

# VA1000 Electric Actuator with Spring Return and Non-Spring Return Function

The VA1000 2500N thrust and 2000N thrust (Spring Return) Valve-Actuators are used to control valves in HVAC systems.

This new actuator is self-adjusting and therefore has 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 insitu.

Valves intended for use with the VA1000 are the Johnson Controls VG9000 PN6 & PN10 flanged valves and the VG8000 / VG8300 series PN16 & PN25 flanged valves.

All actuators are self adjusting, have a manual operation capability and a maximum stroke of 49 mm.



VA1000 Actuator with VG8000N mixing valve

- **Automatic stem coupling**

Provides quick and easy mounting of the actuator to valves. Cuts installation costs

- **Actuator fixed to valve with one ring nut**

Fast and secure attachment to valve

- **Self adjusting, automatic stroke adjustment, calibrated pressure control at the end positions**

No input signal change necessary for calibration, considerable time saved

- **Additional modules for 230V, 2 aux. switches, feedback potentiometer and split range unit available**

One basic standard actuator, small storage space and quick availability

- **IP66**

High protection class, greater area of application

- **Selectable characteristic curve**

Simpler solving of control tasks in-situ

- **Selectable running time**

Possible through DIP switch setting in-situ



## Ordering Codes

### 24 V Actuators

|                     |                               |
|---------------------|-------------------------------|
| <b>VA1125-GGA-1</b> | 2500N; Non-spring return      |
| <b>VA1220-GGA-1</b> | 2000N; Spring return retracts |
| <b>VA1420-GGA-1</b> | 2000N; Spring return extends  |

### Accessory modules for in-situ installation

|                     |                                                                                   |
|---------------------|-----------------------------------------------------------------------------------|
| <b>VA1000-M230N</b> | 230 VAC power supply Module for ON/OFF, Floating and Proportional control         |
| <b>VA1000-M100N</b> | 100 VAC power supply Module for ON/OFF, Floating and Proportional control         |
| <b>VA1000-P2</b>    | 2kΩ feedback potentiometer                                                        |
| <b>VA1000-S2</b>    | 2 SPDT aux. switches                                                              |
| <b>VA1000-SRU</b>   | Split range unit module for proportional actuators only                           |
| <b>VA1000-EP</b>    | Extension kit for applications with temperatures greater than 140 °C up to 200 °C |
| <b>111 6348 011</b> | Cable adaptor M20x1.5                                                             |
| <b>111 6349 011</b> | Cable adaptor M16x1.5                                                             |

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

## Ordering Procedure

The valves and actuators can be ordered separately or factory mounted.

When factory mounted, please add “+M” to the order code for the actuator.

### For example:

For a 2-way valve, DN 65, kVS 63, PN 16 plus 24 V 2500N actuator, order:

- Item 1 **VG82G1S1N** (valve body)
- Item 2 **VA1125-GGA-1** (actuator)

Alternatively, if actuator is requested to be factory mounted, order:

- Item 1 **VG82G1S1N** (valve body)
- Item 2 **VA1125-GGA-1+M** (actuator)

## Valve Combinations

The VA1000 spring return and non-spring return electric actuators are intended for use in conjunction with the VG9000 and VG8000 valve series.

The ordering data for these valve bodies are as follows:

- **VG9000 series** PN6 (K) and PN10 (L)

**2-way PDTC** DN 65...100

**3-way mixing** DN 65...100

- **VG8000V series** PN16 flanged valves

**2-way PDTC** DN 15...150

**3-way mixing** DN 15...150

- **VG8000N series** PN16 flanged valves

**2-way PDTC** \*DN 15...150

**3-way mixing** \*DN 15...150

**3-way diverting** \*DN 15...150

*\*Here DN 15 kvs starts at 2.5*

- **VG8000H series** PN25 flanged valves

**2-way PDTC** \*DN 15...150 kvs

**3-way mixing** \*DN 15...150 kvs

**3-way diverting** \*DN 15...150 kvs

*\*Here DN 15 kvs starts at 2.5*

- **VG8300N + H series**

(PN16 and PN25 pressure balanced flanged valves)

**2-way PDTC** DN 40...150 kvs

Please refer to the relevant flanged valve product bulletins for complete ordering information.

For use with non-Johnson Controls valves please contact Johnson Controls.

