

Operation Manual and Mounting Instructions for a VGD4/VRD4 double gas valve with 2 SKPx5 actuators



Note!

The combination of a VGD4/VRD4 double gas valve with a QPLx5 pressure switch and SKPx5 actuator does not require any maintenance.



Caution!

This document is intended for end users. All legal, safety, warning, and technical notes contained in the data sheets for the SKPx5 actuator (N7643), VGD4 double gas valve (N7631), VRD4 double valve for biogases and recycling gases (N7649), and the QPLx5 pressure switch (N7221) are also applicable!

1 Use

The combination of the SKPx5 actuator and VGD4/VRD4 double gas valve takes on the functions of a

- Safety shutoff valve (SKP15)
- Safety shutoff valve with specific pressure control (SKP25)

1.1 SKP15 actuator

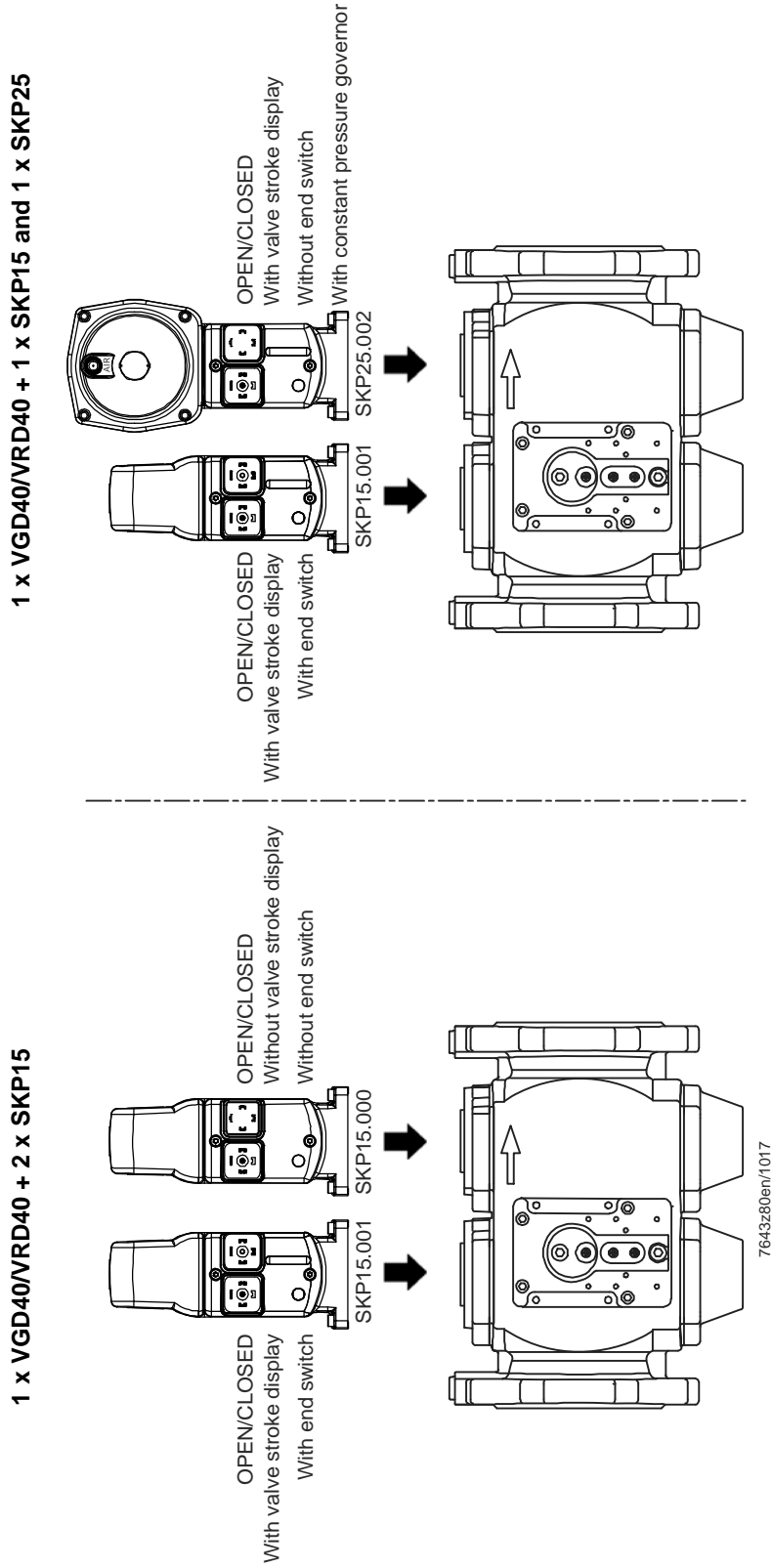
The electrohydraulically operated SKP15 gas fittings together with VGD4/VRD4 work exclusively as a safety shutoff valve (OPEN/CLOSED) and are used primarily on gas-fired combustion plant. They open slowly and close rapidly. The SKP15 actuator can be supplied with end switches including a valve stroke display or without an end switch or valve stroke display.

1.2 SKP25 actuator

The electrohydraulically operated SKP25 gas fittings together with VGD4/VRD4 work as a safety shutoff valve (OPEN/CLOSED) and are also used as a gas pressure governor. This controls the gas pressure on the outlet side according to the setpoint value established by means of a setpoint spring. The SKP25 actuator can be supplied with or without an end switch.

