

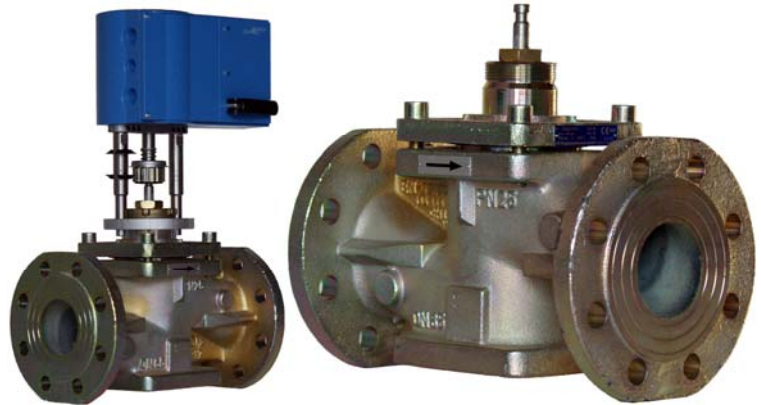
VG8300N & H Series PN 16 & PN 25, DN 40 - DN 150 Balanced Pressure Nodular Iron Flanged Valves

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 VA1000 Actuator)

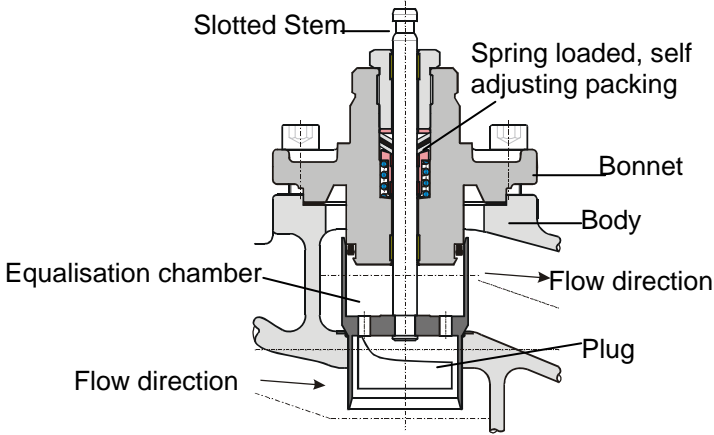
Features and Benefits

| | |
|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Balanced pressure valve. | Cost saving technology, expensive high thrust actuators no longer necessary. |
| <input type="checkbox"/> 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). |
| <input type="checkbox"/> 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). |
| <input type="checkbox"/> Stainless steel stem-plug-welded seat area combination. | Provides stability and durability. |
| <input type="checkbox"/> Pneumatic and electric actuators available. | Allows optimum choice of actuator. |
| <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. | Provides maximum energy efficiency. |
| <input type="checkbox"/> Slotted stem for Johnson Controls coupler. | Simple and robust quick-fit coupler system reduces installation costs. |
| <input type="checkbox"/> 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 PDTC 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 PDTC

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.

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

Ordering Example:

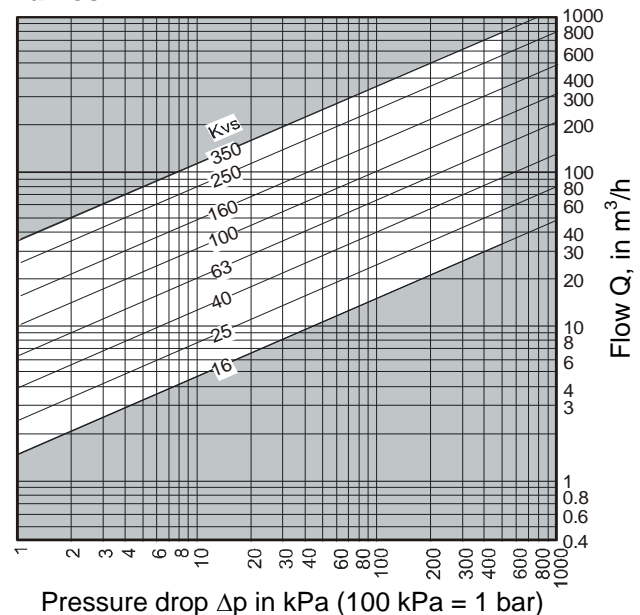
For a DN 65, k_{vs} 63, PN 16 valve, the ordering code is: **VG83G1S1N**

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:

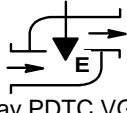






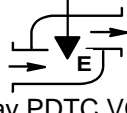




Valve - Actuator Combinations

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)
 - VA1000 electric non-spring & spring return actuators (DN 40...150)
 - VA78x0 electric non-spring & spring return 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-822xxx0 and PA-2xx0-3x1x | | Reverse Acting pneumatic actuators MP-832xxx0 and PA-2xx0-3x2x | |
|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| | Air pressure extends stem | Spring-return retracts stem | Air pressure retracts stem | Spring-return extends stem |
|  2-way PDTC VG82.. |  |  |  |  |

| Electric actuator ➔ | Control mode | | Power fail position (spring return only) | |
|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| | VA1125-GGA-1, VA7810-xxx-12 RA-3xxx-7x2x, RA-3100-8x2x and FA-2xxx-7x1x | | VA7820-xxx-12 VA1220-GGA-1 FA-25xx-751x FA-26xx-741x FA-27xx-711x | VA7830-xxx-12 VA1420-GGA-1 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 | ▲ = Flow |
| L = Linear control characteristic | △ = 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:

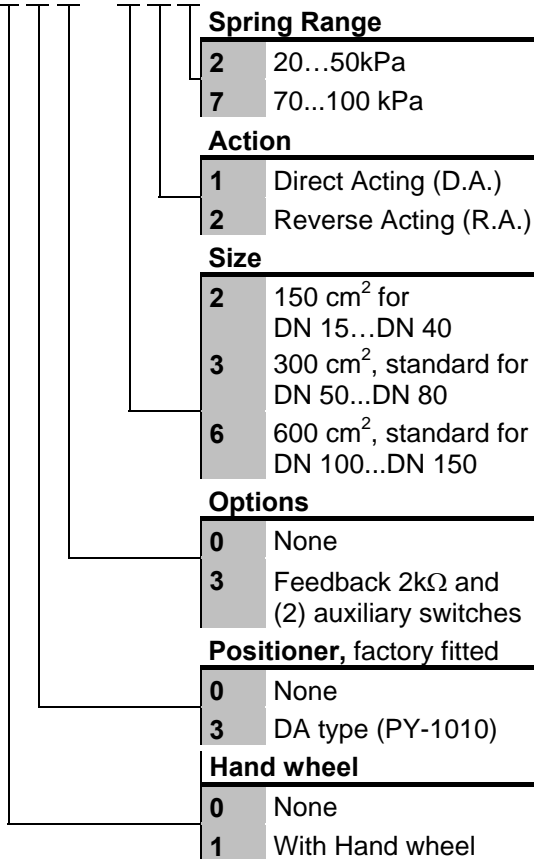
- Valves DN 40 : MP8000 series
- Valves DN 40 – 150 : PA-2000 series

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

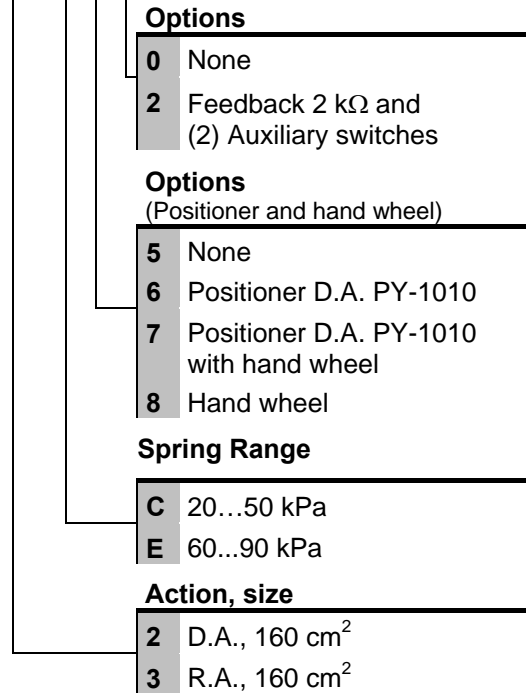
PA-2 -3



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.

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 VG8300N & H flanged valves.