## Actuator - Valve designation, close-off pressures

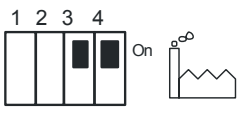
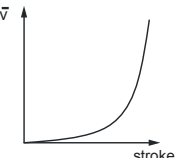
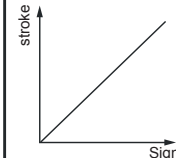
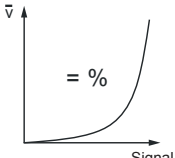
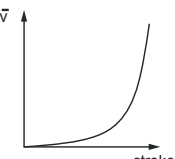
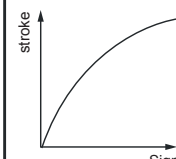
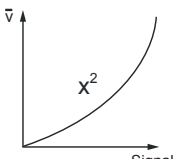
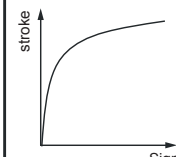
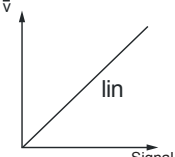
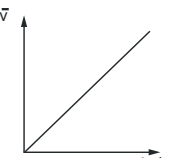
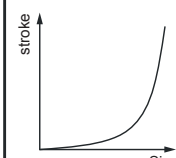
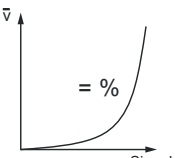
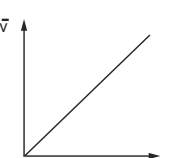
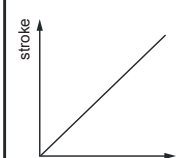
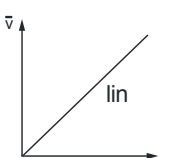
| Model                      | DN  | k <sub>vs</sub> (m³/h) | Close-off pressure (kPa)   |                             |
|----------------------------|-----|------------------------|----------------------------|-----------------------------|
|                            |     |                        | Non-Spring Return Actuator | Spring Return Actuator      |
|                            |     |                        | VA1125-GGA-1               | VA1220-GGA-1 / VA1420-GGA-1 |
| VG9000 PN6 Heating Valve   |     |                        |                            |                             |
| VG9xGxS1K                  | 65  | 63                     | 620                        | 470                         |
| VG9xHxS1K                  | 80  | 100                    | 400                        | 300                         |
| VG9xJxS1K                  | 100 | 160                    | 240                        | 180                         |
| VG9000 PN10 Heating valve  |     |                        |                            |                             |
| VG9xGxS1L                  | 65  | 63                     | 620                        | 470                         |
| VG9xHxS1L                  | 80  | 100                    | 400                        | 300                         |
| VG9xJxS1L                  | 100 | 160                    | 240                        | 180                         |
| VG8000V PN16 Heating Valve |     |                        |                            |                             |
| VG8xAxV1N                  | 15  | 2.5/4                  | 1600                       | 1600                        |
| VG8xBxV1N                  | 20  | 6.3                    | 1600                       | 1600                        |
| VG8xCxV1N                  | 25  | 10                     | 1600                       | 1600                        |
| VG8xDxV1N                  | 32  | 16                     | 1600                       | 1600                        |
| VG8xExV1N                  | 40  | 25                     | 1600                       | 1600                        |
| VG8xFxV1N                  | 50  | 40                     | 1080                       | 800                         |
| VG8xGxV1N                  | 65  | 63                     | 830                        | 620                         |
| VG8xHxV1N                  | 80  | 100                    | 390                        | 280                         |
| VG8xJxV1N                  | 100 | 160                    | 230                        | 160                         |
| VG8xKxV1N                  | 125 | 250                    | 140                        | 90                          |
| VG8xLxV1N                  | 150 | 350                    | 75                         | 40                          |
| VG8000N PN16 System Valves |     |                        |                            |                             |
| VG8xAxS1N                  | 15  | 2.5 - 4                | 1600                       | 1600                        |
| VG8xBxS1N                  | 20  | 6.3/4                  | 1600                       | 1600                        |
| VG8xCxS1N                  | 25  | 10/6.3                 | 1600                       | 1600                        |
| VG8xDxS1N                  | 32  | 16/10                  | 1600                       | 1600                        |
| VG8xExS1N                  | 40  | 25/16                  | 1600                       | 1600                        |
| VG8xFxS1N                  | 50  | 40/25                  | 1080                       | 800                         |
| VG8xGxS1N                  | 65  | 63/40                  | 830                        | 620                         |
| VG8xHxS1N                  | 80  | 100/63                 | 390                        | 280                         |
| VG8xJxS1N                  | 100 | 160/100                | 230                        | 160                         |
| VG8xKxS1N                  | 125 | 250/160                | 140                        | 90                          |
| VG8xLxS1N                  | 150 | 350/250                | 75                         | 40                          |

