



SKP10...

SKP11...

Actuators

SKP1...

- **ON / OFF safety shutoff feature conforming to EN 161 in connection with gas valves from Siemens Building Technologies**
- **Optional 2-stage operation**
- **Delayed opening**
- **Rapid closing**
- **Very low power consumption**
- **Suitable for gases of gas families I...III**
- **With or without end switch**
- **Supplementary Data Sheets (refer to the relevant Data Sheets on gas valves)**

The SKP1... and this Data Sheet are intended for use by OEMs which integrate the actuators in their products.

The SKP1... are designed for use with the following types of valves:

Type of valve	Medium	Data Sheet
VGG... VGF... VGH...	Natural gas Gases of gas families I...III	7636
VGD20... VGD40...	Natural gas Gases of gas families I...III	7631
VRF... VRH...	Biogas	7633
VLf...	Hot air	7637

The combination of actuator and gas valve provides the following functions:

- Safety shutoff valve
- Controlling element for volumetric gas flow (2-stage operation)

The electrohydraulic SKP1... actuators together with the VG... gas valves are designed for use with gases of gas families I...III. They are used primarily on gas-fired combustion plant. The actuators open slowly and close rapidly. They can be combined with any of the above mentioned valve types and nominal sizes. The actuator can also be supplied with an end switch, e.g. for indicating the fully closed position, or for limiting the stroke with 2-stage gas release.

For information about valve sizing, refer to the «Valve sizing chart» in the Data Sheet of the relevant gas valve.

SKP11...

This type of actuator is used as a safety or emergency shutoff valve in gas networks of heating plants, laboratories, etc., where low noise levels are required and where the valve must be constantly open during operation. Other fields of use are applications that demand very low power consumption.

Warning notes



To avoid inquiry to persons, damage to property or the environment, the following warning notes should be observed!

Only qualified staff may open the actuator, interfere with it, or make changes to the respective connection area.

- Before performing any wiring changes in the connection area of the SKP1..., completely isolate the actuator from the mains supply
- Ensure protection against electrical shock hazard by correctly fitting the SKP1... and by providing adequate protection for all connection terminals
- Each time work has been carried out (mounting, installation, service work, etc.), check to ensure that wiring is in an orderly state
- Fall or shock can adversely affect the safety functions. Such actuators and valves must not be put into operation even if they do not exhibit any damage

Engineering notes

Design of the gas train

If the available gas pressure exceeds the valve's maximum permissible operating pressure (refer to Data Sheet on V... valves), the gas pressure must be lowered by an upstream pressure controller. The pressure switch for lack of gas must always be fitted upstream of the gas valve when used in connection with the SKP1.... The measures usually required for ensuring the minimum amount of air must also be taken when using the SKP1...

Mounting notes

- Ensure that the relevant national safety regulations are complied with
- Assemble actuator and gas valve using the 4 screws contained in the terminal compartment
- The square arrangement of the fixing holes enables the actuator to be fitted in 4 different positions
- The actuator can be mounted or replaced while the gas train is under pressure; sealing material is not required
- Follow the Mounting Instructions included with the actuator:
 - For SKP1...: M7641.1
 - For SKP11...: M7639

Installation notes

- When using the end switch, the earth conductor of the connecting cable must be connected to the earth terminal on the housing

Commissioning notes

- Electrical commissioning may only be performed when the SKP1... is fitted to the valve; otherwise, the actuator can be damaged

SKP11...

- *Readjustment of position switch I*

The SKP11... comes with a factory-set microswitch I, secured with lacquer, whose switching function is matched to the fully open position of a 1 ½" valve (refer to «Use»). SKP11... in connection with 1 ½" and 2" valves can be used without any readjustments. However, if no readjustments are made in connection with valve sizes > 2", they will produce a slightly reduced flow rate.



SKP11... in combination with valve sizes 1" and smaller must be readjusted (shorter valve stroke).

