Safety Shut-Off Valve RMG 720

CONTROLS SUPPLY CHAIN
VALVES ACTUATORS INSTRUMENTATIONS

PRODUCT INFORMATION

Serving the Gas Industry Worldwide

SAFETY SHUT-OFF VALVE RMG 720

Application, Characteristics, Technical Data

Application

- main safety device for gas pressure regulating stations
- suitable for natural gas according to DVGW G 260, other gases on request

Characteristics

- compact design; small face-to-face dimensions
- low pressure drop (valve seat diameter is same size as pipe size diameter)
- easy maintenance due to interchangeable cartridge assemblies
- version with different actuators as an optional feature
- shut-off reaction at diaphragm fracture
- electric release and remote indication

TECHNICAL DATA		
max. service pressure p_{max}	- DN 25 - DN 50, DN 80, DN 100	16 bar 25 bar (depending on the flange version)
sizes	DN 25, DN 50, DN 80 and DN 100	
connections	- DN 25: DIN-flanges PN 16 and flanges acc.to ANSI 150 RF - DN 50, DN 80, DN 100: DIN-flanges PN 16, PN 25 and flanges acc.to ANSI 150 RF	
valve diameter	same size as nominal width	
materials	main valve body DN 25 and DN 50 main valve body DN 80 and DN 100 control unit body internal parts diaphragms, o-rings	cast steel cast steel, ductile iron cast aluminium aluminium, stainless steel, brass,steel rubber-like plastic material (NBR)
ambient temperature range class 2	-20 °C to +60 °C	
function and strength	acc. to DIN EN 14382 (DIN 3381)	
special features	manual release electro-magnetic release at current supply / current drop electric remote control of valve position "closed"	
Ex-protection	The device does not have any potential ignition sources and thus ATEX 95 does not apply to it (applied electronic accessories comply with the ATEX requirements).	
DIN-DVGW-Reg.-No.	NG-4303AU0020	
CE-sign acc. to PED	RMG CE 0085	

