VA-7200 series synchronous motor-driven actuator is available for 3-point (floating) or 0...10 VDC proportional control. It features a magnetic clutch coupling and provides a **1000 N** nominal thrust. It can be used in conjunction with VG8300N and VG8300H valve size DN 40.

Ordering codes for VA-7200 Electric Actuators

VA-72 -820

Supply voltage

1	24 V 50/60 Hz
3	230 V 50/60 Hz*

Options

3-point models

	Feedback	Manual Override
00*	No	No
01	0...10 V (pot)	No
03	2 k Ω	No
20	(2) aux. switches	No
40*	No	Yes
41	0...10 V (pot)	Yes
43	2 k Ω	Yes
50	(2) aux. switches	Yes
70	(1) aux. switch	Yes
	(1) switch for manual override signal	

Proportional models (0...10V)

	Feedback	Manual Override
02	No	No
06	0...10 V (pot)	No
22	(2) Aux. switches	No
42	No	Yes
46	0...10 V (pot)	Yes
52	(2) Aux. switches	Yes
72	(1) Aux. switch	Yes
	(1) Switch for auto/manual indication	

(*) Only the VA-7200-8203 and VA-7240-8203 models are available with 230 VAC power supply.

Note: All models with manual override and 24 VAC power supply are equipped with a power cut-off switch.

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 sizes: the RA-3000-712x with **1600 N** thrust and approximately 82 sec running time for the 13 mm stroke DN 40 valves, the RA-3000-722x with **1800 N** thrust and approximately 140 seconds running time for the 25 mm stroke DN 50...80 valves and the RA-3000-732x with **3000 N** thrust and approximately 185 sec running time for the 42 mm stroke DN 50...150 valves, in accordance with the max. close-off pressure ratings specified. Factory fitted options, such as a 2k Ω 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 k Ω 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 manual operation

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.

This actuator is available in two models: The RA-3100-8126 with **1200 N** nominal thrust and approximately 23.4 sec. running time for the 13 mm stroke DN 40 valves and the RA-3100-8226 with **1700 N** nominal thrust and approximately 17.5 sec. running time for the 25 mm stroke DN 50...DN 80 valves and approximately 29.4 sec. running time for the 42 mm stroke DN 100...DN 150 valves, in accordance with the max. close-off pressure ratings specified. Factory fitted options, such as a 2k Ω feedback potentiometer auxiliary switches and manual override are also available.

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 k Ω feedback potentiometer		
41	Positioner 0...10 VDC and (2) aux. switches (Only 24 VAC models)		

Spring Return Actuators

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 2k Ω -feedback potentiometer are order options.

This actuator series can be used in conjunction with DN 40...DN 150 VG8300N & VG8300H valve bodies.

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 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 *

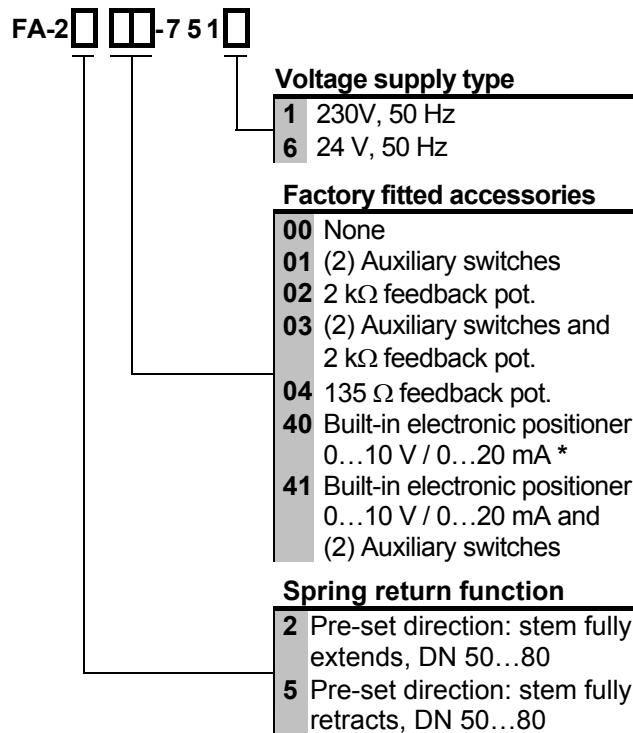
41 Built-in electronic positioner 0...10 V / 0...20 mA and (2) Auxiliary switches