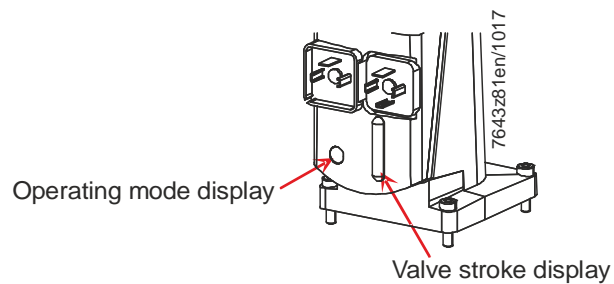
The valve stroke display is generally provided.

1.3 Application example



The SKP15/SKP25 actuators can be combined at will with the VGD4/VRD4 double gas valves.

Description of the SKPx5 actuators



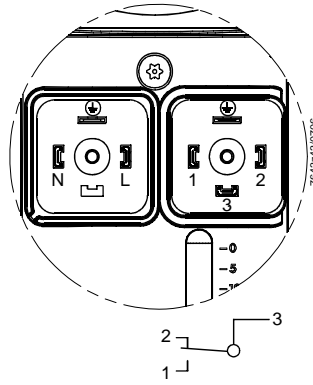
The valve stroke display indicates the relative valve stroke. Depending on the tolerance limits, the fully closed position of the valve may vary. The maximum achievable valve stroke with a fully open valve seat varies according to the type and size of the valve: From 12 mm to 25 mm. During normal operation of an SKP25 actuator, it is also possible to observe the stability and oscillation tendency in addition to the opening of the valve seat.



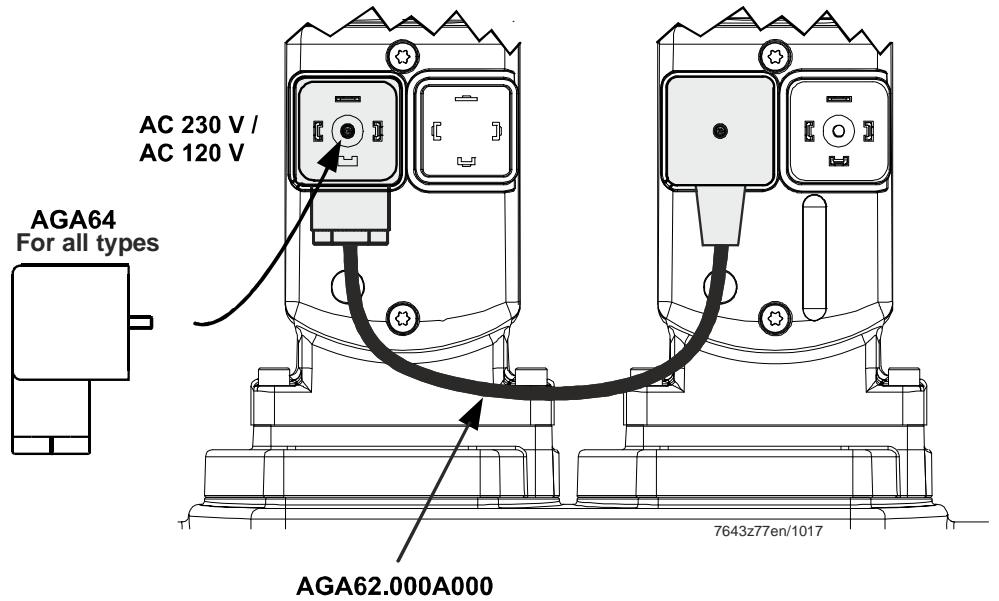
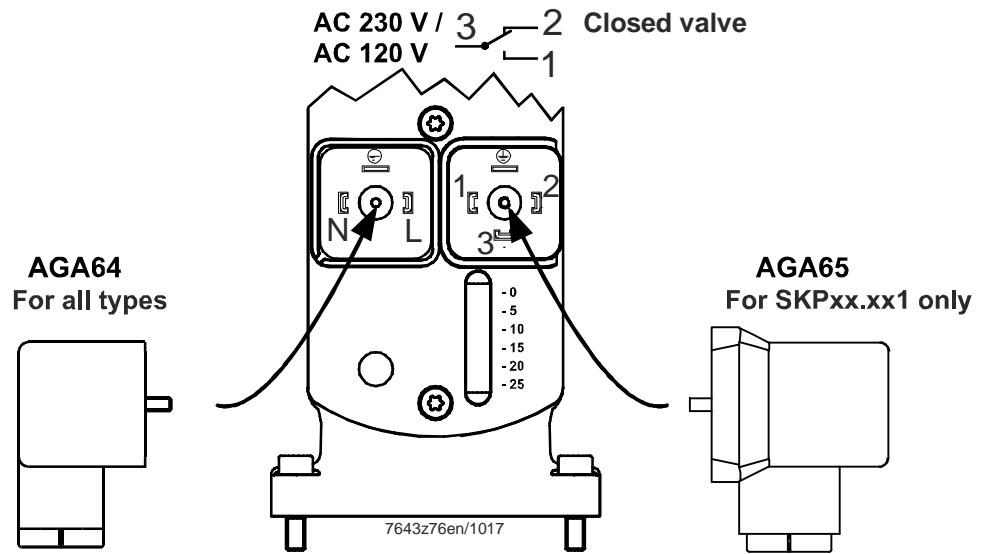
Note!
SKP15.000Ex actuators do not have a valve stroke display!

