VG8000H Series PN 25, DN 15 - DN 150 Nodular Iron Flanged Valves

Introduction

The VG8000H series PN 25 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.

VG8000H Valves
(With PA and RA Actuators)

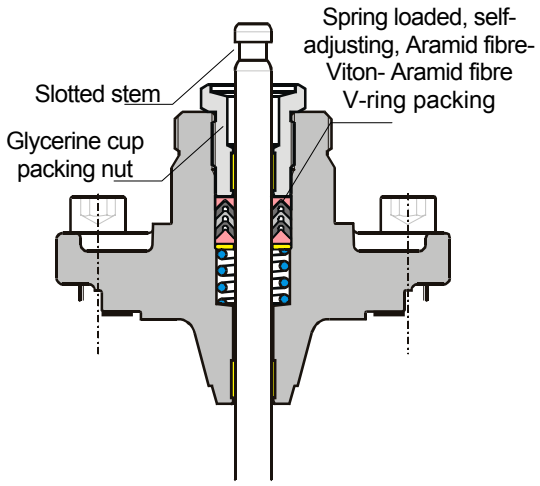
Features and Benefits

❑ **Valves in two-way, three-way mixing and diverting configurations.**	Covers all common HVAC applications.
❑ **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).
❑ **Wide fluid temperature. range**	Standard range: 2°C…200°C with cooling fin: up to 280°C with glycerine cup: as low as –20°C
❑ **Nodular iron valve bodies.**	Compact, lighter and more ductile than ordinary cast iron (EN-GJS-400-18-LT).
❑ **Stainless steel stem-plug-seat combination.**	Provides stability and durability.
❑ **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 for two- and three-way valves.**	Provides maximum energy efficiency.
❑ **Electric and pneumatic actuators available, either factory mounted or for in-situ installation, for all valve configurations.**	Allows optimum actuator selection.
❑ **Slotted stem with coupler for simple actuator attachment.**	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 15 to 150 mm. Flanged connections comply with EN and DIN standards. These valves also comply with **P**ressure **E**quipment **D**irectives (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 VG8000H glycerine bonnet



The VG8000H valve series is available in two-way PDTC configuration and in three-way mixing or diverting configurations.

Two-way valves have an 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.

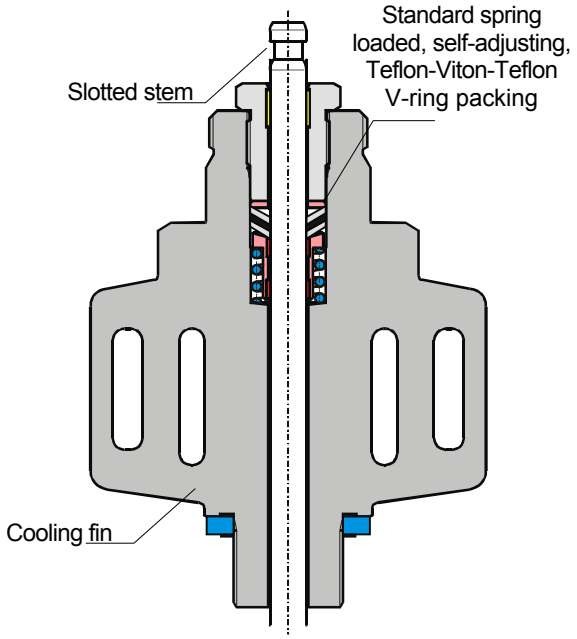
The upper operating fluid temperature range limit is 200°C, where fluid temperatures can rise above this to a max. 280°C the cooling fin option must be used.

The Model where packing includes an optional cup for glycerine anti-freeze is available for fluid temperatures as low as -20 °C.

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

A variety of electric and pneumatic actuators are available and can be ordered as a factory fitted valve/actuator combination or as a single item for on site installation.
Refer to this and following pages for ordering data and additional details.

The VG8000H bonnet with cooling fin



Note: The cooling rib is optional and **must** be ordered where fluid temperatures can exceed 200°C

Ordering codes for Valve Bodies

VG8000H

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

VG8 □□ S1H

	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
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

For ordering a valve with **Cooling fin**, add suffix **"10"** to the ordering code: i.e. VG8xxxS1H**10**.

For ordering a valve with **Glycerine cup** packing, add suffix **"20"** to the ordering code: i.e. VG8xxxS1H**20**.