Spring return function

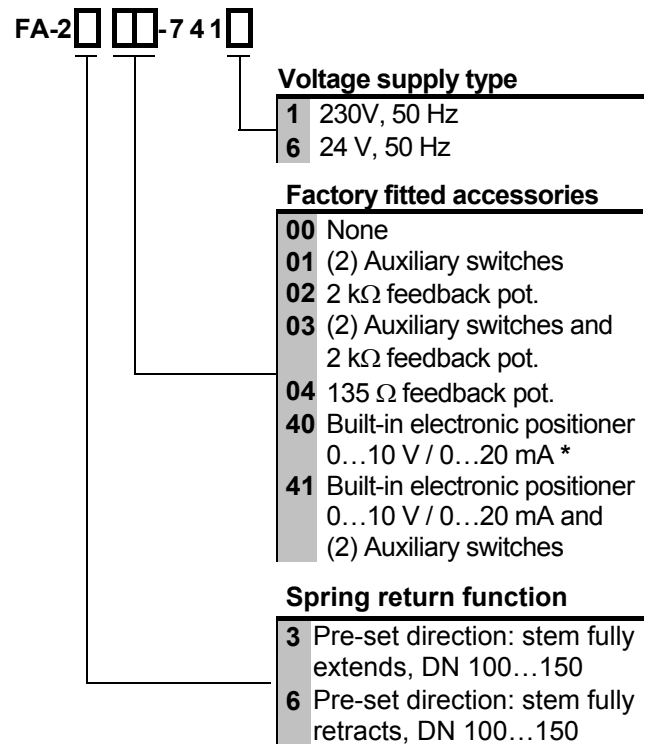
4 Pre-set position: stem fully extended, DN 40

7 Pre-set direction: stem fully retracts, DN 40

* Not for 230 V model

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


* Not for 230 V model

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


* Not for 230 V model

Ordering Procedure

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

For example:

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

Item 1 **VG83G1S1N** (valve body)

Item 2 **RA-3041-7326** (actuator)

Alternatively if order is for factory mounted option:

Item 1 **VG83G1S1N** (valve body)

Item 2 **RA-3041-7326 +M** (actuator)

C lose-off pressures

Maximum Close-off Pressures for Pneumatic Valve-Actuators with VG8300 Valves (kPa)

Actuator model		DN	k _{vs}	2-way PDTC with Reverse Acting actuator (spring-return closes valve)	2-way PDTC with Direct Acting actuator (actuator supply air pressure closes valve)
Stroke	Diaph. area			0 kPa	120...160 kPa
(mm)	(cm ²)			Spring range	Spring range
				[kPa]	[kPa]
				70 - 100; (60-90)*	20 - 50
				Spring ID No.	Spring ID No.
				63	23
MP8000				PN 16 = 1600 PN 25 = 2500	
13	160	40	16, 25		
PA-2000-3200					
13	150	40	16, 25		
PA-2000-3300		50	40		
25	300	65	63		
		80	100		
PA-2000-3600		100	160		
42	600	125	250		
		150	350		

* (For MP8000)

Maximum Close-off Pressures for Electric Valve-Actuators with VG8300N PN 16 Valves (kPa)

Actuator	Stroke	Thrust	Body Size DN						
	(mm)	(N)	40	50	65	80	100	125	150
Non Spring Return Actuators									
VA-7200	13	1000	1600	-	-	-	-	-	-
RA-3000-712x	13	1600		-	-	-	-	-	-
RA-3000-722x	25	1800	-	1600			-	-	-
RA-3000-732x	42	3000	-				1600		
Spring Return Actuators									
FA-2000-711x	13	2000	1600	-	-	-	-	-	-
FA-2000-751x	25	2400	-	1600			-	-	-
FA-2000-741x	42	2200	-	-	-	-	1600		
Non-Spring Return Actuators									
RA-3100-8126	13	1200	1600	-	-	-	-	-	-
RA-3100-8226	25 & 42	1700	-	1600					

