

## PRODUCT INFORMATION

**Serving the Gas Industry  
Worldwide**

## Actuator Systems RMG 670 / RMG 671

Application, advantages, technical data

### Application

The actuators RMG 670 (K 16, K 18) and RMG 671 (K 17, K 19) are designed to operate safety devices (SSV). They can be used as:

- actuator of a safety shut-off valve (SSV, e.g. RMG 711, RMG 721, and RMG 731) Their function is to automatically close the main valve in order to shut off the gas flow in gas pressure regulating stations, as soon as the pressure to be controlled rises above or falls below the pre-set adjustable limits.
- measuring unit of a safety relief valve (SBV, e.g. RMG 850) To automatically open the valve, as soon as the pressure to be controlled reaches a pre-set overpressure limit. The highly sensitive diaphragm systems of these actuators offer the advantage of a high response accuracy across a large temperature range and the response pressure can be closely approached to the pressure to be controlled.

### Advantages

- high response accuracy
- low pressure differential between release pressure and the service pressure to be monitored
- easy maintenance and operation
- suitable for natural gas and all non-corrosive gaseous media

TECHNICAL DATA										
max. operating pressure p <sub>max</sub>	100 bar									
type	K 16, K 17 for response pressure ranges from 0,8 to 40 bar with diaphragm type measuring unit K 18, K 19 for response pressure ranges from 20 to 90 bar with metal-harmonica type measuring unit									
for safety shut-off valves	RMG 670 / K 16, K 18 upper response pressure range W <sub>h0</sub> = 0,8 bar to 90 bar RMG 671/ K 17, K 19 lower response pressure range W <sub>hu</sub> = 2 bar to 40 bar									
for safety relief valves	RMG 670 / K16, K18 response pressure range W <sub>h</sub> 0,8 bar to 90 bar									
connections	screw connection without brazing acc. to DIN 2353 for pipe diameter <table><tr><td>measuring line</td><td>12 mm</td></tr><tr><td>vent line</td><td>12 mm</td></tr><tr><td>bleed line</td><td>12 mm</td></tr><tr><td>switching pressure line</td><td>10 mm</td></tr></table>		measuring line	12 mm	vent line	12 mm	bleed line	12 mm	switching pressure line	10 mm
measuring line	12 mm									
vent line	12 mm									
bleed line	12 mm									
switching pressure line	10 mm									
ambient temperature range	-20 °C to +70 °C									
materials	<table><tr><td>body parts</td><td>aluminium alloy</td></tr><tr><td>internal parts</td><td>aluminium alloy, stainless steel</td></tr><tr><td>o-rings</td><td>rubber-like_plastic_material</td></tr><tr><td>diaphragms</td><td>rubber-like_plastic_material</td></tr></table>		body parts	aluminium alloy	internal parts	aluminium alloy, stainless steel	o-rings	rubber-like_plastic_material	diaphragms	rubber-like_plastic_material
body parts	aluminium alloy									
internal parts	aluminium alloy, stainless steel									
o-rings	rubber-like_plastic_material									
diaphragms	rubber-like_plastic_material									
weight	approx. 1.5 kg									

The actuator consists of the measuring unit and the base plate. The double diaphragm system in the measuring unit has an integrated nozzle and baffle plate as amplifying valve. The measuring unit also incorporates the setpoint spring and the setpoint adjusting screw. The base plate incorporates a throttle valve and the connecting lines within the actuator.

The only difference in the principal designs of the actuators RMG 670 for safety shut-off release or safety relief action lies in the position of the throttle valve.

#### **- safety shut-off operation:**

The pressure to be controlled is fed to the upper side of the highly sensitive double diaphragm system through a measuring impulse line and compared to the pressure adjusted by the set-point spring (force of the setpoint spring). In the normal service condition the amplifying valve is closed. The pipe system to the pressure converter and the pressure converter itself are de-pressurized.