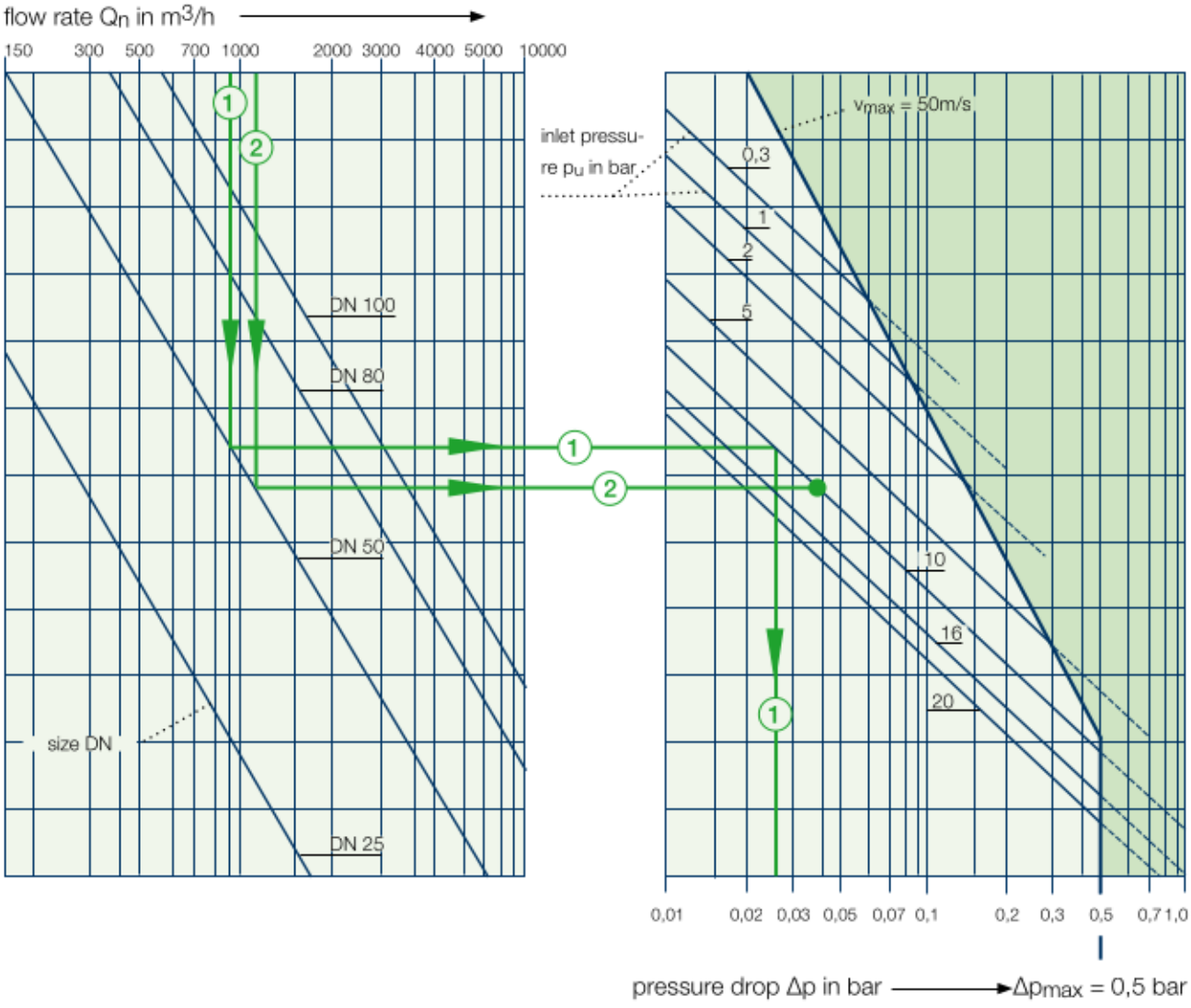
DN 25: SETTING RANGE OF THE SSV MEASURING UNITS K1A, K2A								
measuring unit	setpoint spring			overpressure release		underpressure release		
	No.	colour	wire-dia. in mm	specific setting range W_{dso} (bar)	minimal differential between response pressure (p_{do}) and service pressure (p_d)* Δp_{wo} (bar)	specific setting range W_{dsu} (bar)	minimal differential between response pressure (p_{du}) and service pressure (p_d)* Δp_{wu} (bar)	response pressure category** AG
K1a	1	yellow	2.5	0.050 ... 0.100	0.030			10/5
	2	bright red	3.2	0,080 ... 0.250	0.050			10/5
	3	dark red	3.6	0.200 ... 0.500	0.100			5/2.5
	4	white	4.75	0.500 ... 1.500	0.250			5/2.5
	5	bright blue	1.1			0.010 ... 0.015	0.012	20
	6	white	1.2			0.014 ... 0.040	0.030	10/5
	7	black	1.4			0.035 ... 0.120	0.060	5
K2a	2	bright red	3.2	0.400 ... 0.800	0.100			10/5
	3	dark red	3.6	0.600 ... 1.600	0.200			10/5
	4	white	4.75	1.500 ... 4.500	0.300			5/2.5
	5	bright blue	1.1			0.060 ... 0.150	0.050	10/5