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

Ordering codes for VA7810 Electric Actuators

| Ordering code | Actuator Description |
|--------------------------------------|-----------------------------------------------------------------------------------------------|
| On/Off & Floating Control | |
| VA7810-ADA-12 | AC 230 V |
| VA7810-ADC-12 | AC 230 V, (2) Aux. switches |
| VA7810-AGA-12 | AC 24 V |
| VA7810-AGC-12 | AC 24 V, (2) Aux. switches |
| VA7810-AGH-12 | AC 24 V, 2kΩ Feedback pot. |
| Proportional Control | |
| VA7810-GGA-12 | AC 24 V DC 0(2)...10 V or 0(4)... 20 mA + Floating or On/Off control |
| VA7810-GGC-12 | AC 24 V 2 Aux. switches DC 0(2)...10 V or 0(4)... 20 mA + Floating or On/Off control |

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 DN40... DN150 at the specified close-off pressure ratings.

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 | 2kΩ 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 |

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 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 <input type="text"/> <input type="text"/> -7 <input type="text"/> <input type="text"/> | |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| 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 <input type="text"/> <input type="text"/> -8 <input type="text"/> <input type="text"/> | |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| 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 2kΩ-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 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 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

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 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 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 direction: stem fully extends, DN 100...150 |
| 6 | Pre-set direction: stem fully retracts, DN 100...150 |

* Not for 230 V model

VA78x0 Electric self-adjusting actuators

The VA7800 1000 N thrust valve actuators have manual override as standard and provide stroke capabilities of 8 mm to 25 mm. VG8000 flanged valves should be fitted in accordance with the maximum close-off pressure ratings specified. The actuators can be ordered as separate units or as a factory fitted valve / actuator combinations.

| Ordering code | Description |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| VA7820-GGA-12 (Spring return retracts) | 1000N; AC 24 V Supply DC 0(2)...10 V Feedback |
| VA7830-GGA-12 (Spring return extends) | Proportional DC 0(2)...10 V or 0(4)... 20 mA control + Floating or On/Off control |
| VA7820-GGC-12 (Spring return retracts) | 1000N; AC 24 V Supply DC 0(2)...10 V Feedback |
| VA7830-GGC-12 (Spring return extends) | 2 Aux. switches Proportional DC 0(2)...10 V or 0(4)... 20 mA control + Floating or On/Off control |

VA1000 Electric self-adjusting actuators

The VA1000 2000N thrust 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 DN40...DN150 valves at the specified close-off pressure ratings.

24V Actuator ordering codes

| 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 | 2kΩ 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 |

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

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 | 2-way PDTC with Reverse Acting actuator (spring-return closes valve) | 2-way PDTC with Direct Acting actuator (actuator supply air pressure closes valve) |
|----------------|-----|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| | | 0 kPa | |
| Stroke (mm) | | Spring range [kPa] | Spring range [kPa] |
| | | 70 - 100; | 20 - 50 |
| | | Spring ID No. | Spring ID No. |
| | | 63 | 23 |
| PA-2000-3200 | | PN 16 = 1600 | |
| 13 | 40 | | |
| PA-2000-3300 | 50 | | |
| 25 | 65 | | |
| | 80 | | |
| PA-2000-3600 | 100 | | |
| 42 | 125 | | |
| | 150 | | |

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

| Actuator | Stroke (mm) | Thrust (N) | Body Size DN | | | | | | | |
|-------------------------------------------------|----------------|---------------|--------------|------|----|----|------|------|------|--|
| | | | 40 | 50 | 65 | 80 | 100 | 125 | 150 | |
| Non Spring Return Actuators | | | | | | | | | | |
| VA1125-GGA-1 | | 2500 | 1600- | | | | 1500 | 1400 | | |
| VA7810-xxx-12 | 13 | 1000 | 1600 | - | - | - | - | - | - | |
| RA-3000-712x | 13 | 1600 | - | - | - | - | - | - | - | |
| RA-3000-722x | 25 | 1800 | - | 1600 | | | - | - | - | |
| RA-3000-732x | 42 | 3000 | - | 1600 | | | | | | |
| Spring Return Actuators | | | | | | | | | | |
| VA1x20-GGA-1 | | 2000 | 1600- | | | | 1500 | 1400 | 1000 | |
| FA-2000-711x | 13 | 2000 | 1600 | - | - | - | - | - | - | |
| FA-2000-751x | 25 | 2400 | - | 1600 | | | - | - | - | |
| FA-2000-741x | 42 | 2200 | - | - | - | - | 1600 | | | |
| Fast Running 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 | | | | | | | | | | |
| VA1125-GGA-1 | | 2500 | 2500 | | | | 1900 | 1500 | | |
| VA7810-xxx-12 | 13 | 1000 | 2500 | | | | | | | |
| RA-3000-712x | 13 | 1600 | - | - | - | - | - | - | - | |
| RA-3000-722x | 25 | 1800 | - | 2500 | | | - | - | - | |
| RA-3000-732x | 42 | 3000 | - | 2500 | | | | | | |
| Spring Return Actuators | | | | | | | | | | |
| VA1x20-GGA-1 | | 2000 | 2500 | | | | 2000 | 1400 | 1000 | |
| VA78x0-xxx-12 | 13 | 1000 | 2500 | | | | | | | |
| FA-2000-711x | 13 | 2000 | 2500 | - | - | - | - | - | - | |
| FA-2000-751x | 25 | 2400 | - | 2500 | | | - | - | - | |
| FA-2000-741x | 42 | 2200 | - | - | - | - | 2500 | | | |
| Fast Running 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 (please 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 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