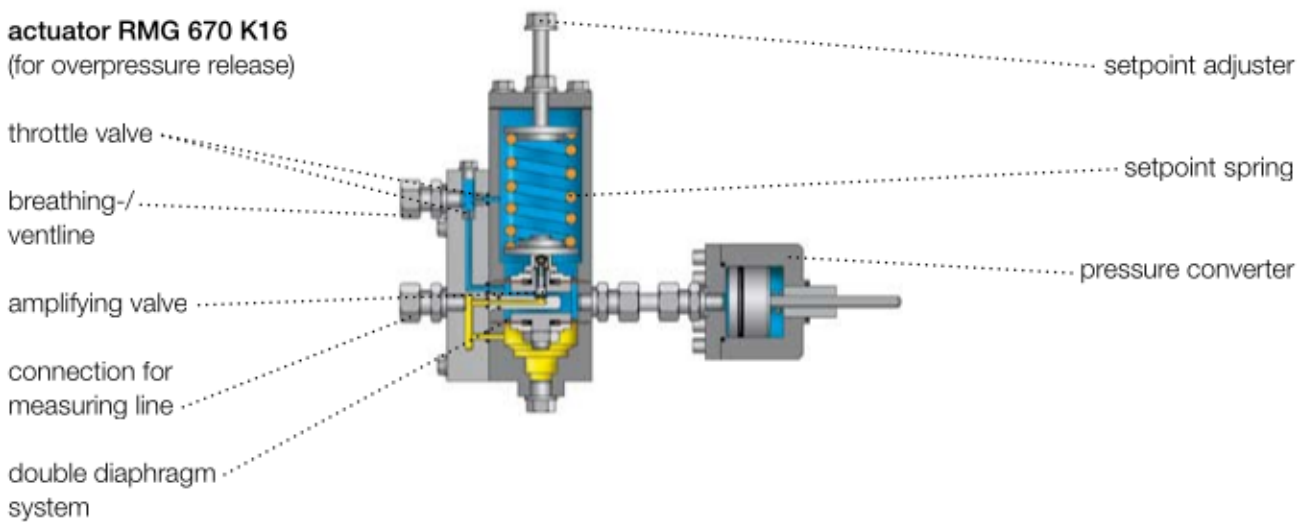
If the service pressure in the line rises to the pre-set overpressure limit of the RMG 670 actuator (or falls to the underpressure limit of the actuator RMG 671), the amplifying valve opens to let gas flow from the measuring line to the pressure converter. The resulting pressure build-up releases the tripping unit of the safety shut-off valve, and the SSV shuts off the gas flow in the mains.

If the faults causing the closing of the valve are found and eliminated, and if the pressure to be controlled has again fallen below the necessary re-engagement differential (RMG 671: risen above the re-engagement differential), the amplifying valve closes again. The pressure in the pressure converter is then quickly vented to the atmosphere via the throttle in the discharge line, and the safety shut-off main valve can be opened again.