Maximum Close-off Pressures for Electric Valve-Actuators with VG8300H PN 25 Valves (kPa)

Actuator	Stroke (mm)	Thrust (N)	Body Size DN						
			40	50	65	80	100	125	150
Non Spring Return Actuators									
VA-7200	13	1000	2500	-	-	-	-	-	-
RA-3000-712x	13	1600		-	-	-	-	-	-
RA-3000-722x	25	1800		2500			-	-	-
RA-3000-732x	42	3000					2500		
Spring Return Actuators									
FA-2000-711x	13	2000	2500	-	-	-	-	-	-
FA-2000-751x	25	2400		2500			-	-	-
FA-2000-741x	42	2200		-	-	-	2500		
Non-Spring Return Actuators									
RA-3100-8126	13	1200	2500	-	-	-	-	-	-
RA-3100-8226	25 & 42	1700	-	2500					

Installation and Servicing

When mounting the VG8300N and VG8300H 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 on pages 11, 13, 14, 15 and 16)
- 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 VG8300N and VG8300H 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 VG8300N and VG8300H 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.

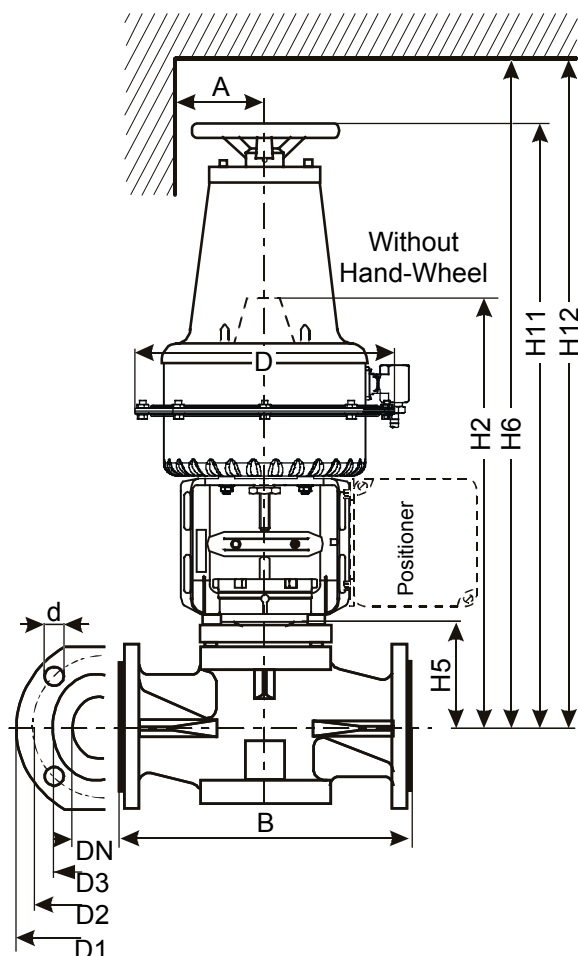
- No air pressure is applied to the piping system when servicing the valve.
- No attempt is made to remove the spring of a pneumatic actuator from its housing.