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

Ordering example:

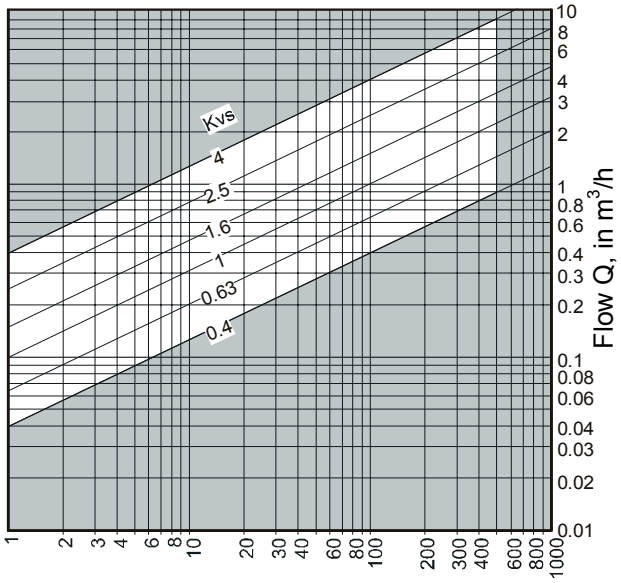
For a two-way valve, DN 65, k_{vs} 63, PN 25, the ordering code is:**VG82G1S1H**

Special models (heavy duty, special coating) are available on request.

Valve Selection

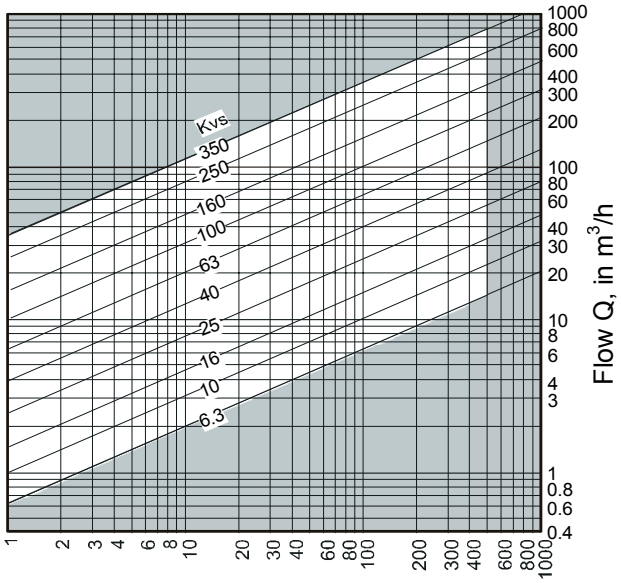
The valve size for water applications can be defined using the diagrams below, where the intersection of the pressure drop across the valve and the flow must be within the white area.

k_v selection diagram for DN 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

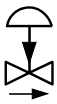
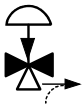
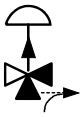
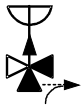
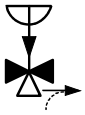
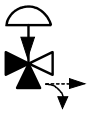
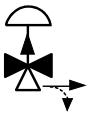
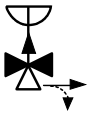
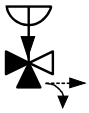
The VG8000H series nodular iron flanged valves can be combined with the following series of pneumatic and electric actuators:

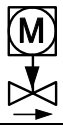
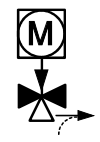
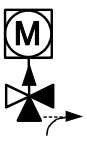
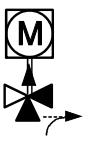
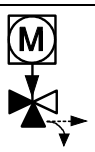
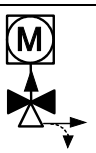
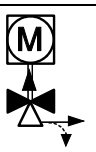
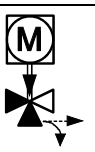
- MP-8000 pneumatic actuators (DN 15 ...40)
- PA-2000 pneumatic actuators (DN 15 ...150)
- VA-7200 electric actuators (DN 15 ...40)
- RA-3000 electric actuators (DN 15 ...150)
- FA-2000 electric spring return actuators (DN 15...150)
- FA-3300 heavy duty electric actuators (DN 100, 125 and 150)

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	
⬇ Valve type	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)**	
	VA-72xx-820x, RA-3xxx-7x2x, RA-3100-8x2x, FA-2xxx-7x1x and FA-33xx-741x		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..				
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□□□

Spring Range

2	20... 50 kPa
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
7	600 cm^2, large actuator for DN 50...DN 80

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

The PA-2000 can be specially ordered as a Teflon-free model, in conjunction with the VG8000H series. Please contact your Johnson Controls distributor.

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

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 for 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 the DN 15...40 VG8000H valve series.

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 kΩ	No
20	(2) aux. switches	No
40*	No	Yes
41	0…10 V (pot)	Yes
43	2 kΩ	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 15…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 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 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 15…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 2kΩ 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 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 VG8000H 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 kΩ 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

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 15...DN 150 VG8000H 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 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 position: stem fully extended, DN 15…40
7	Pre-set position: stem fully retracted, DN 15…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 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

2	Pre-set position: stem fully extended, DN 50…80
5	Pre-set position: stem fully retracted, DN 50…80

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 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

3	Pre-set position: stem fully extended, DN 100…150
6	Pre-set position: stem fully retracted, DN 100…150

* Not standard for 230 V model. Can be specially ordered; please note longer delivery time.