1.4 Electrical connection

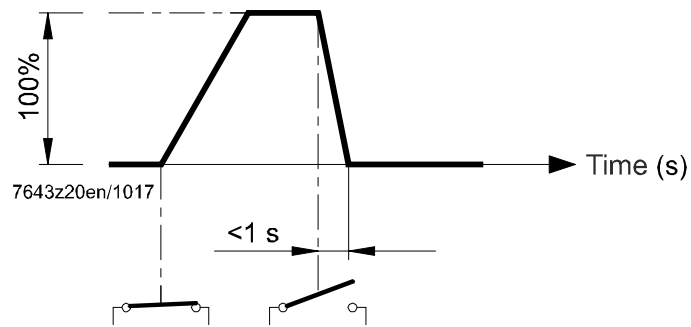
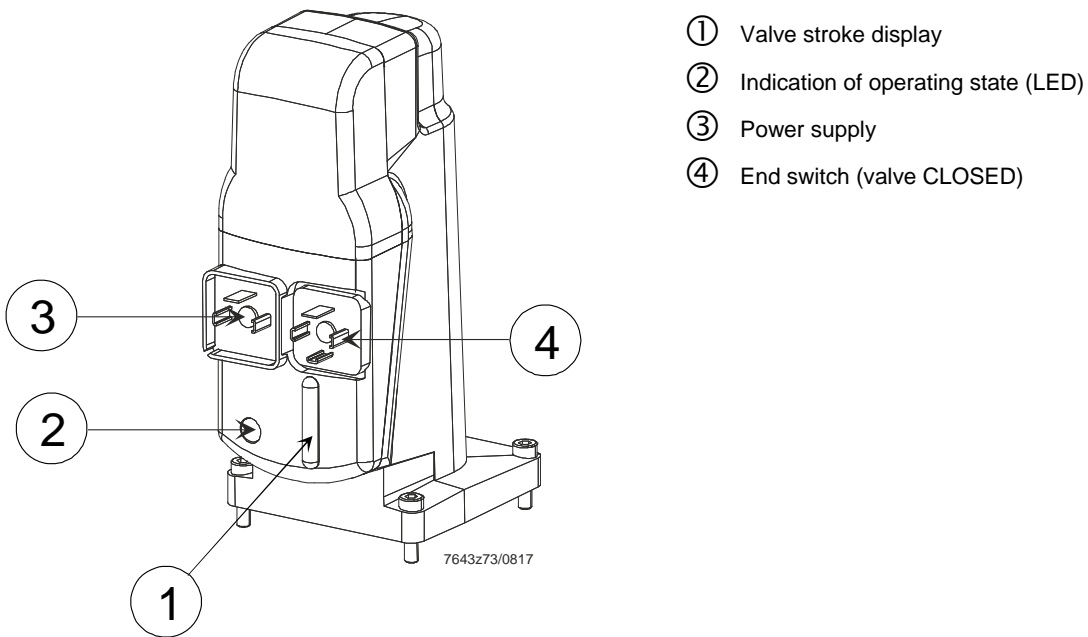
120 V~/230 V~ activation of the SKPx5 actuator →



← Potential-free end switch (indicating the fully closed position) only with the SKPx5.xx1xx actuator



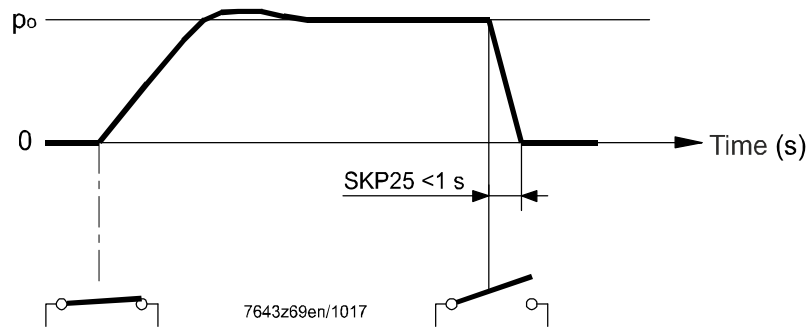
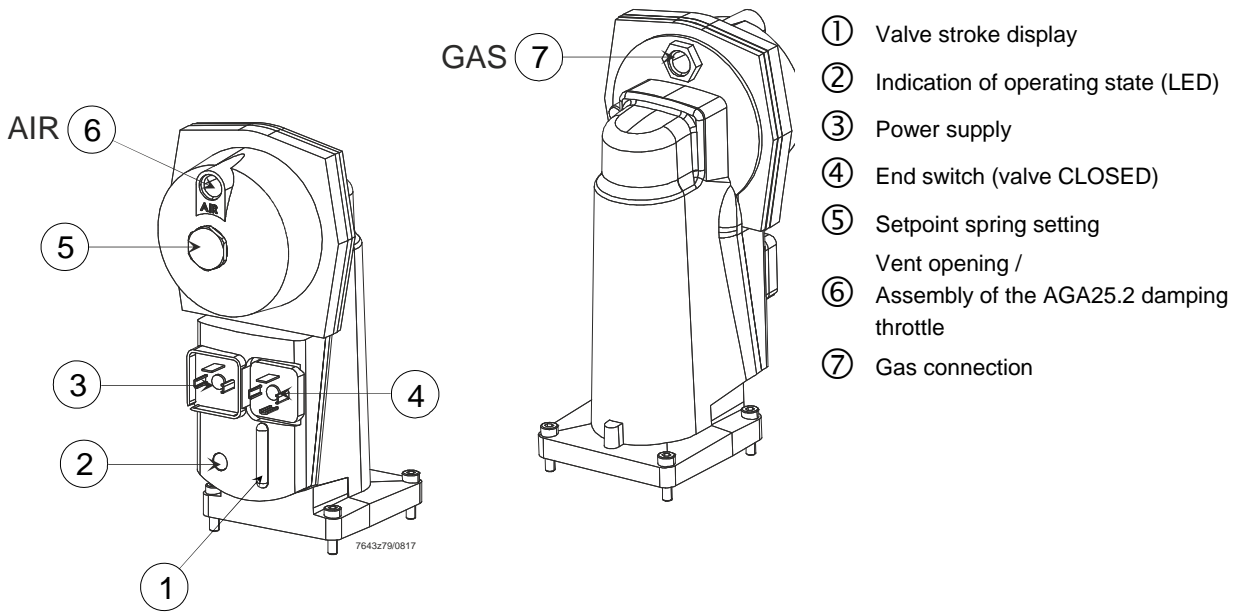
1.5 SKP15 actuator