Ordering Code for Replacement Packing Kits

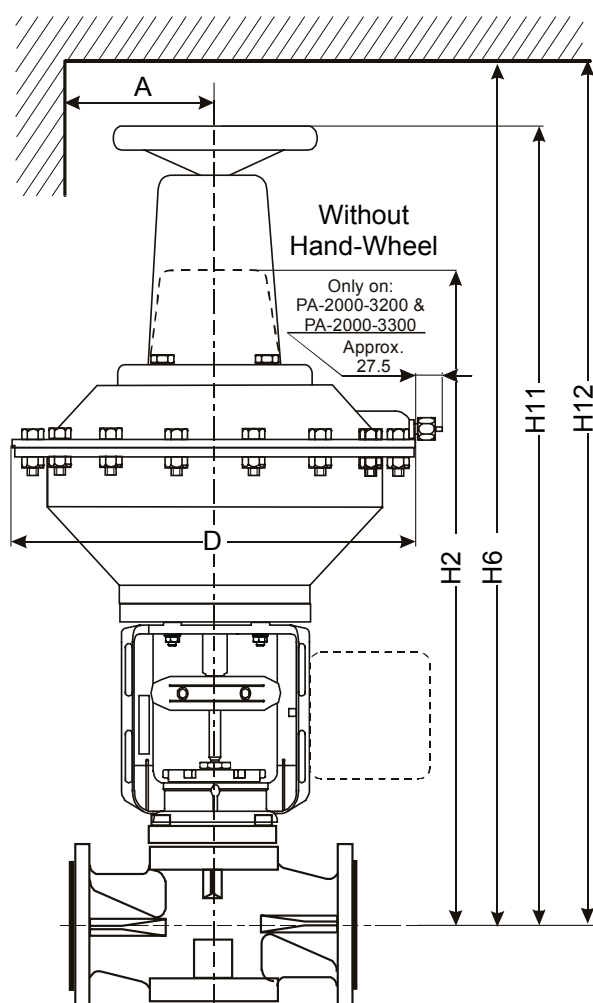
Ordering Code	For valves	Installation kit ordering code
Standard packing kit:		
121 4393 011	DN 40	-
121 4409 011	DN 50...80	-
121 4433 011	DN 100...150	-
* Glycerine cup packing kit:		
121 4434 011	DN 40	121 4434 111
121 4435 011	DN 50...80	121 4435 111
121 4436 011	DN 100...150	121 4436 111
* Installation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

Dimensions (in mm): Pneumatic Actuators and VG8300 valves, DN 40...DN 150

MP8000 with Hand-Wheel



PA-2000 with Hand-Wheel



Valve and Actuator dimensions VG8300 PN 16 and PN 25 Valves

Valve body			MP8200 & MP8300							PA-2000-3200					
DN	B	H5	A	A *)	D	H2	H6	H11	H12	A	D	H2	H6	H11	H12
40	200	78	160	220	219	345	495	551	600	220	205	375	525	463	613