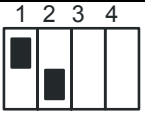
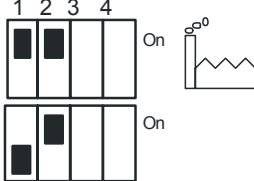
## Actuator - Valve designation, close-off pressures (*continued*)

| Model                                 | DN  | k <sub>vs</sub> (m³/h) | Close-off pressure (kPa)   |                             |
|---------------------------------------|-----|------------------------|----------------------------|-----------------------------|
|                                       |     |                        | Non-Spring Return Actuator | Spring Return Actuator      |
|                                       |     |                        | VA1125-GGA-1               | VA1220-GGA-1 / VA1420-GGA-1 |
| VG8000H PN25 System Valves            |     |                        |                            |                             |
| VG8xAxS1H                             | 15  | 2.5 - 4                | 2500                       | 2500                        |
| VG8xBxS1H                             | 20  | 6.3/4                  | 2500                       | 2500                        |
| VG8xCxS1H                             | 25  | 10/6.3                 | 2500                       | 2500                        |
| VG8xDxS1H                             | 32  | 16/10                  | 2500                       | 2500                        |
| VG8xExS1H                             | 40  | 25/16                  | 2000                       | 1550                        |
| VG8xFxS1H                             | 50  | 40/25                  | 1020                       | 750                         |
| VG8xGxS1H                             | 65  | 63/40                  | 790                        | 580                         |
| VG8xHxS1H                             | 80  | 100/63                 | 370                        | 260                         |
| VG8xJxS1H                             | 100 | 160/100                | 210                        | 140                         |
| VG8xKxS1H                             | 125 | 250/160                | 120                        | 80                          |
| VG8xLxS1H                             | 150 | 350/250                | 70                         | 40                          |
| VG8300N PN16 Pressure balanced Valves |     |                        |                            |                             |
| VG83ExS1N                             | 40  | 25/16                  | 1600                       | 1600                        |
| VG83FxS1N                             | 50  | 40/25                  | 1600                       | 1600                        |
| VG83GxS1N                             | 65  | 63/40                  | 1600                       | 1600                        |
| VG83HxS1N                             | 80  | 100/63                 | 1600                       | 1600                        |
| VG83JxS1N                             | 100 | 160/100                | 1600                       | 1500                        |
| VG83KxS1N                             | 125 | 250/160                | 1500                       | 1400                        |
| VG83LxS1N                             | 150 | 350/250                | 1400                       | 1000                        |
| VG8300H PN25 Pressure balanced Valves |     |                        |                            |                             |
| VG83ExS1H                             | 40  | 25/16                  | 2500                       | 2500                        |
| VG83FxS1H                             | 50  | 40/25                  | 2500                       | 2500                        |
| VG83GxS1H                             | 65  | 63/40                  | 2500                       | 2500                        |
| VG83HxS1H                             | 80  | 100/63                 | 2500                       | 2500                        |
| VG83JxS1H                             | 100 | 160/100                | 2500                       | 2000                        |
| VG83KxS1H                             | 125 | 250/160                | 1900                       | 1400                        |
| VG83LxS1H                             | 150 | 350/250                | 1500                       | 1000                        |

## Adjustment

The actuator characteristic curve (proportional) and the actuator running time with regard to the application can be re-set prior to installation. The factory setting is a linear characteristic curve and 6s/mm running time.