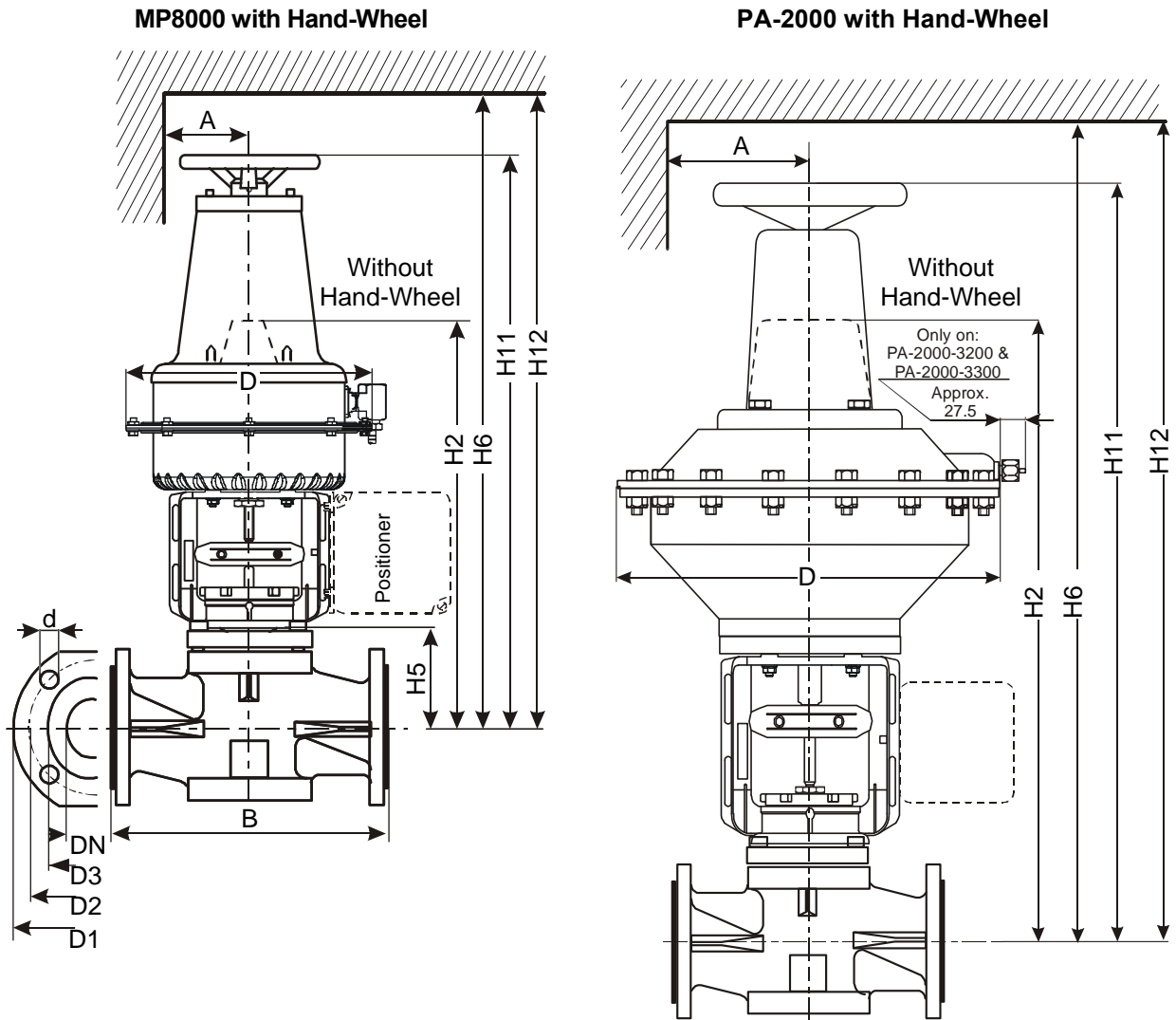
Make and check all wiring connections before applying power to the system. Short circuited or improperly connected wires may result in permanent damage to the unit.