*) For actuator with positioner

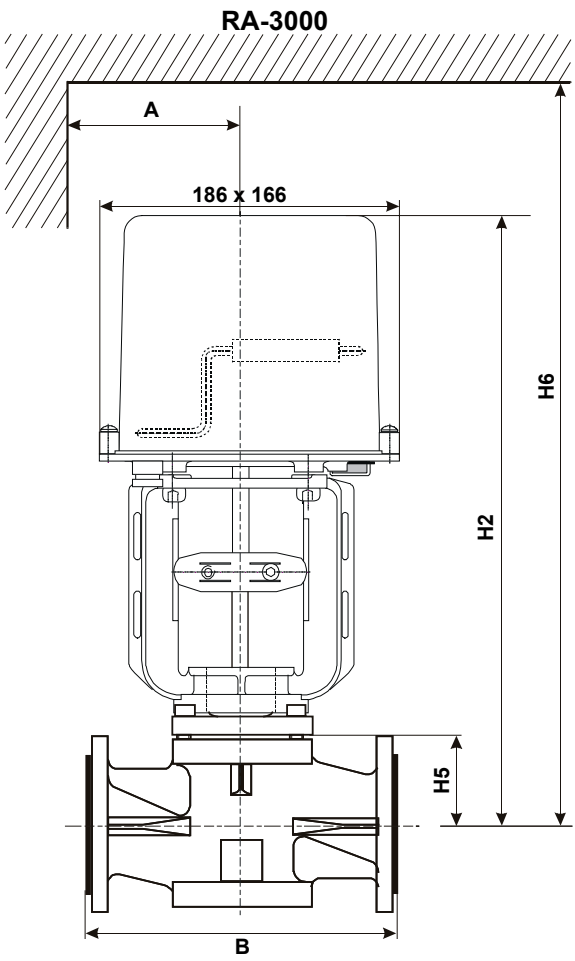
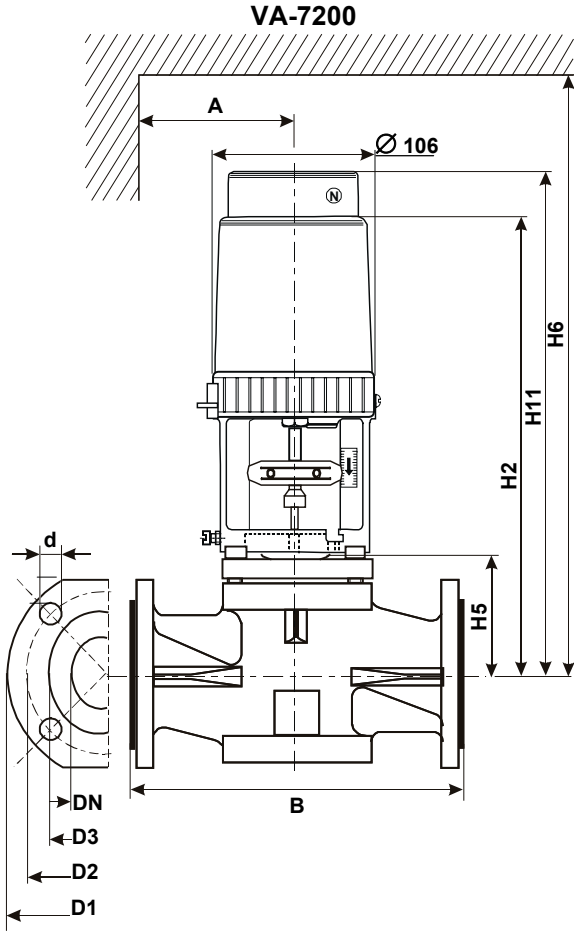
Valve body			PA-2000-3300							PA-2000-3600 & PA-2000-3700					
DN	B	H5	A	D	H2	H6	H11	H12		A	D	H2	H6	H11	H12
50	230	101	235	290	479	629	593	743		250	384	609	809	767	967
65	290	102	235	290	480	630	594	744		250	384	610	810	768	968
80	310	108	235	290	486	636	600	750		250	384	616	816	774	974
100	350	136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

Flange Dimensions

DN	D1	D2	D3	d	Bolts	Holes	DN	D1	D2	D3	d		d	Bolts	Holes
PN 16							PN 16								
PN 16							PN 25								
40	150	110	88	17.5	M16 x 55	4	100	220	180	158	17.5	M16 x 70	22	M20 x 70	8
50	165	125	102	17.5	M16 x 60	4	125	250	210	188	17.5	M16 x 75	26	M20 x 75	8
65	185	145	122	17.5	M16 x 60	4	150	285	240	212	22	M20 x 60	26	M20 x 80	8
80	200	160	138	17.5	M16 x 65	8									

*) For actuator with positioner

Dimensions (in mm): VA-7200 & RA-3000 electric actuators for VG8300 valves (DN 40)