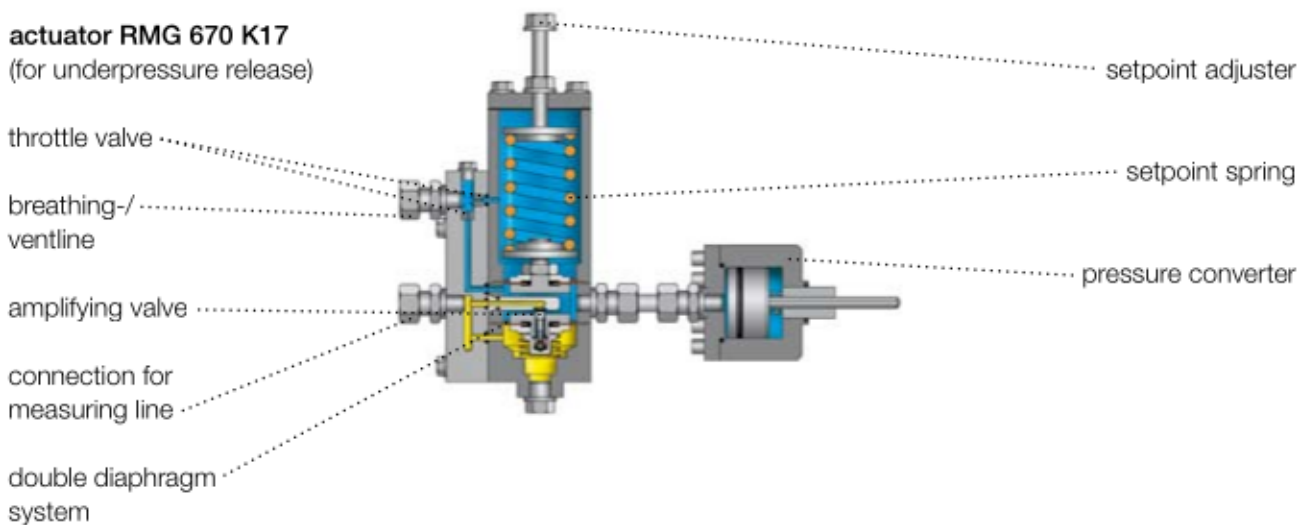
## Actuator Systems RMG 670 / RMG 671

### Design and operation

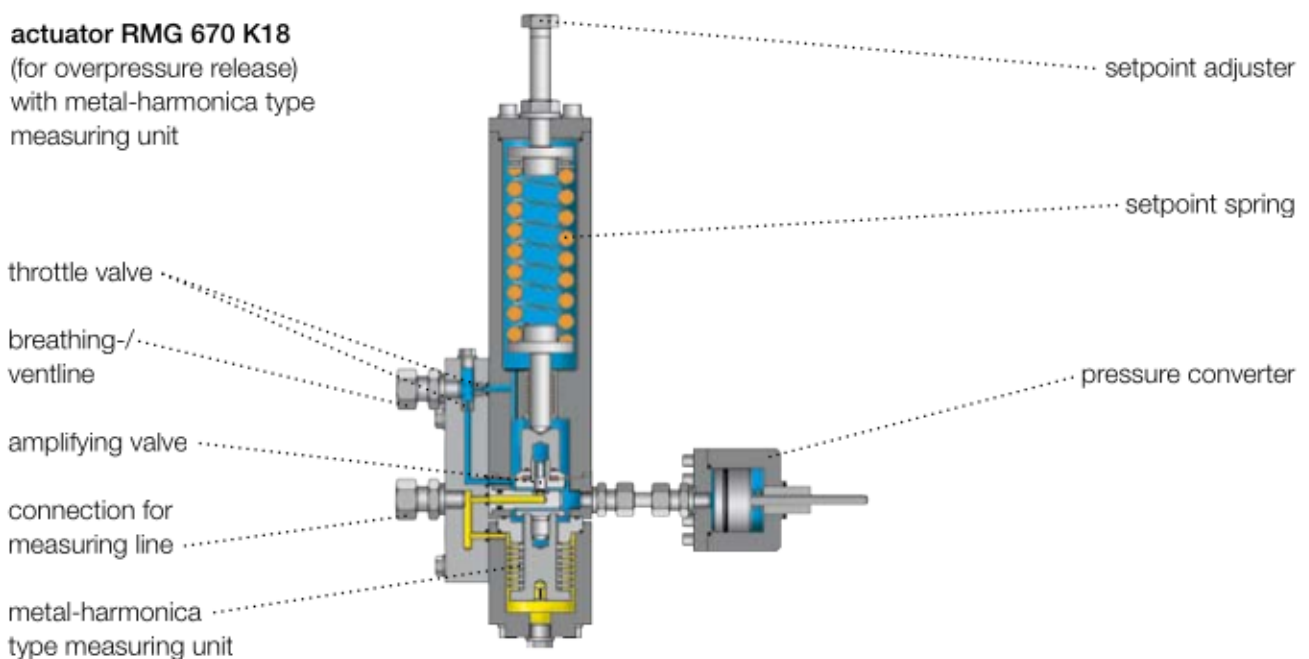
#### actuator RMG 670 K16 (for overpressure release)



#### actuator RMG 670 K17 (for underpressure release)



#### actuator RMG 670 K18 (for overpressure release) with metal-harmonica type measuring unit





### Safety Relief Valve Operation:

The safety relief valve (i.e. RMG 850) opens as soon as the pressure to be monitored reaches the pre-set level, thus venting the surplus gas into the atmosphere. The safety relief valve consists of the main valve and the actuator RMG 670. A fine filter is placed as protection against dust or dirt in front of the actuator and the bleed. The main valve RMG 850 controls the gas flow via the valve cone and the valve sleeve. The piston is fixed onto the valve sleeve. The upper and lower chamber of the piston are connected via the base plate of the actuator RMG 670. Thus the pressure at the piston is compensated, and the closing spring holds the valve sleeve in the CLOSED position.