	6	black	1.4			0.120 ... 0.400	0.100	5
DN 50 TO DN 100: SETTING RANGE OF THE SSV ACTUATOR UNITS K3, K4, K5, K6, K16								
K3	2	bright red	3.2	0.020 ... 0.050	0.013			5
	5	bright blue	1.1			0.004 ... 0.008	0.008	15
	6	black	1.4			0.008 ... 0.020	0.008	15
K4	2	bright red	3.2	0.040 ... 0.100	0.020			5/2.5
	3	dark red	3.6	0.080 ... 0.250	0.030			2.5
	4	black	4.5	0.200 ... 0.500	0.060			2.5/1
	5	bright blue	1.1			0.005 ... 0.020	0.010	20/5
	6	black	1.4			0.015 ... 0.060	0.020	5
K5	3	dark red	3.6	0.200 ... 0.800	0.100			2.5
	4	black	4.5	0.600 ... 1.500	0.200			2.5/1
	5	bright blue	1.1			0.015 ... 0.050	0.030	20/5
	6	black	1.4			0.040 ... 0.120	0.060	5
K6	3	dark red	3.6	0.600 ... 2.000	0.200			2,5
	4	black	4.5	1.500 ... 4.500	0.400			2.5/1
	5	bright blue	1.1			0.040 ... 0.120	0.060	20/5
	6	black	1.4			0.120 ... 0.300	0.120	5
K16	0	bright blue	3.2	0.800 ... 1.500	0.100			1
	1	black	4.5	1.000 ... 5.000	0.200			1
	2	grey	5.0	2.000 ... 10.00	0.400			1
	3	brown	6.3	5.000 ... 27.50	0.800			1