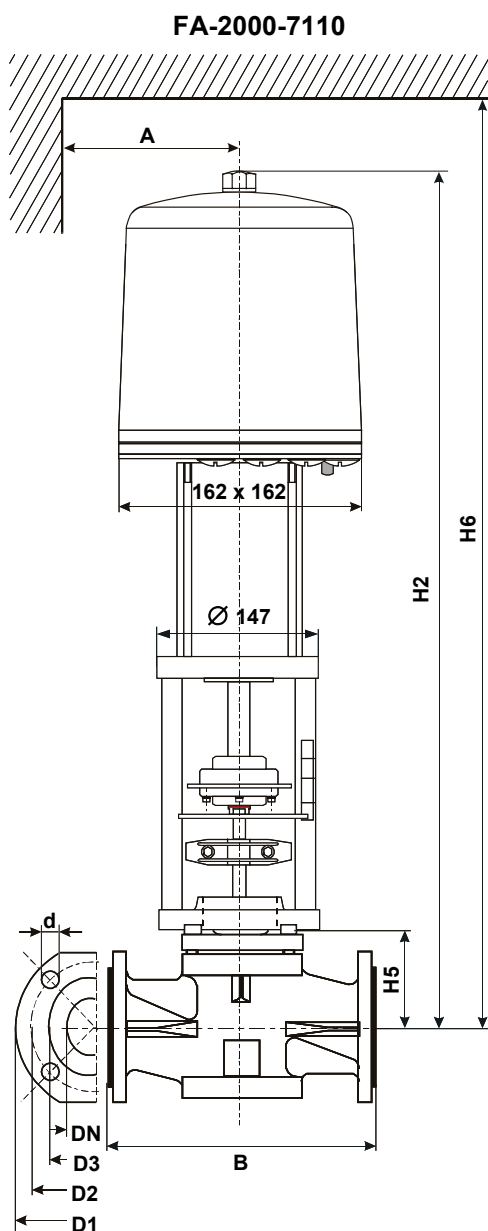
Flange Dimensions

DN	D1	D2	D3	d	Bolts	Holes
40	150	110	88	17.5	M16 x 55	4

Valve and Actuator dimensions

Valve body			VA-7200				RA-3000		
DN	B	H5	A	H2	H11	H6	A	H2	H6
40	200	78	160	291	318	470	160	386	550

Dimensions (in mm):FA-2000 Electric Actuator for VG8300 Valves, (DN 40)



Flange Dimensions

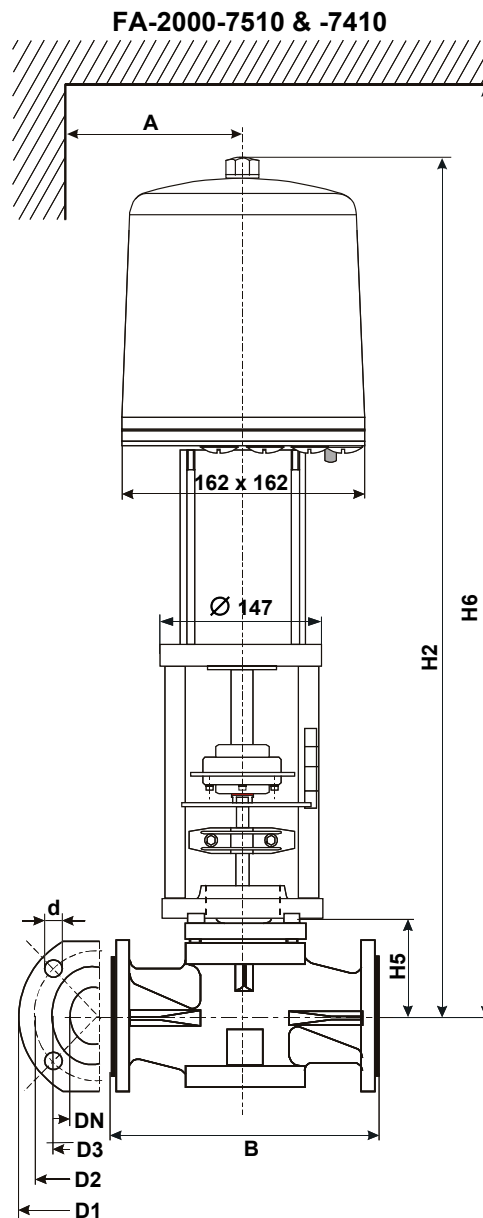
DN	D1	D2	D3	d	Bolts	Holes
40	150	110	88	17.5	M16 x 55	4