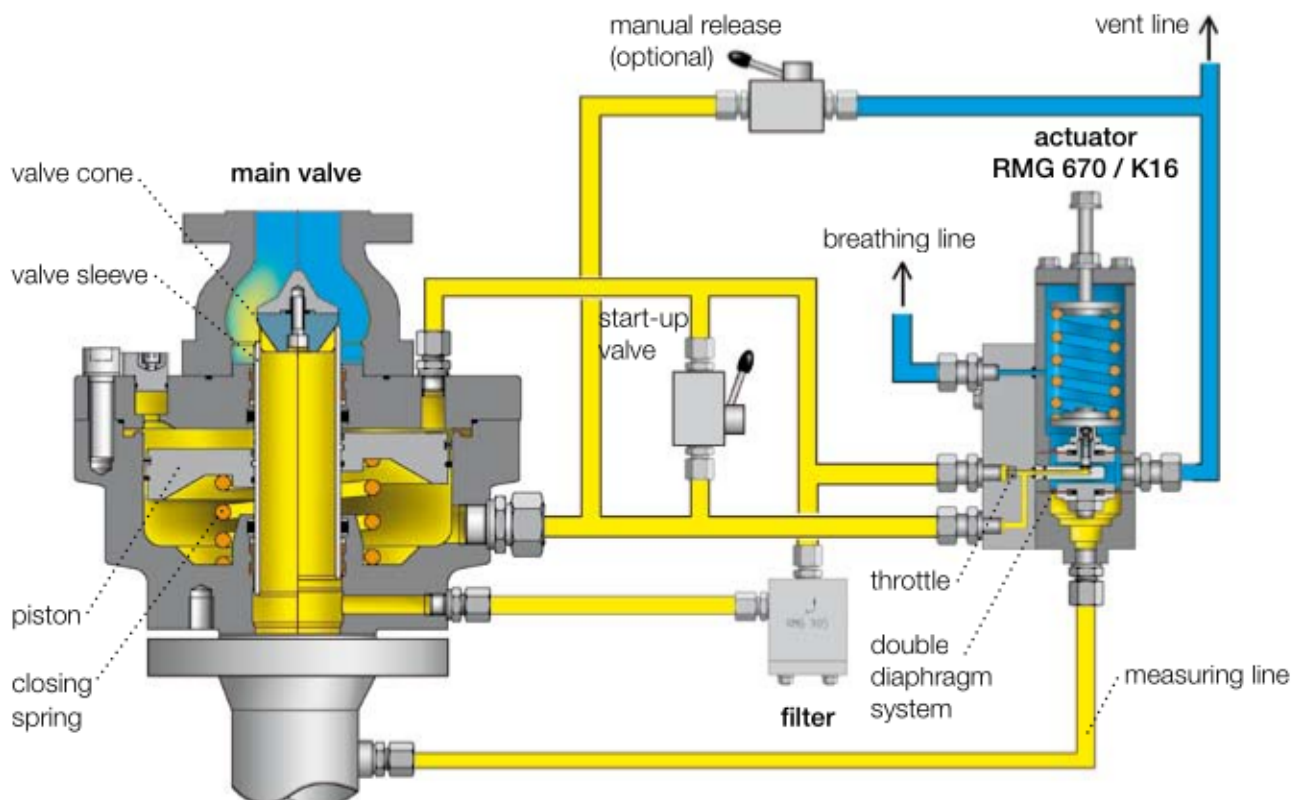
The pressure within the system to be monitored is led via the measuring line to the lower side of the double diaphragm system in the actuator. The force of the pressure is then compared with the pre-set value of the setpoint spring.

Should the pressure to be monitored reach the pre-set value, then the nozzle within the double diaphragm system opens and thus vents the pressure from the lower side of the piston to the atmosphere. The prevailing service pressure on the top side presses the piston and the valve sleeve downward, and the surplus gas in the main pipe is released to the atmosphere.

If the line pressure then falls again below the pre-set value, the actuator valve closes, and the pressure underneath the piston increases again via the throttle to service pressure value. The pressure compensation at the piston enables the closing spring to shut the safety relief valve automatically.

For first pressurization in the line the start-up valve should be pressed to enable quick pressure compensation at the piston, thus keeping the main valve of the safety relief valve closed during pressure build-up.