|                                                                                     |    |     |    |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |    |
|    |    |    |    |
|    |    |    |    |
|   |   |   |   |
|  |  |  |  |

| Running time per mm | Switch configuration                                                                | Running time for 14 mm stroke | Running time for 25 mm stroke | Running time for 42 mm stroke |
|---------------------|-------------------------------------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------|
| 2s                  |  | 28s ± 1                       | 50s ± 1                       | 84s ± 2                       |
| 4s                  |  | 56s ± 2                       | 100s ± 2                      | 168s ± 4                      |
| 6s                  |  | 84s ± 4                       | 150s ± 4                      | 252s ± 8                      |

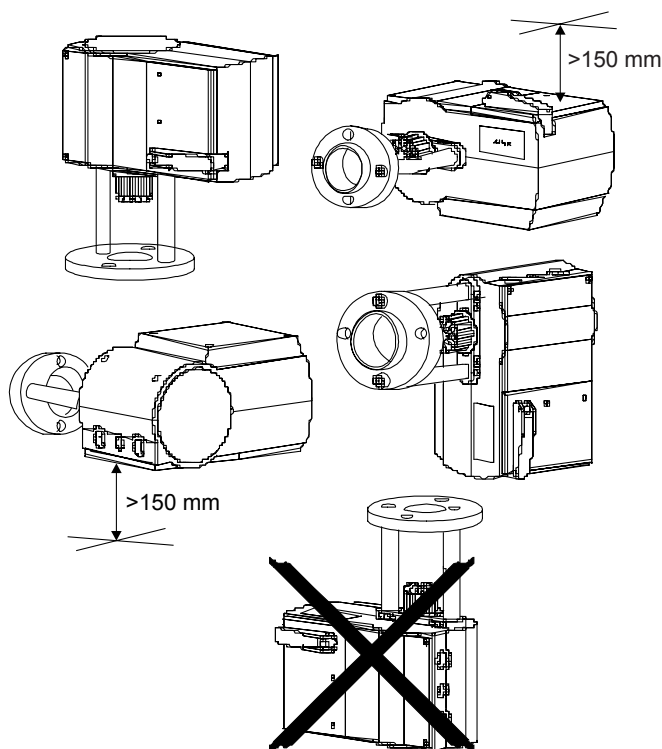
See actuator Service and Data Sheet: SDS 111 6340 010 & SDS 111 6341 010

At this point, if required, additional modules can be fitted to the actuator and the cable adapters screwed in: 1xM20 x 1.5 and 1xM16 x 1.5 as delivered.

## Mounting instructions

When mounting the actuator on a valve, please follow the instructions below:

- Valve sizes DN 15 to DN 40 actuator flanges are to be loosened, turned 90° and re-tightened. The actuator is then set on to the valve and fixed into position using the ring nut provided. The automatic coupling can now be put into the open position if not already so.
- It is recommended that the valves be mounted in the upright position in a conveniently accessible location.



- The actuator must not be covered with insulating material
- Sufficient clearance must be allowed for actuator removal (refer to the dimension drawings)
- The valve must be fitted so that the plug seats against the flow as indicated by the arrow(s) on the valve body.

## Wiring Instructions

- All wiring must be in accordance with local regulations and national electrical codes, and should be carried out by authorised personnel only.
- Make sure that the line power supply is in accordance with the power supply specified on the device.