- *Procedure for readjusting position switch I:*
 - Apply power to the SKP11...
 - Turn adjusting screw for position switch I in clockwise direction until the actuator is fully open and the oscillating pump still runs
 - Turn adjusting screw I in counterclockwise direction until the oscillating pump stops running (audible check or by means of an ammeter)
 - Turn adjusting screw I another 90° in counterclockwise direction

In the case of smaller valve sizes, the position indicator on the actuator does not travel across the entire length of the viewing window to reach the fully open position. The valve stroke from the fully closed to the fully open position varies from 11 mm for the smaller valve sizes to 18 mm for the larger sizes. In the fully open position, piston and stem sometimes make a small linear movement. The position is cyclically readjusted by short-time contact closures of microswitch I and additional pumping.




Standards and certificates



ISO 9001: 2000
Cert. 00739



ISO 14001: 1996
Cert. 38233

Type reference			
SKP10.110B17	x	x	---
SKP10.110B27	x	x	x
SKP10.111B17	x	x	---
SKP10.111B27	x	x	x
SKP10.123A17	x	x	---
SKP10.123A27	x	x	x
SKP11.211B27	---	x	x
SKP11.212A17	---	x	x

For use in the USA / Canada, the actuators carry type suffix «U» (see example) and are UL-, CSA- and FM-listed.

Example: SKP10.110U17

In connection with VG...
valves



Conformity to EEC directives

- Electromagnetic compatibility EMC (immunity)
- Directive for gas appliances
- Directive for pressure devices

89 / 336 / EEC

90 / 396 / EEC

97 / 23 / EEC

Disposal notes



The actuator contains electrical and electronic components and hydraulic oil and must not be disposed of together with household waste.
Local and currently valid legislation must be observed.

Type summary (other types of actuators on request)

The complete gas shutoff assembly or pressure governor assembly consists of actuator and valve.

SKP10...

Electrical connections via the terminal compartment

Mains voltage	AC 100...110 V	AC 220...240 V
1-stage opening and closing, without end switch	SKP10.110B17	SKP10.110B27
1-stage opening and closing, with 2 end switches	SKP10.111B17	SKP10.111B27
2-stage opening and closing, with 2 end switches	SKP10.123A17	SKP10.123A27

SKP11...

Electrical connections via the terminal compartment

Mains voltage	AC 100...110 V	AC 220...240 V
1-stage opening and closing, without end switch	On request	SKP11.211B27
1-stage opening and closing, with end switch	SKP11.212A17	On request

Ordering

When ordering, please give the exact type reference of the actuator (refer to «Type summary»).

Example:

Actuator

SKP10.111B27

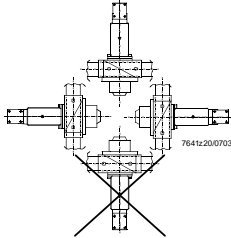

- ON / OFF

- With end switch

- For AC 230 V / 50 Hz

The complete gas valve shutoff assembly or gas pressure governor assembly consists of actuator and valve. Please order the required valves separately (refer to the relevant Data Sheets). Actuator and valve are supplied unassembled. Assembly is straightforward and can be done on site.