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, order:

Item 1 **VG82G1S1H** (valve body)

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

Alternatively if order is for factory mounted option:

Item 1 **VG82G1S1H** (valve body)

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

Close-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"					
Stroke	Diaph. area			0 kPa		120 kPa		140 kPa		160 kPa	
				Spring range		Spring range		Spring range		Spring range	
(mm)	(cm²)			[kPa]		[kPa]		[kPa]		[kPa]	
				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	0.4 - 1.6	820	2500	2500	2500	2500	2500	2500	2500
13	160	15	2.5 - 4	30	2500	2500	1330	2500	2500	2500	2500
		20	4, 6.3	-	2500	2500	590	2500	1940	2500	2500
		25	6.3, 10	-	1780	2250	350	2500	1300	2500	2250
		32	16,10	-	880	1140	120	1650	630	2160	1140
		40	16, 25	-	510	670	30	990	350	1320	670
PA-2000-3200		15	0.4 - 1.6	240	2500	2500	240	2500	2500	2500	2500
13	150	15	2.5, 4	-	2500	2500	-	2500	2310	2500	2500
		20	4, 6.3	-	2500	2500	-	2500	1100	2500	2370
		25	6.3, 10	-	2050	2050	-	2500	710	2500	1600
		32	16,10	-	1030	1030	-	1500	310	1980	790
		40	16, 25	-	600	600	-	900	150	1210	450
PA-2000-3300		50	40	-	800	800	-	1130	320	1450	640
25	300	65	-	-	620	620	-	870	230	1130	490
		80	100	-	280	280	-	410	90	540	220
PA-2000-3600		100	160	30	460	460	30	640	200	810	380
42	600	125	250	10	280	280	10	400	120	510	230
		150	350	-	170	170	-	240	60	310	130
PA-2000-3700		50	40	320	1940	1940	320	2500	960	2500	1610
25	600	65	63	230	1510	1510	230	2020	740	2500	1250
		80	100	90	730	730	90	990	340	1250	600

* (For MP8000)

Actuator	Stroke	Thrust	Body Size DN										
	(mm)	(N)	15	20	25	32	40	50	65	80	100	125	150
Non Spring Return Actuators													
VA-7200	13	1000	2500	2030	1360	660	370	-	-	-	-	-	-
RA-3000-712x	13	1600	2500	2500	2500	1930	1180	-	-	-	-	-	-
RA-3000-722x	25	1800	-	-	-	-	-	650	500	220	-	-	-
RA-3000-732x	42	3000	-	-	-	-	-	1300	1010	480	290	170	100
FA-3300-741x	42	6000	-	-	-	-	-	-	-	-	720	450	270
Spring Return Actuators													
FA-2000-711x	13	2000	2500	2500	2500	2400	1480	-	-	-	-	-	-
FA-2000-751x	25	2400	-	-		-	-	920	710	330	-	-	-
FA-2000-741x	42	2200	-	-		-	-	-	-	-	180	100	50
Non-Spring Return Fast Running Actuators													
RA-3100-8126	13	1200	2500	2500	2500	1300	770	-	-	-	-	-	-
RA-3100-8226	25 & 42	1700	-	-	-	-	-	600	450	200	100	-	-

Installation and Servicing

When mounting the VG8000H 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 VG8000H 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.

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		

When servicing the VG8000H 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.

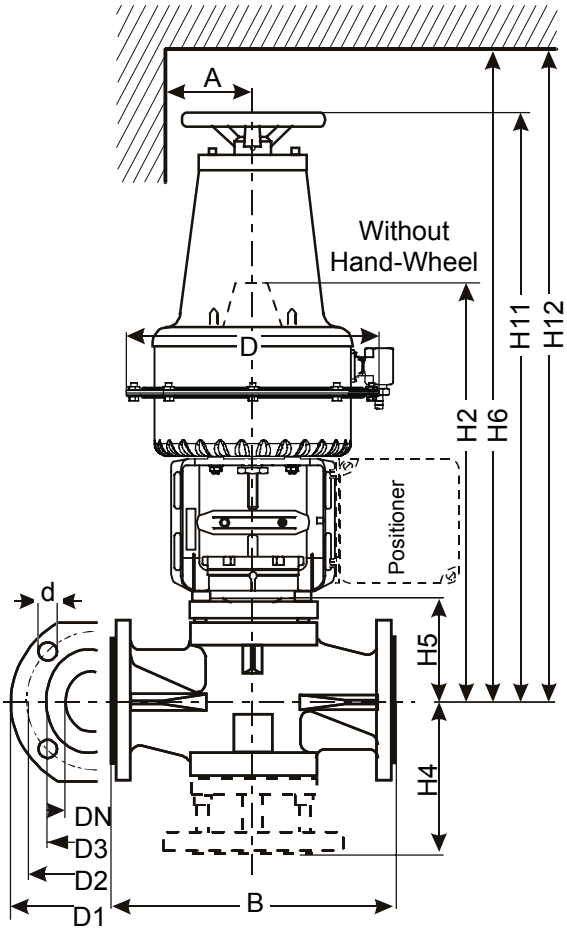
Equipment Damage Hazard

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.