### WARNING:

#### Shock Hazard

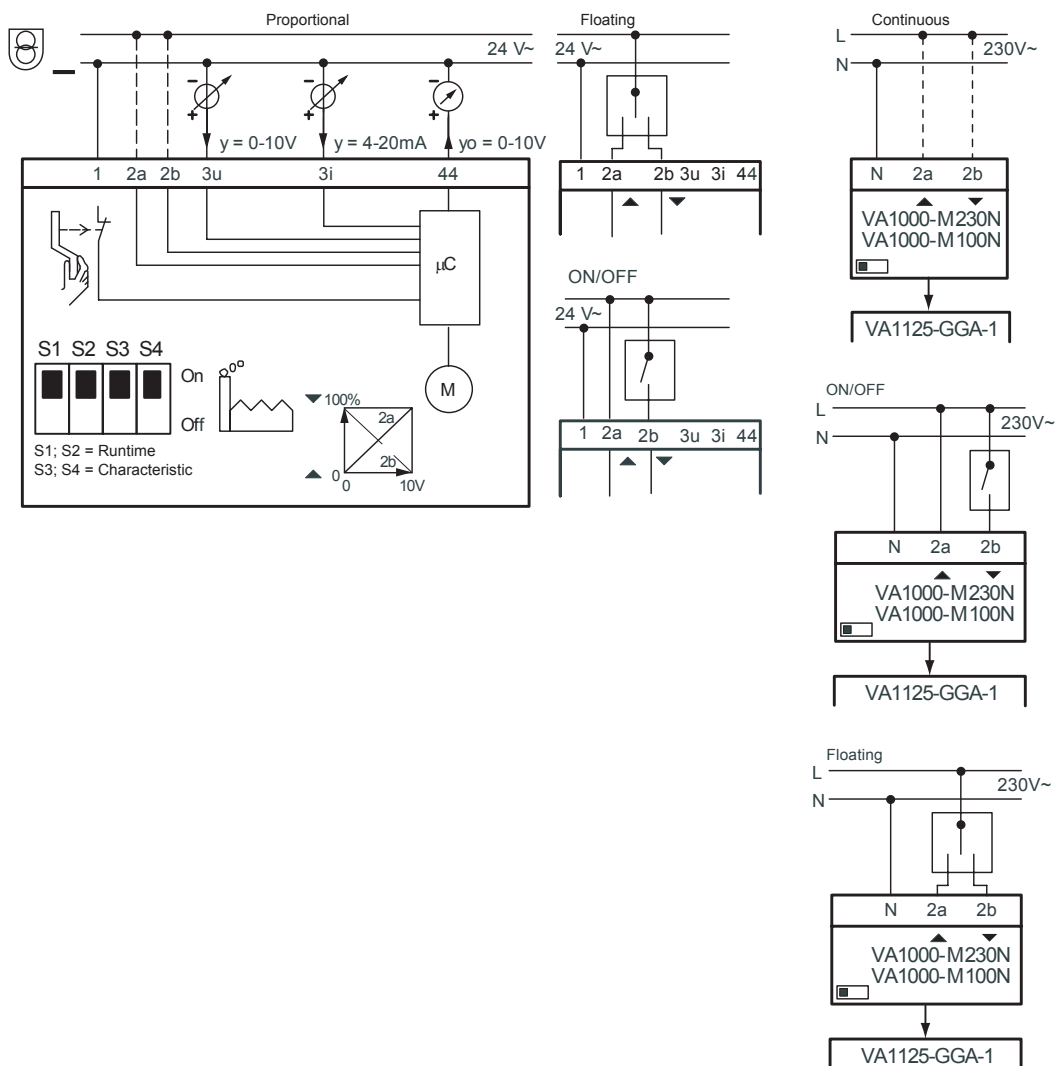
Disconnect the power supply before wiring connections are made to avoid personal injury.