Service note!

No spare parts are available for the SKP15 actuator (security regulating unit).
The entire actuator can only be replaced by contacting the burner manufacturer.

1.6 SKP25 actuator



Key
 p_o Control pressure



Service note!

No spare parts are available for the SKP25 actuator (security regulating unit). The entire actuator can only be replaced by contacting the burner manufacturer.



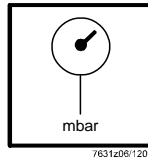
Note!

The vent opening ⑥ must not be closed or clogged as a result of contamination.

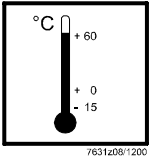
1.7 Description of the VGD4/VRD4 double gas valve



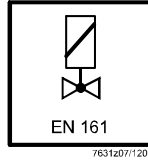
Work on the VGD4/VRD4 double gas valve may only be carried out by qualified personnel.



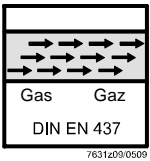
Maximum operating pressure
 $P_{max} = 100 \text{ kPa DN 40/50}$
 $P_{max} = 70 \text{ kPa DN 65...150}$



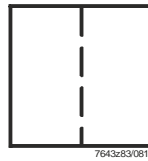
Ambient temperature
 $-15...+60^{\circ}\text{C}$



Valve 1 + Valve 2, Class A, Group 2 according to EN 161

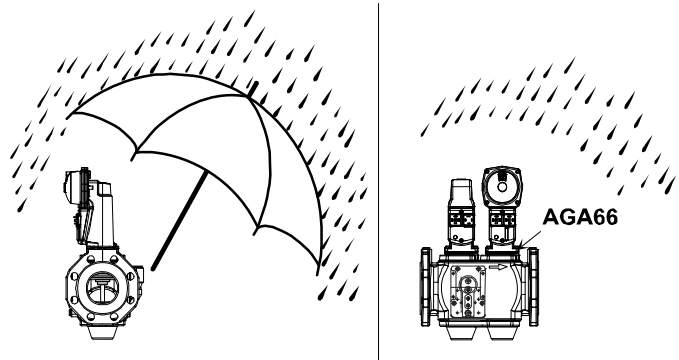
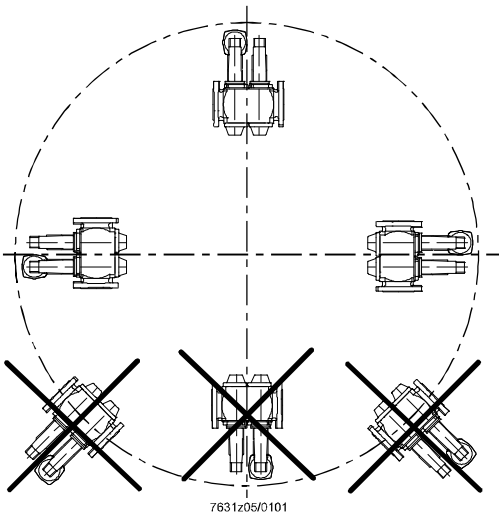


60°C air
 Family 1 + 2 + 3



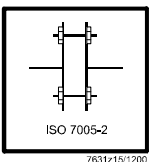
Built-in filter, mesh size 0.9 mm

1.8 Mounting position



Note!
 The AGA66 gasket set increases the degree of protection for the valve combination from IP54 to IP65!

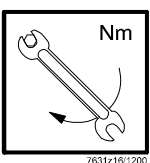
1.9 Torques



Max. torques / flange connection and stud screws according to DIN 939

- Tighten locking and connecting screws in the appropriate manner
- Note the material pairing of aluminum/steel!