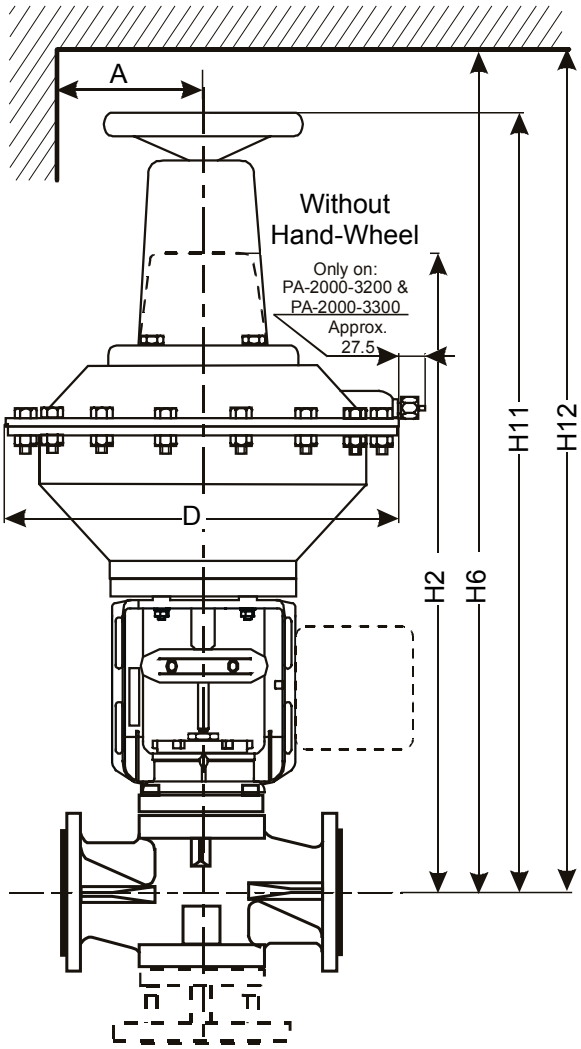
- No air pressure is applied to the piping system when servicing the valve.
- No attempt is made to remove the spring of a pneumatic actuator from its housing.

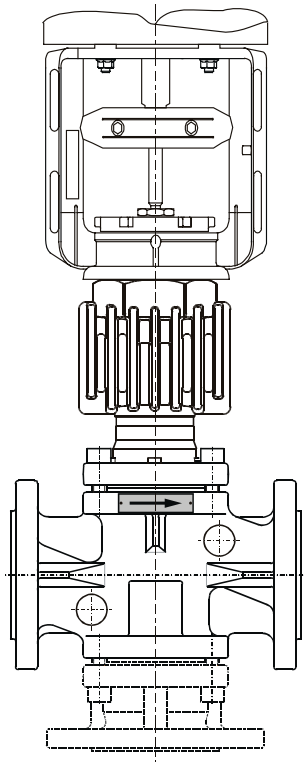
Dimensions (in mm): Pneumatic Actuators and VG8000H valves, DN 15…DN 150

MP8000 with Hand-Wheel



PA-2000 with Hand-Wheel





Note: For the dimensions of actuator + valve with cooling fin just add the height information in column Hc of the valve and actuator dimensions table.

Valve and Actuator dimensions

Valve body					MP8200 & MP8300							PA-2000-3200					
DN	**B**	**H4**	**Hc**	**H5**	**A**	**A *)**	**D**	**H2**	**H6**	**H11**	**H12**	**A**	**D**	**H2**	**H6**	**H11**	**H12**
15	130	100	125	76	160	220	219	342	492	448	600	220	205	372	522	460	610
20	150	106	125	76	160	220	219	342	492	448	600	220	205	372	522	460	610
25	160	106	125	76	160	220	219	342	492	448	600	220	205	372	522	460	610
32	180	123	125	81	160	220	219	347	497	553	600	220	205	377	527	465	615
40	200	140	125	78	160	220	219	345	495	551	600	220	205	375	525	463	613