#### Equipment Damage Hazard

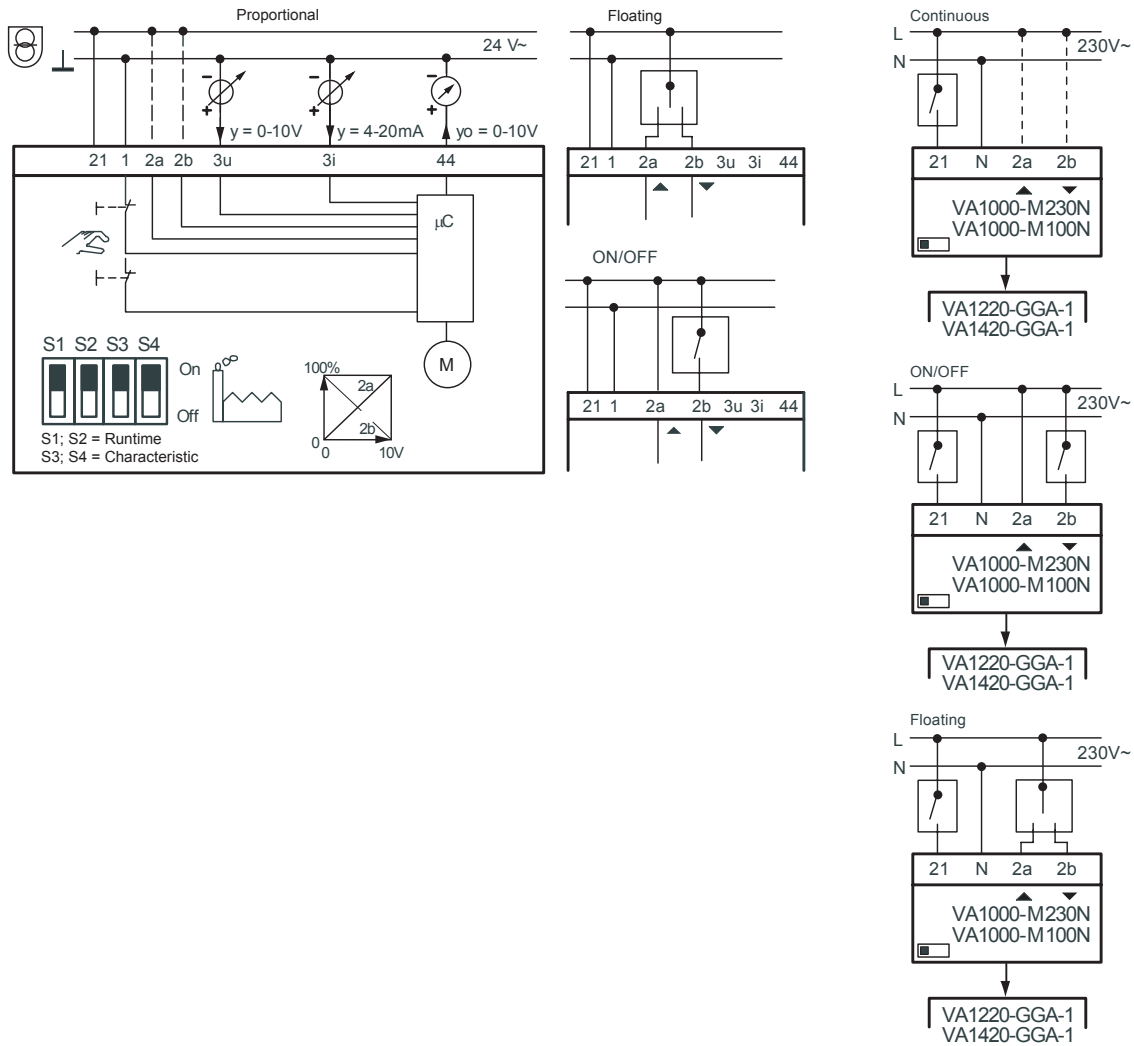
Make and check all wiring connections before applying power to the system.

Short circuited or improperly connected wires may result in permanent damage to the unit

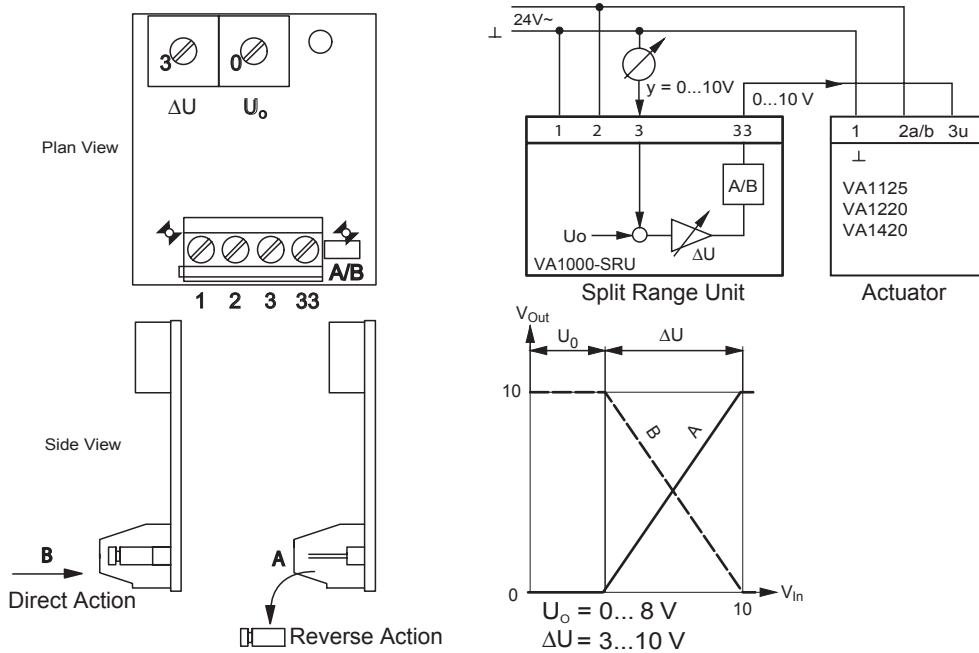
## VA1125-GGA-1 Non Spring-Return



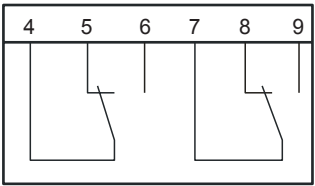
## VA1220-GGA-1 and VA1420-GGA-1 Spring-Return