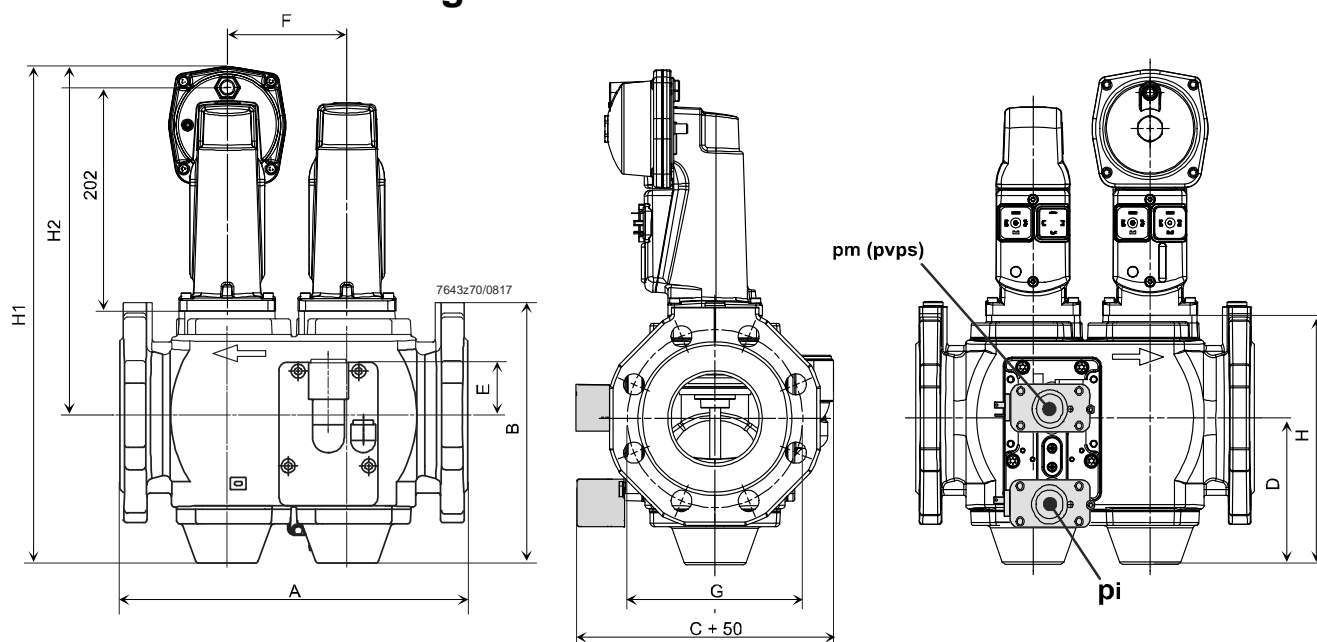
| | | |
|-------------|----------|-------|
| DN 40...100 | M16 x 65 | 50 Nm |
| DN 125 | M16 x 75 | 50 Nm |
| DN 150 | M20 x 80 | 90 Nm |



Max. torque of the pressure connections

| | | | |
|------|------|-------|-------|
| M4 | G1/8 | G1/4 | G3/4 |
| 3 Nm | 8 Nm | 15 Nm | 35 Nm |

1.10 Installation dimensions for the VGD4 double gas valve with SKPx5 actuator

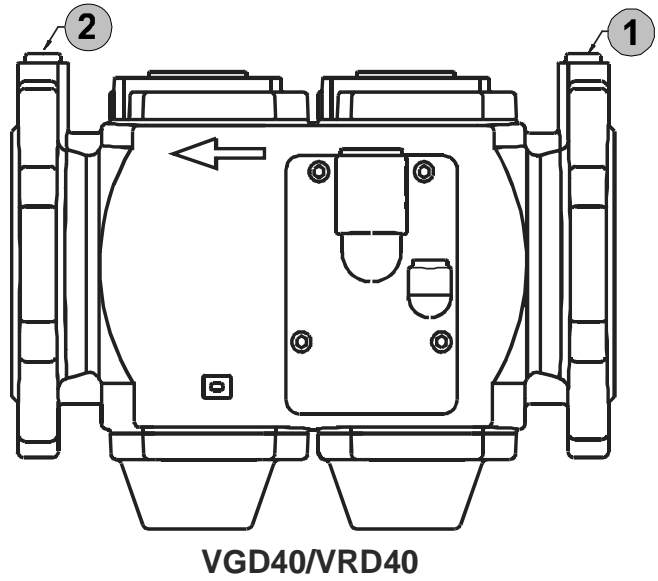
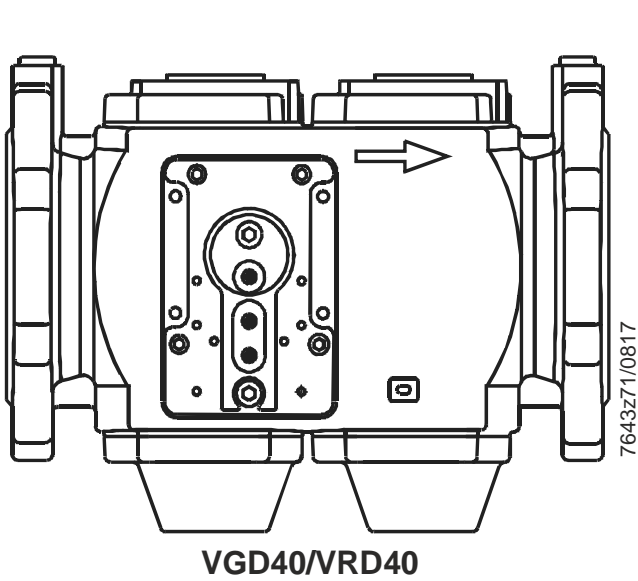