Valve and Actuator dimensions

DN	Valve body		FA-2000		
	B	H5	A	H2*)	H6*)
40	200	78	160	590	830

*) For models with positioner add 40 mm

Dimensions (in mm): FA-2000 Electric Actuator for VG8300 Valves (DN 50 - 150)



Flange Dimensions

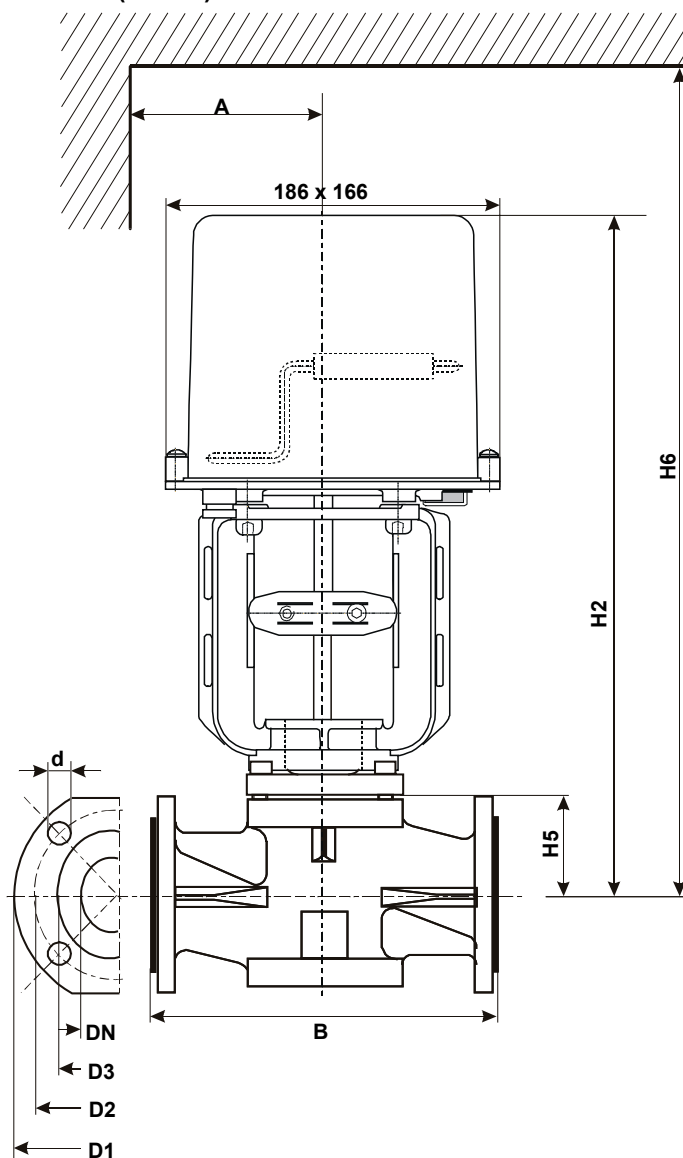
DN	D1	D2	D3	d	Bolts	d	Bolts	Holes	
					PN 16		PN 25	PN 16	PN 25
50	165	125	102	17.5	M16 x 60	17.5	M16 x 60	4	4
65	185	145	122	17.5	M16 x 60	17.5	M16 x 60	4	8
80	200	160	138	17.5	M16 x 65	17.5	M16 x 65	8	8
100	220	180	158	17.5	M16 x 70	22	M20 x 70	8	8
125	250	210	188	17.5	M16 x 75	26	M20 x 75	8	8
150	285	240	212	22	M20 x 60	26	M20 x 80	8	8

Valve and Actuator dimensions

Valve body			FA-2000		
DN	B	H5	A	H2 *)	H6 *)
50	230	101	160	642	880
65	290	102	160	643	880
80	310	108	160	649	880
100	350	136	160	711	950
125	400	155	160	730	970
150	480	175	160	750	990

*) Add 40 mm for models with positioner

Dimensions (in mm): Electric Actuators RA-3000 for VG8300 valves (DN 50 - 150)