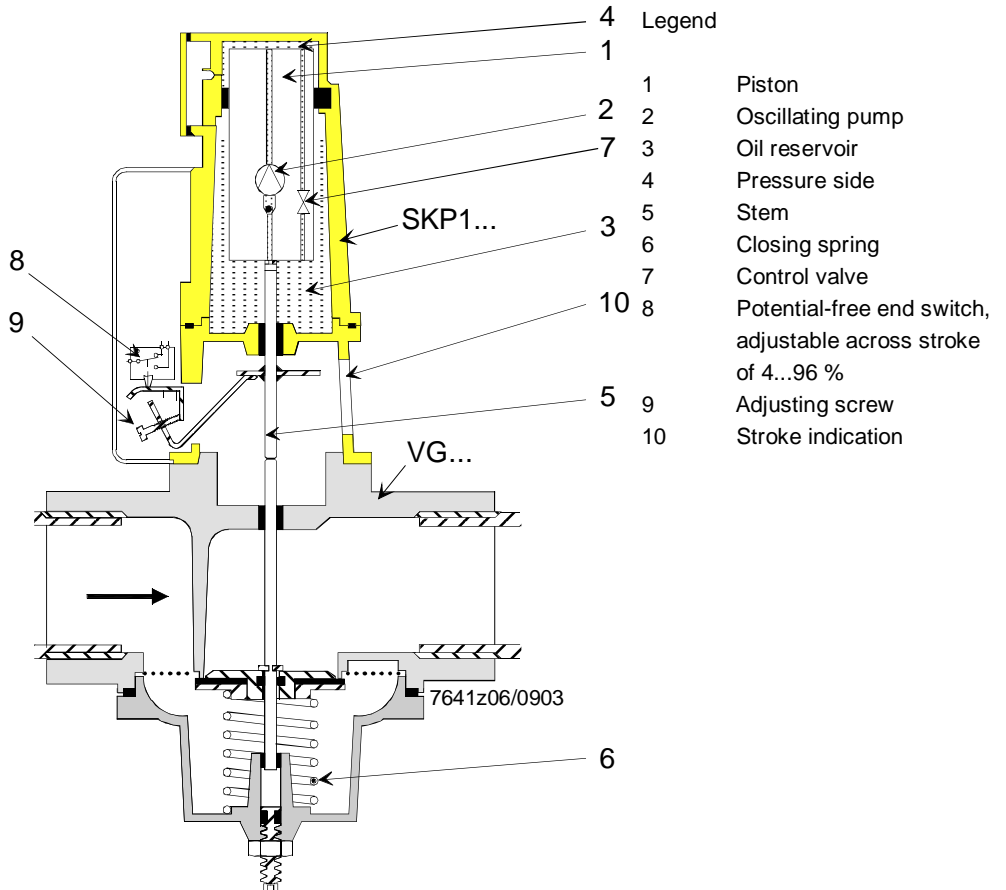
Technical data

General actuator data	Mains voltage	AC 220 V -15 %...AC 240 V +10 % AC 100 V -15 %...AC 110 V +10 %
	Mains frequency	50...60 Hz ± 6 %
	Power consumption	max. 13.5...23 VA
	- Only SKP11...	max. 3 VA (when fully open)
	End switch (if fitted)	
	- Switching capacity	4 (2 A, $\cos\varphi = 0.3$)
	- Setting range	4...96 % stroke
	- On time	100 %
	Opening time for full stroke	6...12 s (depending on nominal size)
	Opening speed	approx. 2 mm / s
	Closing time when switching off	< 0.8 s
	Perm. mounting positions	 <p>always with the diaphragms in the vertical position</p>
	Degree of protection	IP 54 after valve is fitted
	Cable entry	
	- Pg11	2 knockout holes for Pg11 entry glands, nut max. 3 mm thick
	- M16 (alternatively)	2 knockout holes for M16 entry glands, nut max. 3 mm thick
	Stroke	max. 18 mm (limited by the valve)
	Inlet pressure	max. 300...1200 mbar (depending on size, refer to Data Sheet on valves)
	Weight	approx. 1250 g
	Suitable media	depending on the type of valve
Medium inlet pressure	depending on the type of valve	
Perm. medium temperature	depending on the type of valve	
Flow rate	depending on the type of valve	
Environmental conditions	Storage	DIN EN 60 721-3-1
	Climatic conditions	class 1K3
	Mechanical conditions	class 1M2
	Temperature range	-10...+60 °C
	Humidity	< 95 % r.h.
	Transport	DIN EN 60 721-3-2
	Climatic conditions	class 2K2
	Mechanical conditions	class 2M2
	Temperature range	-10...+60 °C
	Humidity	< 95 % r.h.
	Operation	DIN EN 60 721-3-3
	Climatic conditions	class 3K3
	Mechanical conditions	class 3M3
	Temperature range	-10...+60 °C (longer opening times below 0 °C)
	Humidity	< 95 % r.h.
	 Condensation, formation of ice and ingress of water are not permitted!	
SKP11...	Cyclic position adjustment	< 3 x / min.