| Type | DN | A | B | C | D | E | F | G | H | SKP15 | | SKP25 | |
|----------------------------|-----|-----|-----|-----|-----|----|-----|-----|-----|-------|-----|-------|-----|
| | | | | | | | | | | H1 | H2 | H1 | H2 |
| VGD40.040 / L VRD40.040 | 40 | 240 | 195 | 168 | 115 | 58 | 88 | 110 | 194 | 382 | 267 | 415 | 300 |
| VGD40.050 / L VRD40.050 | 50 | 240 | 202 | 175 | 115 | 58 | 88 | 125 | 194 | 382 | 267 | 415 | 300 |
| VGD40.065 / L VRD40.065 | 65 | 290 | 214 | 195 | 118 | 60 | 102 | 145 | 200 | 388 | 270 | 421 | 303 |
| VGD40.080 / L VRD40.080 | 80 | 310 | 236 | 204 | 132 | 54 | 107 | 160 | 224 | 412 | 280 | 445 | 313 |
| VGD40.100 / L VRD40.100 | 100 | 350 | 259 | 228 | 145 | 43 | 131 | 180 | 255 | 443 | 298 | 476 | 331 |
| VGD40.125 / L VRD40.125 | 125 | 400 | 305 | 256 | 175 | 31 | 150 | 210 | 303 | 491 | 316 | 524 | 349 |
| VGD40.150 / L VRD40.150 | 150 | 480 | 335 | 294 | 188 | 20 | 168 | 240 | 333 | 521 | 333 | 554 | 366 |
| VGD41.040 | 40 | 240 | 195 | 149 | 115 | 58 | 88 | 110 | 194 | 382 | 267 | 415 | 300 |
| VGD41.050 | 50 | 240 | 202 | 160 | 115 | 58 | 88 | 125 | 194 | 382 | 267 | 415 | 300 |
| VGD41.065 | 65 | 290 | 214 | 178 | 118 | 60 | 102 | 145 | 200 | 388 | 270 | 421 | 303 |
| VGD41.080 | 80 | 310 | 236 | 192 | 132 | 54 | 107 | 160 | 224 | 412 | 280 | 445 | 313 |
| VGD41.100 | 100 | 350 | 259 | 208 | 145 | 43 | 131 | 180 | 255 | 443 | 298 | 476 | 331 |
| VGD41.125 | 125 | 400 | 305 | 236 | 175 | 31 | 150 | 210 | 303 | 491 | 316 | 524 | 349 |
| VGD41.150 | 150 | 480 | 335 | 276 | 188 | 20 | 168 | 240 | 333 | 521 | 333 | 554 | 366 |

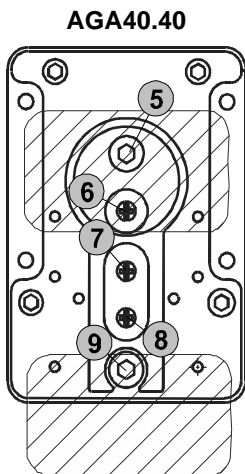


Note!
VGD40.xxxL double gas valves are supplied with reverse-mounted connecting plates.

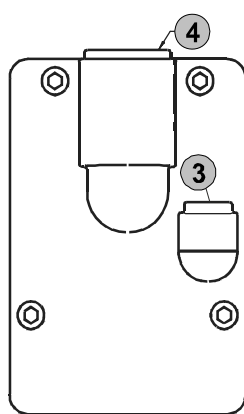
1.11 Pressure connections



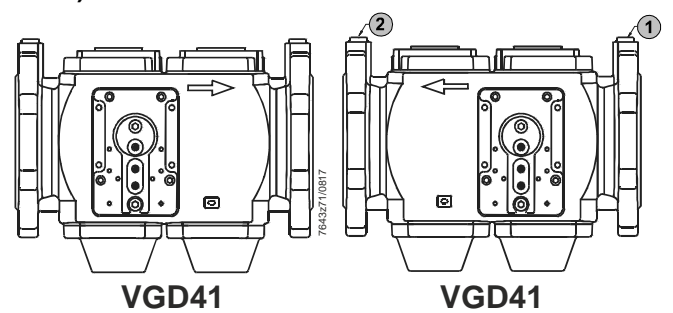
Pressure switch connecting plate



Pilot gas connecting plate



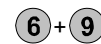
Pressure switch connecting plate (mounted on both sides)



Key



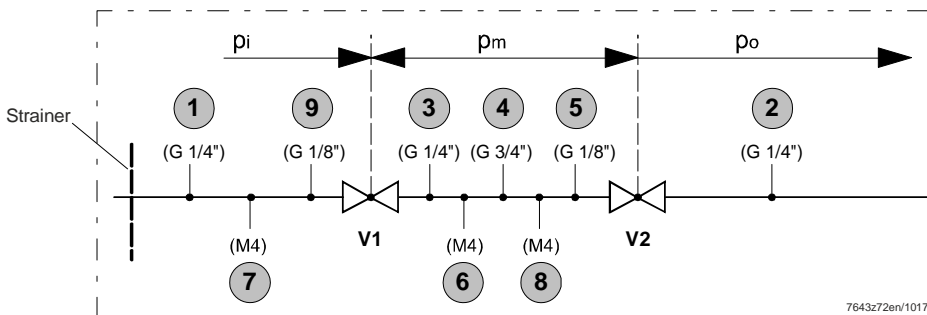
Mounting surface of the QPLx5 pressure switch



Pressure connection for the QPLx5 pressure switch



Note!
Remove M4 locking screws as required.