- 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



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 |

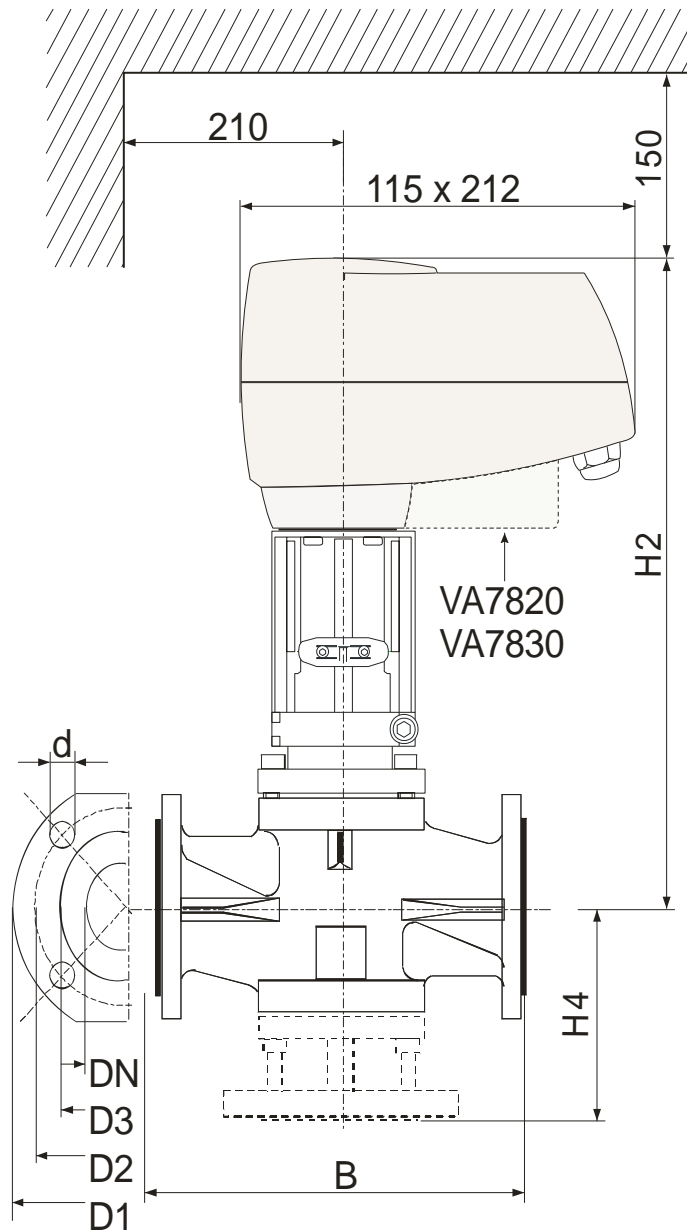
*) For actuator with positioner

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

Dimensions (in mm): VA78x0 electric actuators for VG8300 valves (DN 40)