Function

SKP1... with valve

(Schematic drawing)



- Legend
- 1 Piston
 - 2 Oscillating pump
 - 3 Oil reservoir
 - 4 Pressure side
 - 5 Stem
 - 6 Closing spring
 - 7 Control valve
 - 8 Potential-free end switch, adjustable across stroke of 4...96 %
 - 9 Adjusting screw
 - 10 Stroke indication

Functioning principle of 1-stage actuator with safety shutoff feature

When power is applied to the actuator, the pump will be switched on and the control valve closed. Then, oil is pumped from the nearly filled chamber beneath the piston to the actual pressure chamber above the piston. This causes the piston to move downward, thereby opening the valve against the pressure of the closing spring. The pump remains energized until the closing command is given. When power is removed, or in the event of a power failure, the pump will be deactivated and the control valve opened so that the closing spring pushes the piston back. The return flow system is designed such that the counter-stroke required for reaching the fully closed position is completed within about 0.8 seconds.

Functioning principle of 2-stage actuator

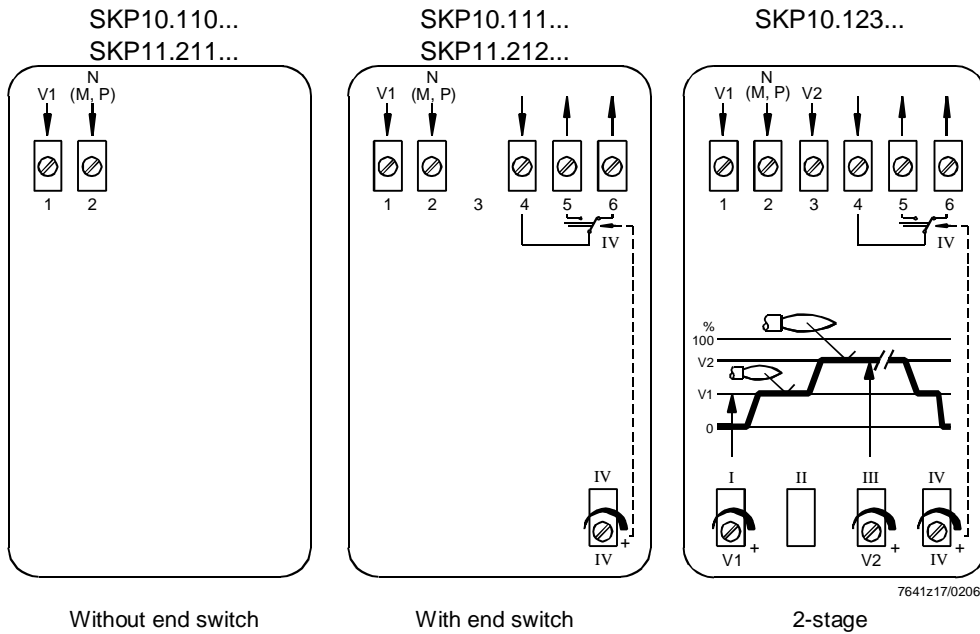
SKP10.123...

With this type of actuator, opening starts the same way as with the 1-stage actuators. However, as soon as the part load stroke is reached, the disk on the stem actuates switch «V1» via a lever system. This deactivates the pump so that the valve disk will maintain the present position. The pump resumes operation only when the burner control feeds power to terminal 3 of the actuator, be it directly or via the load controller. The adjusted nominal load stroke ends when switch «V2» changes over so that the pump receives no more power. If the load controller stops feeding power to terminal 3, the control valve will open until the low-fire position is reached. If terminals 1 and 3 become dead, the actuator will travel to the fully closed position in less than 1 second.

SKP11...

When power is applied to terminal 1, the stem extends, the SKP11... opens to the stem position to which position switch I is adjusted and maintains that position. When terminal 1 is dead, the stem retracts to the fully closed position – pushed back by the spring in the valve.