Key

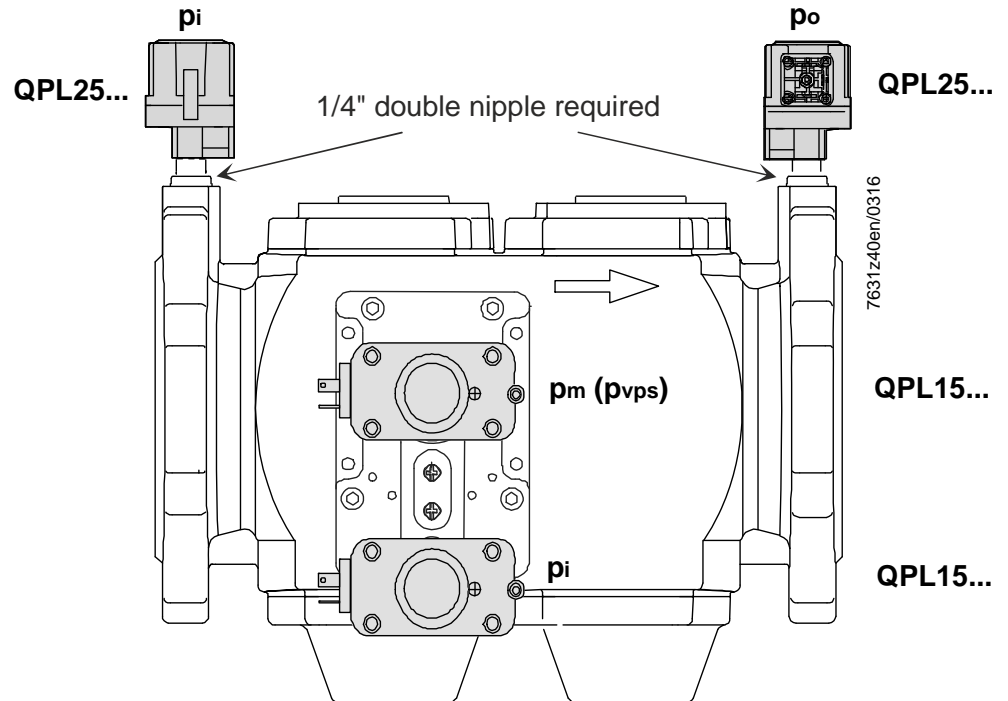
pi Inlet pressure

pm Pressure between valve V1/V2

po Outlet pressure for valve V2

2 Description of the mountable QPLx5 pressure switches

The QPLx5 pressure switch is designed to monitor the gas pressure. When the pressure falls below or exceeds the adjusted switching point, the respective electrical circuit will be opened or changes over.



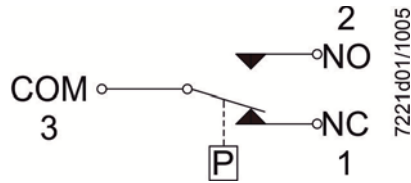
| Key | |
|-----------|------------------------------|
| pi | Inlet pressure |
| pm (pvps) | Pressure between valve V1/V2 |
| po | Outlet pressure for valve V2 |

3 Connection diagram

3.1 Function as a minimum/maximum pressure switch

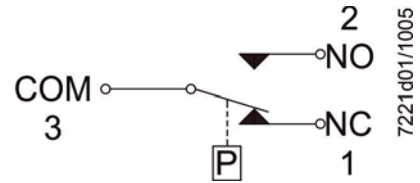
Minimum pressure switch

When the pressure falls below the set value, NO opens and NC closes

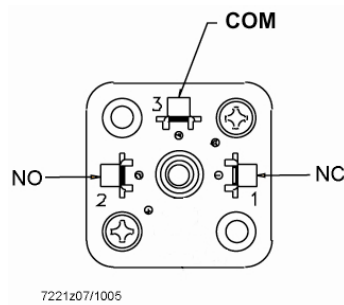


Maximum pressure switch

When the pressure exceeds the set value, NC opens and NO closes



3.2 Connection via connector AGA65 according to DIN 43650



4 Technical data

4.1 SKPx5 actuator

Environmental conditions

| | |
|-----------------------|---|
| Operation | DIN EN 60721-3-3 |
| Climatic conditions | Class 3K3 |
| Mechanical conditions | Class 3M3 |
| Temperature range | -10...+60°C (longer opening times below 0°C) -20...+60°C (with heating element AGA63.5A27) |
| → SKP25.2 | -10...+50°C (restricted operating conditions) |
| Humidity | <95% r.h. |
| Installation altitude | Max. 2,000 m above sea level |

4.2 VGD4/VRD4 double gas valve

Environmental conditions

| | |
|-----------------------|------------------------------|
| Operation | DIN EN 60721-3-3 |
| Climatic conditions | Class 3K5 |
| Mechanical conditions | Class 3M2 |
| Temperature range | -10...+60°C |
| Humidity | <95% r.h. |
| Installation altitude | Max. 2,000 m above sea level |



Note!

For the model number of the VGD4/VRD4 double gas valve, see the nameplate on the SKPx5 actuator!