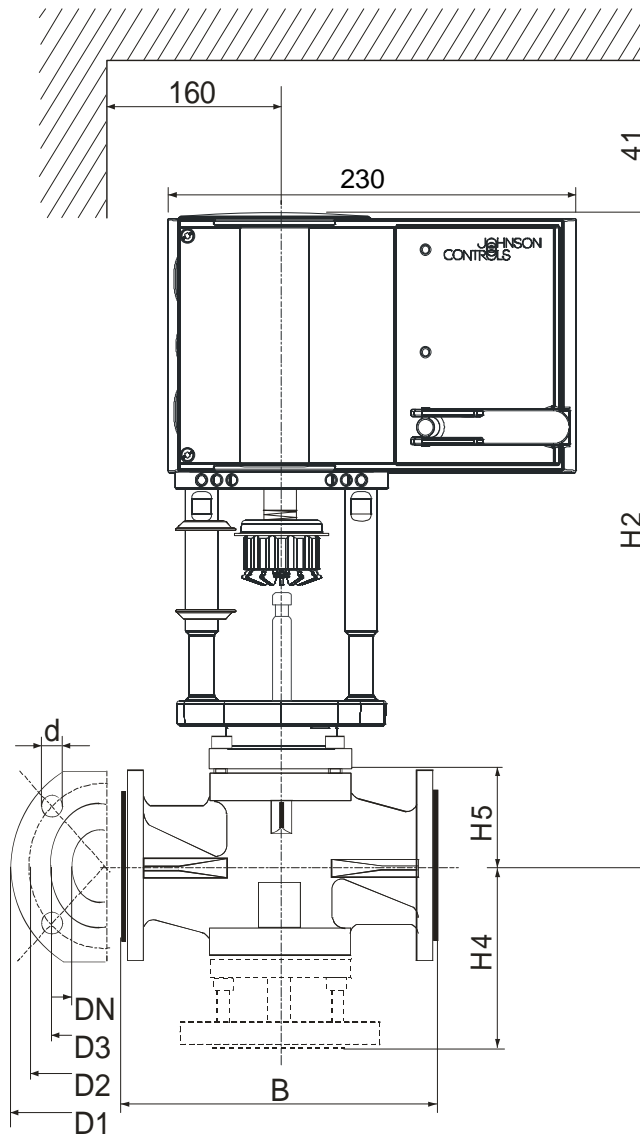


Flange Dimensions

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

| Valve body | | | VA-7800 | |
|------------|-----|----|---------|-----|
| DN | B | H5 | A | H2 |
| 40 | 200 | 78 | 210 | 386 |

Dimensions in mm, VA1125-GGA-1 & VA1x20-GGA-1 Electric Actuators for DN 40 valves.



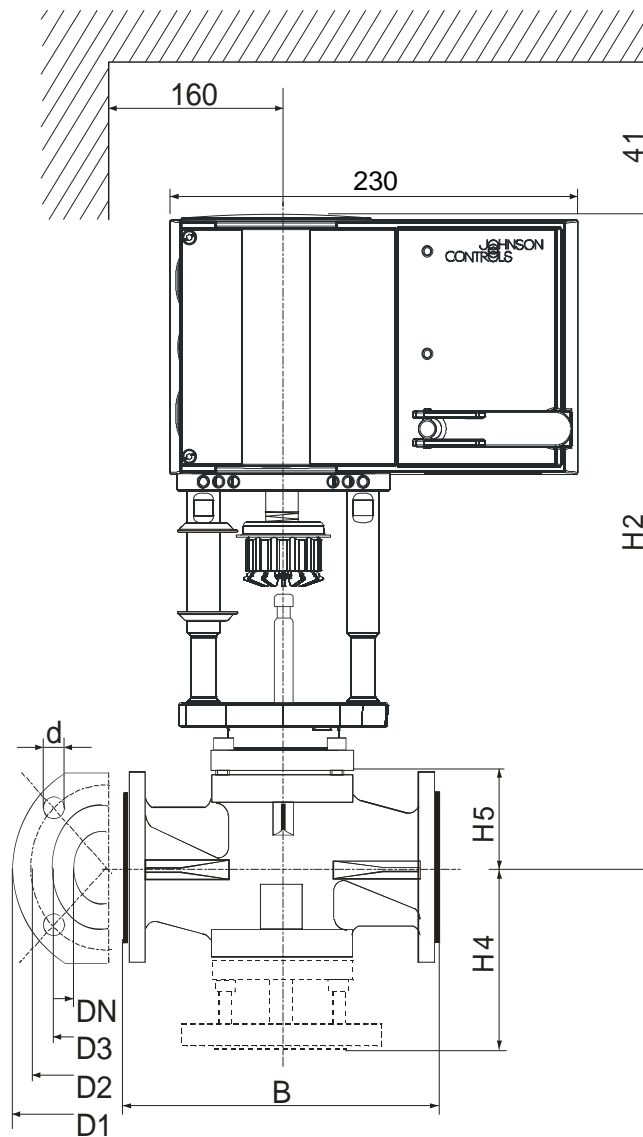
Flange Dimensions

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

Valve and Actuator dimensions

| DN | Valve body | | | | VA1000 |
|----|------------|-----|----|-----|--------|
| | B | H4 | H5 | Hc | H2 |
| 40 | 200 | 140 | 78 | 203 | 364 |

Dimensions in mm, VA1225-GGA-1 VA1x20-GGA-1 Electric Actuators for DN 50 – DN 150 Valves