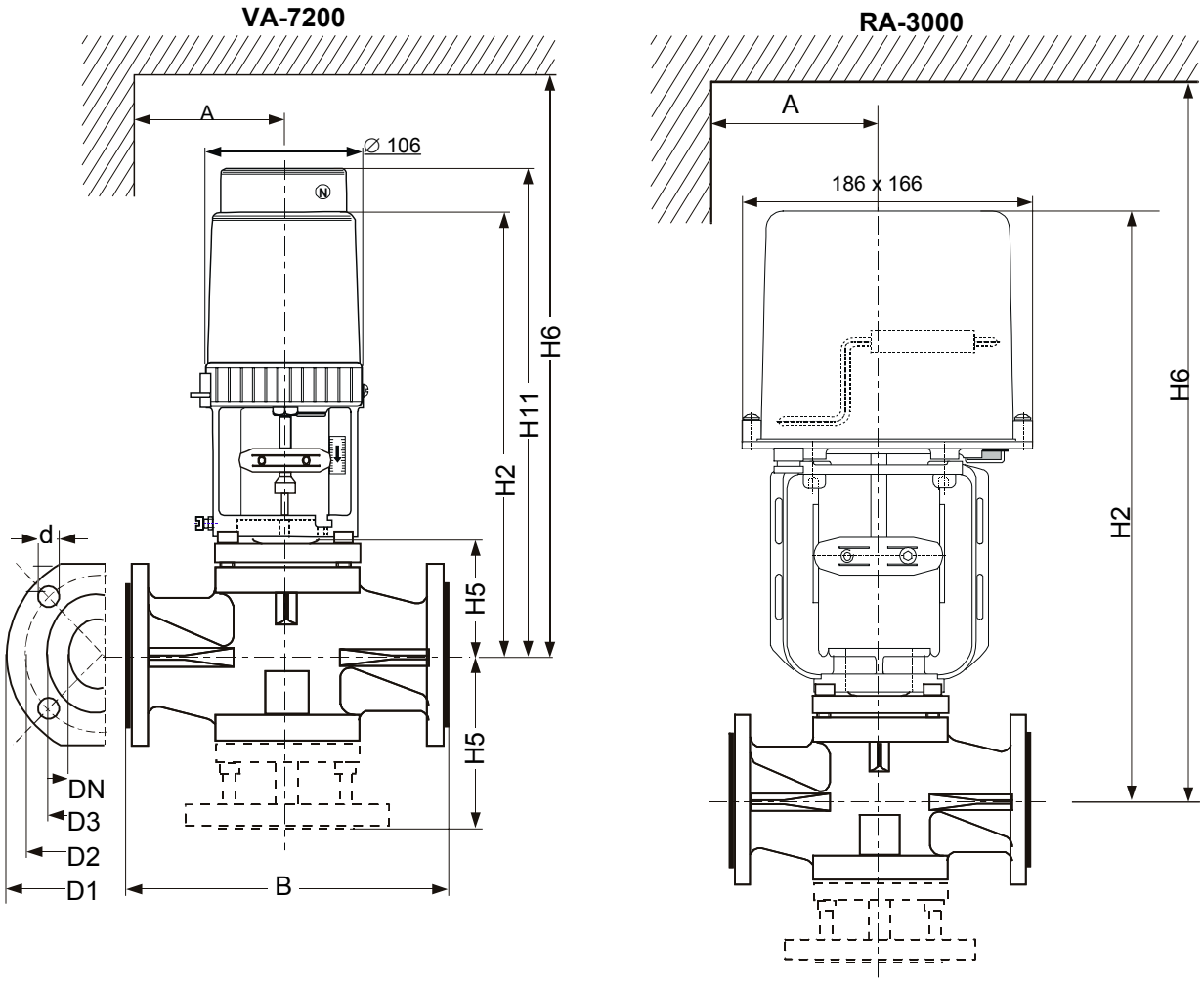
*) For actuator with positioner

Valve body					PA-2000-3300						PA-2000-3600 & PA-2000-3700					
DN	**B**	**H4**	**Hc**	**H5**	**A**	**D**	**H2**	**H6**	**H11**	**H12**	**A**	**D**	**H2**	**H6**	**H11**	**H12**
50	230	145	140	101	235	290	479	629	593	743	250	384	609	809	767	967
65	290	156	140	102	235	290	480	630	594	744	250	384	610	810	768	968
80	310	180	140	108	235	290	486	636	600	750	250	384	616	816	774	974
100	350	225	140	136	-	-	-	-	-	-	250	384	644	844	802	1002
125	400	255	140	155	-	-	-	-	-	-	250	384	663	863	821	1021
150	480	290	140	175	-	-	-	-	-	-	250	384	683	883	841	1041