## VA1000-SRU (for 24 V proportional only)

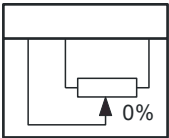


VA1000-S2 Auxiliary Switches

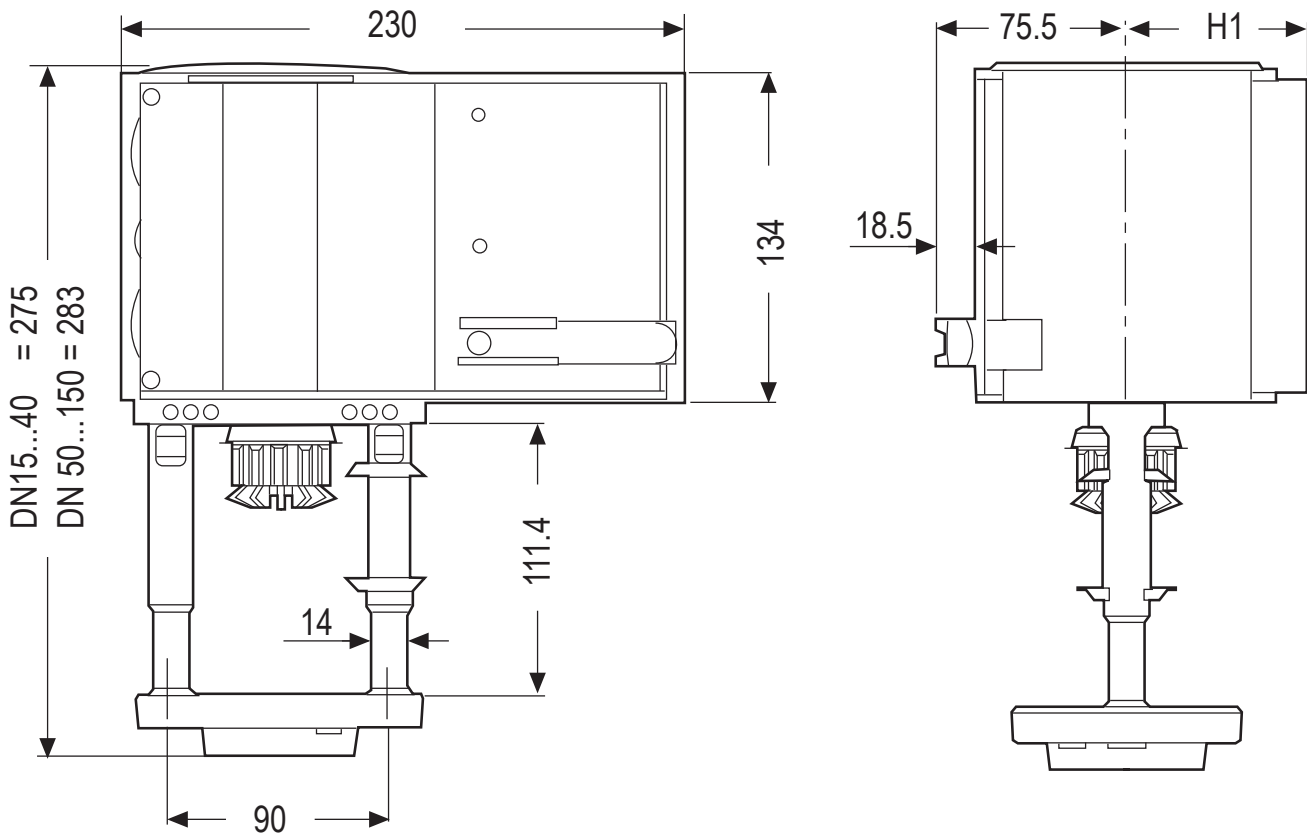


VA1000-P2 Potentiometer

| s (mm) | Connection |       |     | Connection terminal |
|--------|------------|-------|-----|---------------------|
| 40     | 10         | 11a   | 12a | top                 |
| 20     | 10         | 11b/c | 12c | down                |
| 14     | 10         | 11b/c | 12b | top                 |
|        |            | 100%  | 0%  |                     |