Terminal markings

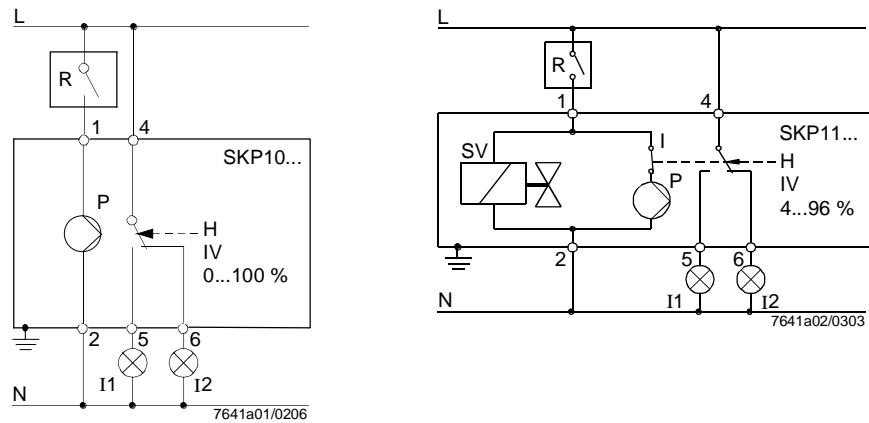


Without end switch

With end switch

2-stage

Connection diagram



Legend



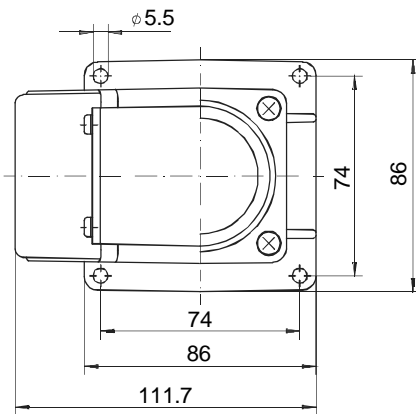
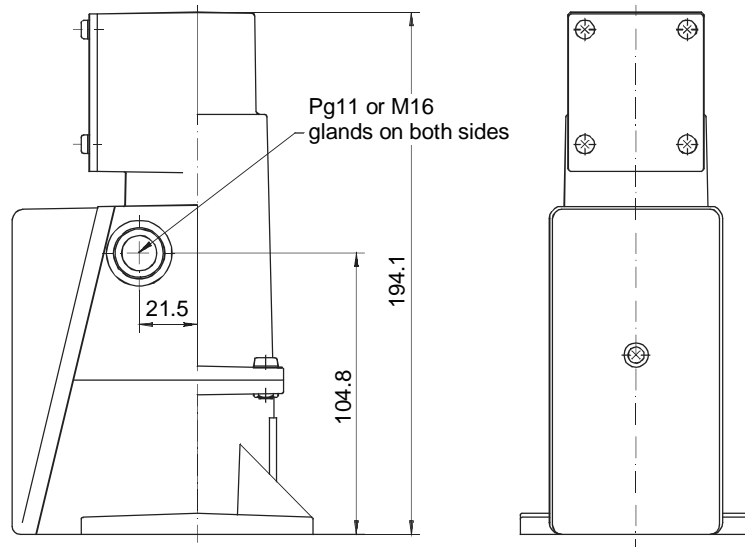
Fuses, etc., must be in compliance with local regulations.

I	Position switch, factory-set (adjusting screw for low-fire)	H	Stroke of stem
III	Position switch, factory-set (adjusting screw for high-fire)	I1/I2	External indication
IV	Potential-free end switch, adjustable (only on actuators with end switch, refer to «Type summary»)	N/M/P	Neutral conductor
		R	External switching element (controller, switch, etc.)
		SV	Control valve (internal)
		V1	Control input stage 1 (L) / phase 1
		V2	Control input stage 2 (L) / phase 2

Dimensions

Dimensions in mm

SKP10... / SKP11...



7641m01e/1003