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
50	165	125	102	17.5	M16 x 60	4
65	185	145	122	17.5	M16 x 60	8
80	200	160	138	17.5	M16 x 65	8
100	235	190	162	22	M20 x 70	8
125	270	220	188	26	M24 x 75	8
150	300	250	218	26	M24 x 80	8

Dimensions in mm: VA-7200 & RA-3000 electric actuators for VG8000H valves (DN 15 - 40)



Flange Dimensions

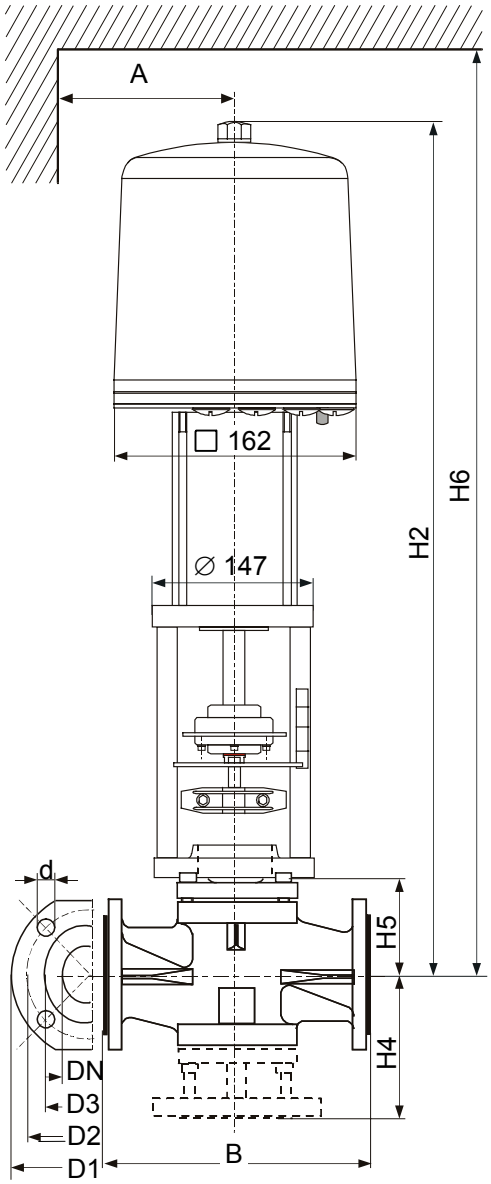
DN	D1	D2	D3	d	Bolts	Holes
15	95	65	45	13.5	M12 x 45	4
20	105	75	58	13.5	M12 x 50	4
25	115	85	68	13.5	M12 x 50	4
32	140	100	78	17.5	M16 x 55	4
40	150	110	88	17.5	M16 x 55	4

Note: For the dimensions of actuator + valve with cooling fin just add the height information in column Hc of the valve and actuator dimensions table.

Valve and Actuator dimensions

	Valve body				VA-7200				RA-3000		
DN	**B**	**H4**	**Hc**	**H5**	**A**	**H2**	**H11**	**H6**	**A**	**H2**	**H6**
15	130	100	125	76	160	288	315	470	160	383	550
20	150	106	125	76	160	288	315	470	160	383	550
25	160	106	125	76	160	288	315	470	160	383	550
32	180	123	125	81	160	293	320	470	160	388	550
40	200	140	125	78	160	291	318	470	160	386	550

Dimensions - FA-2000-7110 Electric Actuator, 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

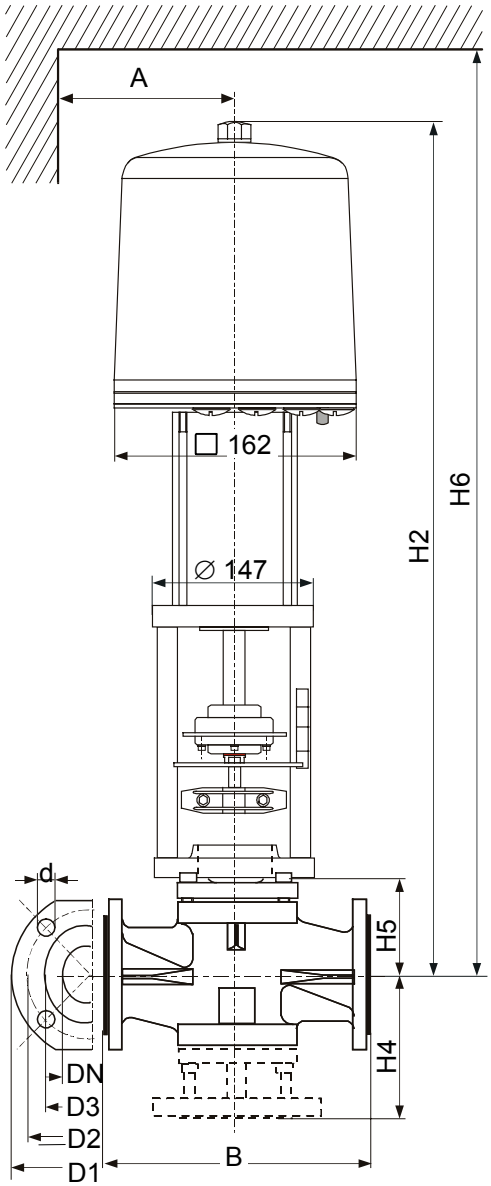
Note: For the dimensions of actuator + valve with cooling fin just add the height information in column Hc of the valve and actuator dimensions table.