Dimensions in mm



|    | VA1125-GGA-1 | VA1220-GGA-1 & VA1420-GGA-1 |
|----|--------------|-----------------------------|
| H1 | 60 mm        | 73 mm                       |

## Technical Specifications

| Actuator models                        | VA1125-GGA-1 Non-Spring-Return                                             |      |              | VA1220-GGA-1 Spring-Return retracts<br>VA1420-GGA-1 Spring-Return extends |
|----------------------------------------|----------------------------------------------------------------------------|------|--------------|---------------------------------------------------------------------------|
| Associated valve series and body sizes | VG9000K                                                                    | PN6  | DN65...DN100 | Two way & mixing valves                                                   |
|                                        | VG9000L                                                                    | PN10 | DN65...DN100 | Two way & mixing valves                                                   |
|                                        | VG8000V                                                                    | PN16 | DN15...DN150 | Two way & mixing valves                                                   |
|                                        | VG8000N*                                                                   | PN16 | DN15...DN150 | Two-way, mixing & diverting valves                                        |
|                                        | VG8000H*                                                                   | PN25 | DN15...DN150 | Two-way, mixing & diverting valves                                        |
|                                        | VG8300N                                                                    | PN16 | DN40...DN150 | Two way pressure balanced valves                                          |
|                                        | VG8300H                                                                    | PN25 | DN40...DN150 | Two way pressure balanced valves                                          |
| Control                                | ON-OFF, Floating, Modulating , 0...10 V DC, 4...20mA                       |      |              |                                                                           |
| Impedance                              | 100 kΩ @ DC 0...10 V - 50Ω @ 4...20mA                                      |      |              |                                                                           |
| Feedback signal                        | 0...10 VDC, 2.5 kΩ minimum Load                                            |      |              |                                                                           |
| Hand crank                             | Standard                                                                   |      |              |                                                                           |
| Supply voltage and frequency           | AC 24 V ±20%, (50/60 Hz), DC 24 V ±15%<br>Module AC 230 V ±15%, (50/60 Hz) |      |              |                                                                           |
| Power consumption<br>(Idling)          | 20.5 VA<br>(1.5 VA)                                                        |      |              | 17 VA<br>(9.3 VA)                                                         |
| Nominal Thrust                         | 2500 N                                                                     |      |              | 2000 N                                                                    |
| Nominal Stroke                         | 49 mm                                                                      |      |              |                                                                           |
| Nominal running speed                  | 2 / 4 / 6 s/mm – Factory setting = 6 s/mm                                  |      |              |                                                                           |
| Enclosure Protection / Class           | IP 66 / III as per EN60730                                                 |      |              |                                                                           |
| Spring-return running time             | 15s for 13 mm valve stroke; less than 35s for 42 mm valve stroke           |      |              |                                                                           |
| Operation                              | -10...+55 °C                                                               |      |              |                                                                           |
| Storage                                | -30...+80 °C                                                               |      |              |                                                                           |
|                                        | R.H.< 95 %, non condensing                                                 |      |              |                                                                           |
| Electrical Connection                  | 6 Terminals max. 2.5 mm2                                                   |      |              | 7 Terminals max. 2.5 mm2                                                  |
| Cable adapter                          | 2xM20 x 1.5 and 1xM16 x 1.5 (1 of each included in delivery)               |      |              |                                                                           |
| Noise level                            | 60 dB (A) @ 1 meter                                                        |      |              | 65 dB (A) @ 1 meter                                                       |
| Life time                              | Tested for 100 000 full cycles                                             |      |              | Tested for 40 000 full cycles                                             |
| Net weight                             | 4.2 kg                                                                     |      |              | 5.7 kg                                                                    |



Conformity

EMC Directive 2004/108/EC  
Low Voltage Directive 2006/95/EC  
Machinery Directive 98/37/EC

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



### Building Efficiency

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