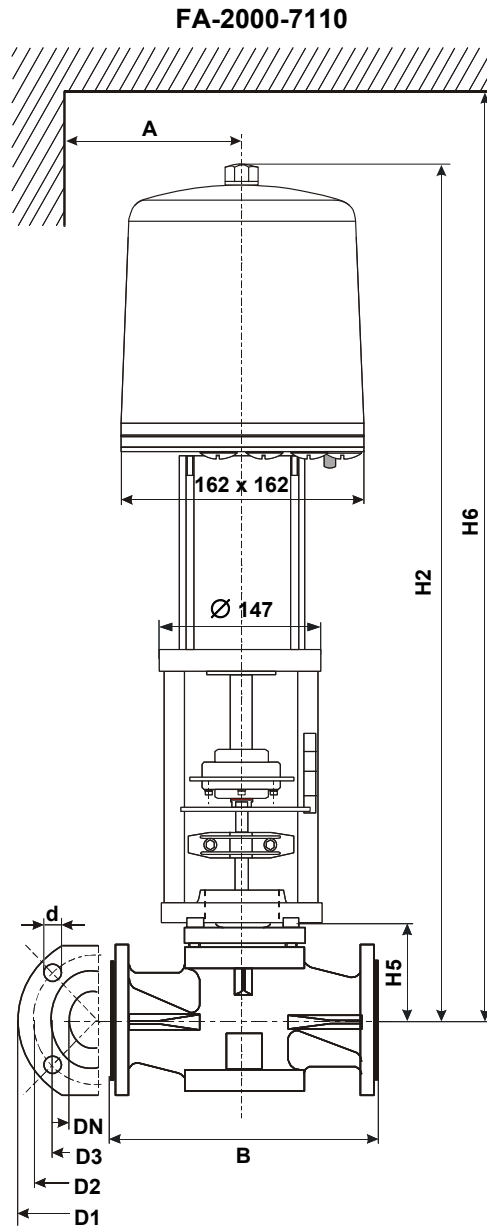
Flange Dimensions

| 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):FA-2000 Electric Actuator for VG8300 Valves, (DN 40)



Flange Dimensions

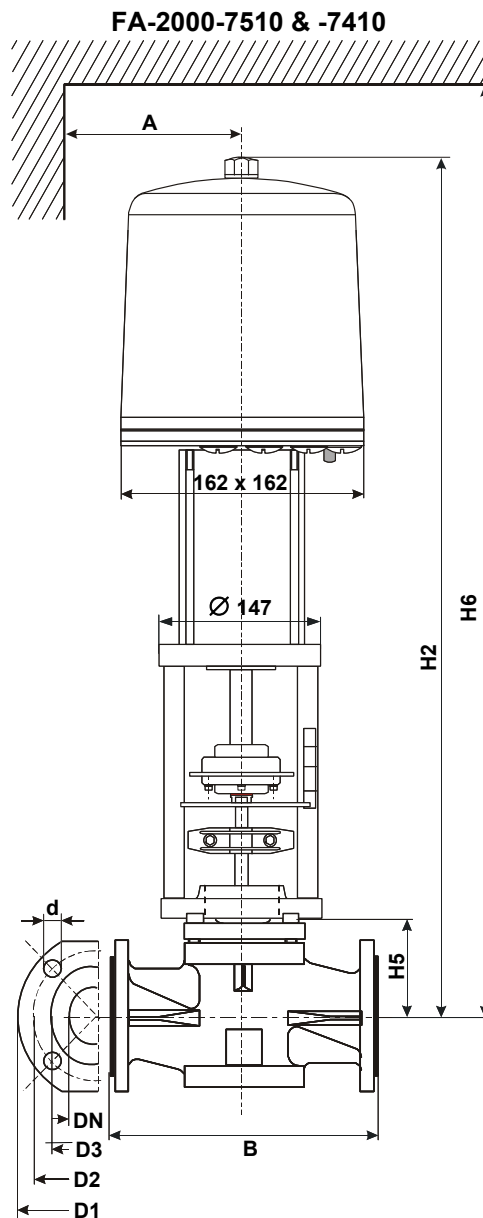
| DN | D1 | D2 | D3 | d | Bolts | Holes |
|----|-----|-----|----|------|----------|-------|
| 40 | 150 | 110 | 88 | 17.5 | M16 x 55 | 4 |