Valve and Actuator dimensions

	Valve body				FA-2000		
DN	**B**	**H4**	**Hc**	**H5**	**A**	**H2*)**	**H6*)**
15	130	100	125	76	160	587	830
20	150	106	125	76	160	587	830
25	160	106	125	76	160	587	830
32	180	123	125	81	160	592	830
40	200	140	125	78	160	590	830

*) For models with positioner add 40 mm

Dimensions - FA-2000-7510 & -7410 Electric Actuator (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	8
80	200	160	138	17.5	M16 x 65	8
100	235	190	162	22	M20 x 70	8
125	270	220	188	26	M24 x 75	8
150	300	250	218	26	M24 x 80	8

Note: For the dimensions of actuator + valve with cooling fin just add the height information in column Hc of the valve and actuator dimensions table.

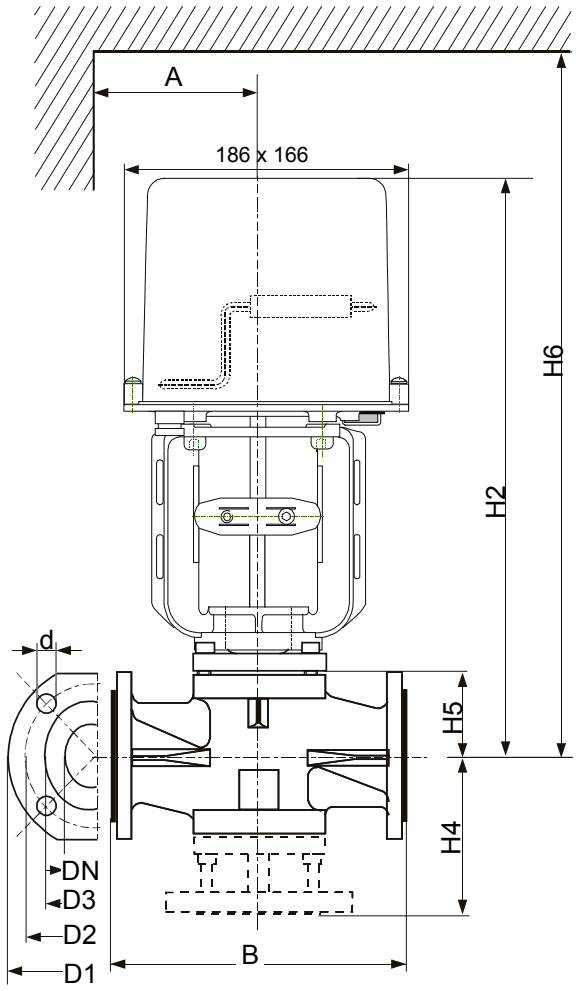
Valve and Actuator dimensions

	Valve body				FA-2000		
DN	**B**	**H4**	**Hc**	**H5**	**A**	**H2 *)**	**H6 *)**
50	230	145	140	101	160	642	880
65	290	156	140	102	160	643	880
80	310	180	140	108	160	649	880
100	350	225	140	136	160	711	950
125	400	255	140	155	160	730	970
150	480	290	140	175	160	750	990