4.3 QPLx5 pressure switch

Environmental conditions

| | |
|-----------------------|------------------|
| Operation | DIN EN 60721-3-3 |
| Climatic conditions | Class 3K5 |
| Mechanical conditions | Class 3M2 |
| Temperature range | -15...+60°C |
| Humidity | <95% r.h. |









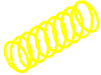



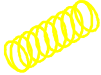




Caution!

Condensation, formation of ice, and ingress of water are not permitted.

5 Spare parts and accessories

Please note the different article numbers for the VGD4/VRD4 double gas valves and the SKPx5 actuator when ordering spare parts.

| | Article no | Type |
|--|--------------------------|----------------------|
|  <p>Adapter plug For powering both SKPx5 actuators on the VGD4/VRD4 double gas valve with an AGA64 connector.</p> | BPZ:AGA62.000A000 | AGA62.000A000 |
|  <p>Contact box for valve actuator (power supply)</p> <ul style="list-style-type: none"> • Plug-in connector conforming to DIN EN 175301-803-A • 3-pole + protective ground • Ø 6...9 mm / max. 1.5 mm² | BPZ:AGA64 | AGA64 |
|  <p>Contact box for end switch</p> <ul style="list-style-type: none"> • Plug-in connector conforming to DIN EN 175301-803-A • 3-pole + protective ground • Ø 4.5...11 mm / max. 1.5 mm² | BPZ:AGA65 | AGA65 |
|  <p>Heating element</p> <ul style="list-style-type: none"> • For use at low ambient temperatures (-10...< -20°C) • Refer to data sheet N7923 | BPZ:AGA63.5A27 | AGA63.5A27 |
|  <p>Gasket set</p> <ul style="list-style-type: none"> • For mounting between SKPx5 actuator and VGD4/VRD4 double gas valve • Increases degree of protection from IP54 to IP65 • Take note of data sheet N7631 when using VGD4/VRD4 double gas valves • Refer to Mounting Instruction M7643.2 (74 319 0421 0) | BPZ:AGA66 | AGA66 |
|  <p>Damping throttle for the SKP25 actuator Optional</p> | BPZ:AGA25.2 | AGA25.2 |

| | | Article no | Type |
|--|---|--------------------|----------------|
|  | <p>Setpoint spring (yellow/gold) for SKP25 actuator</p> <ul style="list-style-type: none"> • Optional for built-in standard spring AGA29 • 1.5...12 kPa for SKP25.0 actuator • 7...70 kPa for SKP25.4 actuator (optionally for AGA23 setpoint spring) • Ø 1.6 mm | BPZ:AGA22 | AGA22 |
|  | <p>Setpoint spring (red) for SKP25 actuator</p> <ul style="list-style-type: none"> • Optional for built-in standard spring AGA29 • 10...25 kPa for SKP25.0 actuator • 15...150 kPa as a standard spring for SKP25.4 actuator • Ø 1.8 mm | BPZ:AGA23 | AGA23 |
|  | <p>Setpoint spring (unpainted) for SKP25.0 actuator</p> <ul style="list-style-type: none"> • Equivalent built-in standard spring • 0.05...2.2 kPa • Ø 1 mm | BPZ:AGA29 | AGA29 |
| <p>AGA30.x setpoint fine adjustment for SKP25 actuator</p> <ul style="list-style-type: none"> • Packaging version with one setpoint spring each • Refer to Mounting Instruction M7643 (74 319 0926 0) | | | |
|   | <p>Setpoint spring (gold)</p> <ul style="list-style-type: none"> • 1.5...12 kPa • Ø 1.6 mm | BPZ:AGA30.0 | AGA30.0 |
|   | <p>Setpoint spring (red)</p> <ul style="list-style-type: none"> • 10...25 kPa • Ø 1.8 mm | BPZ:AGA30.1 | AGA30.1 |
|   | <p>Setpoint spring (unpainted)</p> <ul style="list-style-type: none"> • 10...36 kPa • Ø 2 mm | BPZ:AGA30.2 | AGA30.2 |

6 Lifetime

The combination of VGD4/VRD4 double gas valve and SKPx5 actuator has a design lifetime* of

| Nominal size | Burner startup cycles |
|--------------|-----------------------|
| ≤DN 25 | 200,000 |
| DN 25...80 | 100,000 |
| DN 80...150 | 50,000 |

when using gases according to EN 437 (or DVGW specification G260).

This is based on the endurance tests specified in the standard EN 161. A summary of the conditions has been published by the European Control Manufacturers Association (Afecor) (www.afecor.org).

The designed lifetime is based on the use of a VGD4/VRD4 double gas valve and an SKPx5 actuator according to the manufacturer's data sheet. After reaching the designed lifetime in terms of the number of burner startup cycles, or after the corresponding usage time, the VGD4/VRD4 double gas valve and SKPx5 actuator must be checked and/or replaced by authorized personnel.

The criteria set out in EN 161 / EN 13611 are applicable when testing the tightness. This test can be omitted if a valve proving system is in place.

* The designed lifetime is not the warranty time specified in the Terms of Delivery.

| Safety components | Structural lifetime | | CEN standard |
|---|-------------------------|--------------|------------------|
| | Number of cycles | Time (years) | |
| Gas pressure monitor | 50,000 | 10 | EN 1854 |
| Double gas valve (with valve proving system) | After detecting a fault | | EN 1643 |
| Double gas valve (without valve proving system) | 50,000...200,000 | 10 | EN 126 EN 161 |