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

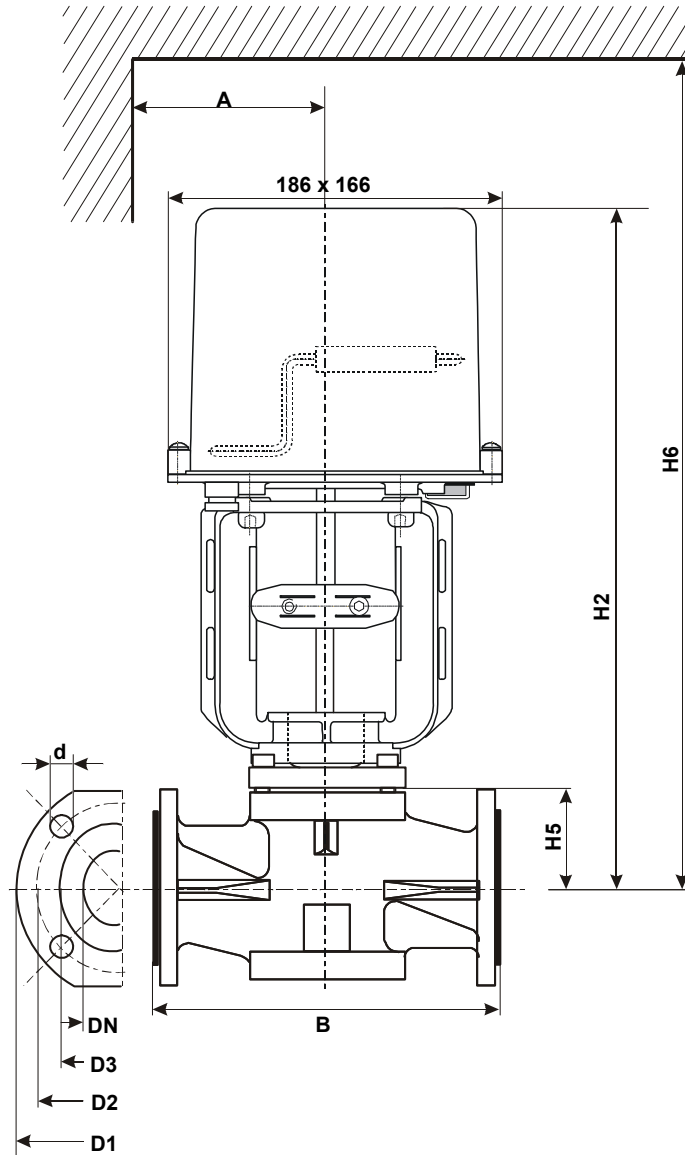
| DN | D1 | D2 | D3 | d | Bolts | | Holes | | |
|-----|-----|-----|-----|------|----------|-------|----------|-------|---|
| | | | | | d | Bolts | PN 16 | PN 25 | |
| | | | | | PN 16 | PN 25 | PN 16 | PN 25 | |
| 50 | 165 | 125 | 102 | 17.5 | M16 x 60 | 17.5 | M16 x 60 | 4 | 4 |
| 65 | 185 | 145 | 122 | 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

| DN | Valve body | | FA-2000 | | |
|-----|------------|-----|---------|-------|-------|
| | 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 | Bolts | | Bolts | | Holes | |
|-----|-----|-----|-----|-------|----------|-------|----------|-------|-------|
| | | | | d | | d | | PN 16 | PN 25 |
| | | | | 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 |

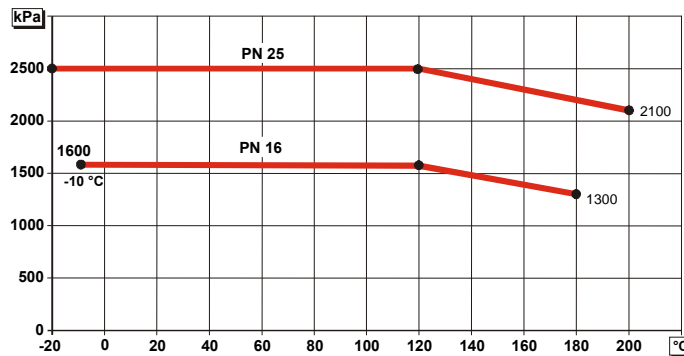
Valve and Actuator dimensions

| DN | Valve body | | RA-3000 | | |
|-----|------------|-----|---------|-----|-----|
| | 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 |

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 PN 16 & 25: | | 9.7 | 14 | 18.5 | 26 | 36 | 54.5 | 79.5 |
| 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}):
Sensitivity n_{gl}(ideal rangeability):

100:1

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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Building Efficiency

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