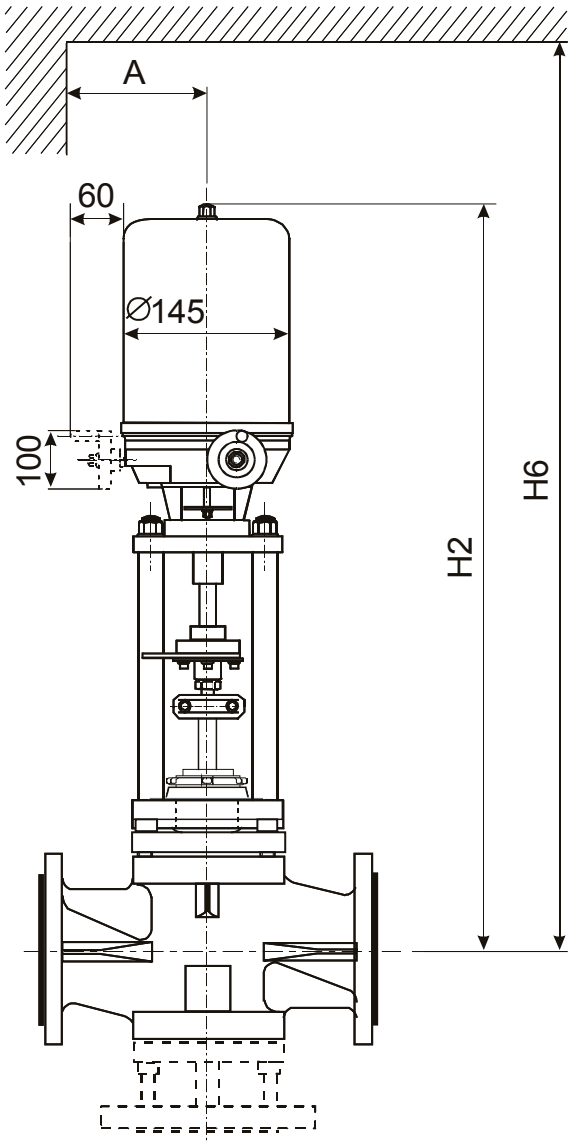
*) Add 40 mm for models with positioner

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

RA-3000



FA-3300



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	8
80	200	160	138	17.5	M16 x 65	8
100	235	190	162	22	M20 x 70	8
125	270	220	188	26	M24 x 75	8
150	300	250	218	26	M24 x 80	8

Note: For the dimensions of actuator + valve with cooling fin just add the height information in column Hc of the valve and actuator dimensions table.

Valve and Actuator dimensions

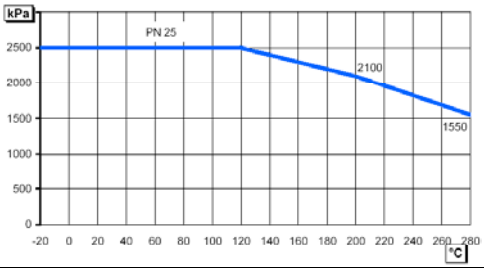
Valve body					FA-3300			RA-3000		
DN	**B**	**H4**	**Hc**	**H5**	**A**	**H2 **)**	**H6 **)**	**A**	**H2**	**H6**
50	230	145	140	101	-	-	-	160	408	580
65	290	156	140	102	-	-	-	160	409	580
80	310	180	140	108	-	-	-	160	415	580
100	350	225	140	136	300	608	820	160	443	600
125	400	255	140	155	300	626	840	160	462	630
150	480	290	140	175	300	637	860	160	482	640

**) Add 15 mm for models with positioner

Specifications

Product :	**VG8000H Series flanged valves**										
Models:	2-way (PDTC) DN 15…150, 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 (4)	10 (6.3)	16 (10)	25 (16)	40	63	100	160	250	350
Weight (kg) VG8000H: 2-way:	4.5	5	5.5	7.5	10	14	18	25.5	34.5	50	75.5
Mixing:	5.5	6.5	7.5	10	13	18	23.5	33.5	44	68	99
2-way Diverting:	5.5	6.5	7.5	10.5	13	18	23.5	33.5	44	68.5	99.5
with cooling fin:	7.5	8.5	9	11	13.5	18	22	29.5	39	55.5	81.5
Mixing with cooling fin:	8.5	10	10.5	13.5	16.5	22	27.5	37.5	48.5	73.5	105
Diverting with cooling fin:	8.5	10	10.5	14	16.5	22	27.5	37.5	48.5	74	105.5
Nominal stroke:	13 mm					25 mm			42 mm		

Pressure / Temperature characteristics:



Fluid temperature limits:	2°C...200 °C -20 °C at temperatures below 0°C optional glycerine cup must be used; Over 200°C up to 280°C optional cooling fin must be used. See SDI 121 4734 050
Material	
Body:	Nodular cast iron: EN-GJS-400-18-LT; Material specification No. EN-JS1025
Stem / Plug / Seat edge:	Stainless steel, Material specification 1.4305
Packing:	Teflon-Viton-Teflon V-ring combination, spring loaded and self adjusting
Flange dimensions:	DIN EN1092-2, form B seal strip. See SDI 121 4734 050 (Pre-welded flange, recommended in accordance with DIN EN1092-2)
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 (Diverting linear)	Linear (Diverting equal percent)
Practical rangeability (k_{vs} / k_{vr}):	100:1	
ideal rangeability:	4.5 for $k_{vs} \geq 1$ 3.2 for k_{vs} 0.1…0.63	
Max. Δpv_{100}:	1000 kPa with water, 1600 kPa with super heated steam (Heavy duty)	

Leakage rate:	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
	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

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

0.4	0.63	1.0	1.6	2.5	4

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.

JOHNSON CONTROLS

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