Flange Dimensions

DN	D1	D2	D3	d	Bolts	d	Bolts	Holes	
								PN 16	PN 25
50	165	125	102	17.5	M16 x 60	17.5	M16 x 60	4	4
65	185	145	122	17.5	M16 x 60	17.5	M16 x 60	4	8
80	200	160	138	17.5	M16 x 65	17.5	M16 x 65	8	8
100	220	180	158	17.5	M16 x 70	22	M20 x 70	8	8
125	250	210	188	17.5	M16 x 75	26	M20 x 75	8	8
150	285	240	212	22	M20 x 60	26	M20 x 80	8	8

Valve and Actuator dimensions

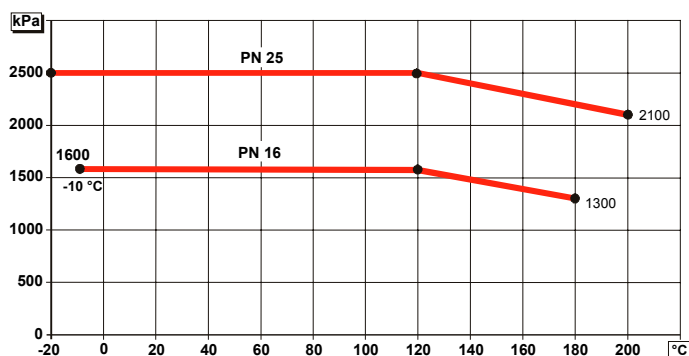
Valve body			RA-3000		
DN	B	H5	A	H2	H6
50	230	101	160	408	580
65	290	102	160	409	580
80	310	108	160	415	580
100	350	136	160	443	600
125	400	155	160	462	630
150	480	175	160	482	640

**) Add 15 mm for models with positioner

Specifications

Product: VG8300N, PN 16 flanged valves					VG8300H PN 25 flanged valves			
Models: 2-way Balanced pressure (PDTC) DN 40...150					2-way Balanced pressure (PDTC) DN 40...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:	40	50	65	80	100	125	150
	k _{vs} :	25	40	63	100	160	250	350
Weight (kg) VG8300N:		12	14	18.5	25.5	35.5	55	75
Nominal stroke in mm:		13	25			42		

Pressure / Temperature characteristics:



Fluid temperature limits:		2°C... 180 °C (with DN 125 & DN 150 2°C...130°C); -10 °C when optional glycerine cup is used (below 0°C optional glycerine cup must be used).	2°C...200 °C; -20 °C when optional glycerine cup is used (below 0°C optional glycerine cup must be used).
Material Body:		Nodular cast iron EN-GJS-400-15, Mat. spec. No. EN-JS1030	Nodular cast iron In accordance with EN-GJS-400-18-LT, Mat.spec. No. EN-JS1025
Stem / Plug / Seat edge:		Stainless steel, Material specification 1.4305	
Packing:		Teflon-Viton-Teflon V-ring combination, spring loaded, self adjusting (Aramid fibre-Viton- Aramid fibre when glycerine cup is used)	
Face to face dimensions:		In accordance with DIN EN558-1	
Flange dimensions:		DIN EN1092-2, form B seal strip (Pre-welded flange, recommended in accordance with DIN EN1092-2)	
Flow characteristics		Characteristic: Equal percentage	
Practical rangeability (k_{vs} / k_{vr}):		100:1	
Sensitivity n_{gl}(ideal rangeability):		4.5 for k _{vs} ≥ 1; 3.2 for k _{vs} 0.4...0.63	
Max. Δp_{v100}:		500 kPa with water. 800 kPa with heavy duty model for super heated steam	1000 kPa with water. 1600 kPa with heavy duty model for super heated steam
Leakage rate:		Max. 0.05 % of k _{vs} DIN 32730; Test with water as per DIN EN1349	
Type of device:		Pressure accessory conforms to the 97/23/EU as per module D1 for DN 40...DN 125 Pressure accessory conforms to the 97/23/EU as per modules B & D for DN 150	
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	

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

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