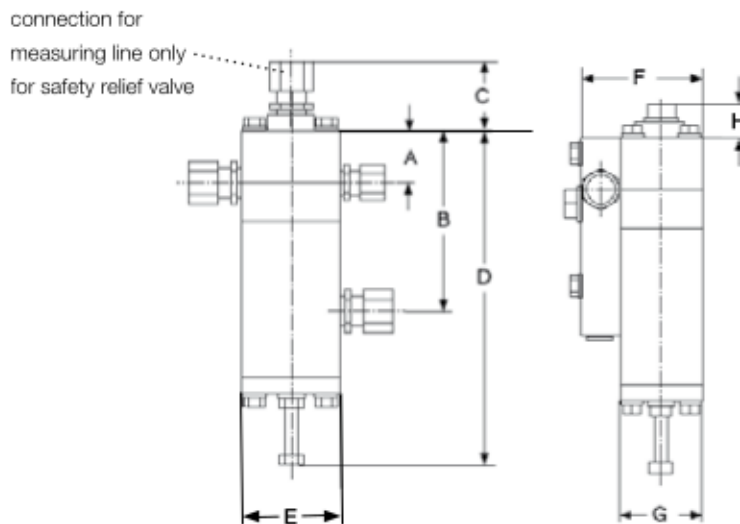
### safety relief valve RMG 850 with actuator RMG 670 / K16



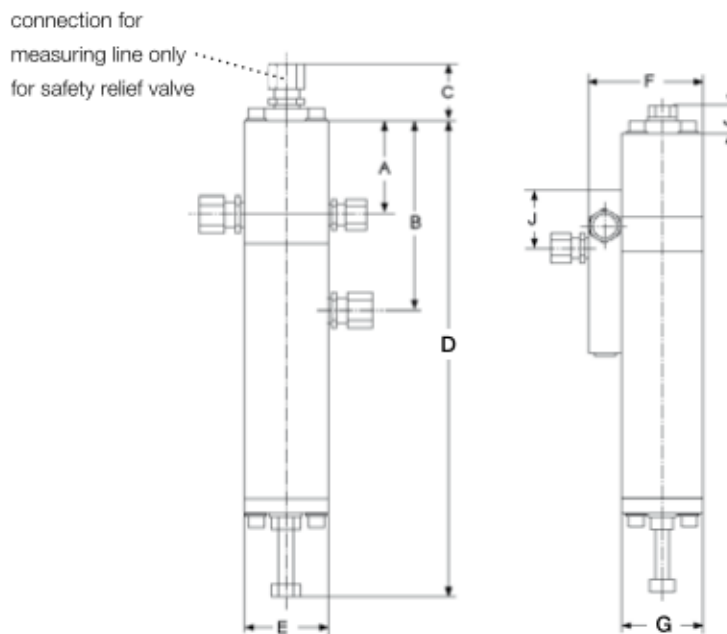
## Actuator Systems RMG 670 / RMG 671

### Measurements

#### actuator K16 / K17



#### actuator K18 / K19



MEASUREMENTS IN MM										
type		A	B	C	D(max)	E	F	G	H	J
for safety shut-off valve	K16 / K 17	26	100		195	60	75	50	20	
	K18 / K19	60	131		340	60	85	60	18	
for safety relief valve	K 16	26	100	40	195	60	75	50		38
	K 18	60	131	37	340	60	85	60		38

## Actuator Systems RMG 670 / RMG 671

Type description

RMG 670 - A - 3 - So

example:

TYPE			
type		RMG 670 RMG 671	
VERSION FOR			
safety shut-off valve		A	
safety relief valve		B	
ADJUSTING RANGES			
actuator	setpoint range in bar		
	W <sub>ho</sub>	W <sub>hu</sub>	
K16	0.8 ... 1.5	-	0
K16	1.0 ... 5.0	2.0 ... 10.0	1
K16 / K17	2.0 ... 10.0	5.0 ... 20.0	2
K16 / K17	5.0 ... 20.0	10.0 ... 40.0	3
K16 / K17	10.0 ... 40.0	-	4
K18*	20.0 ... 90.0	-	5
SPECIAL VERSION			
special version (to be described in detail)			So

\* with metal-harmonica type measuring unit