*) Note: if control devices are used with both overpressure and underpressure release, then the min. gap between the two setpoints pdso and pdsu has to be at least 10% larger than the sum of the two differential values ($\Delta p_{wo} + \Delta p_{wu}$).

$$p_{dso} - p_{dsu} \geq 1.1 (\Delta p_{wo} + \Delta p_{wu})$$

**) The higher response precision category is valid for the first half, the lower response precision category is valid for the second half of the setting range.

Diagram for determination of pressure drop and max. permissible flow velocity (natural gas ρ_n=0.83 kg/m3)



1.) determination of pressure drop:
This diagram is valid for natural gas. For other gases please convert the flow rate into the natural gas flow.

$$Q_{n\ nat.\ gas} = \frac{Q_{n\ gas}}{f} \text{ in } m^3/h$$

conversion factor f (for other conversion factors please see RMG-booklet)		
	nitrogene	0,81
	methane	1,08
	town gas	1,23
	air	1,26

example: given: DN 50, p_u = 10 bar, Q_n = 1100 m^3/h (town gas)

determination of pressure drop: $Q_{n\ nat.\ gas} = \frac{Q_{n\ gas}}{f} = \frac{1100\ m^3/h}{1,23} = 900\ m^3/h$

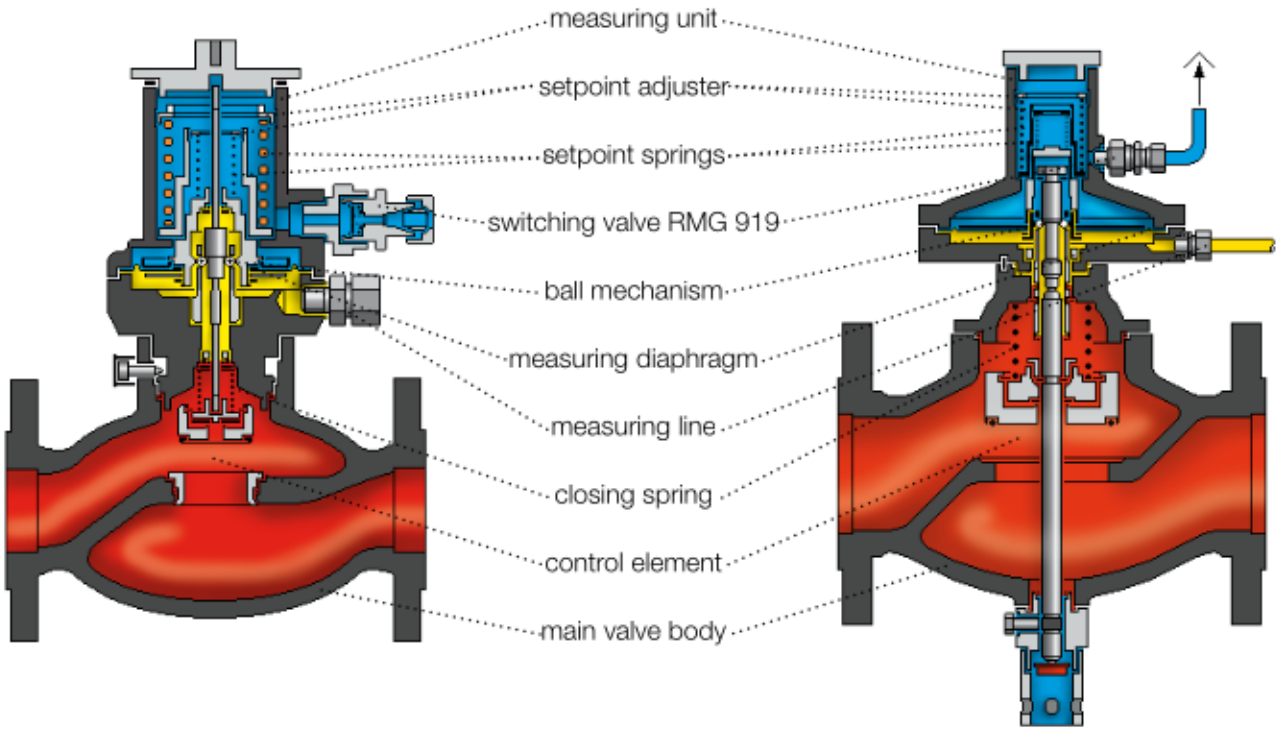
found: (path ①): $\Delta p = 0,027$ bar < $\Delta p_{max} = 0,5$ bar

2.) permissible gas velocity v_{max}. It can be determined by using the nominal flow rate.

example: given: DN 50, p_u = 10 bar, Q_n = 1100 m^3/h (town gas)

gas velocity control: found: (path ②): $v < v_{max} = 50$ m/s

RMG 720 - DN 25: **RMG 720 - DN 80:**



The safety shut-off valve (SSV) RMG 720 is designed to automatically shut off the gas flow of a gas pressure regulating station, as soon as the pressure within the system to be protected rises above or falls below pre-set limits.

The RMG 720 consists of a main valve body and a measuring unit as an actuating element. For regular maintenance the actuating element can easily be subjected to a visual inspection. In case of failure the actuating modules can be replaced by spare units, and the repair works can be carried out in the workshop without having to shut down the
gas pressure regulating system.

All measuring units of the safety shut-off valve are equipped with a spring-loaded diaphragm to block or release the ball mechanism of the tripping device. The diaphragm assembly is suitable for both overpressure and/or underpressure release. The response pressures for overpressure release and underpressure release can be adjusted independently from each other.

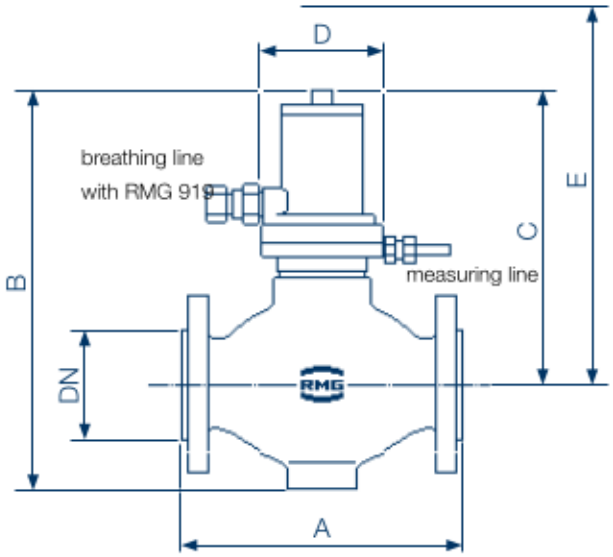
A pressure compensating valve is integrated into the valve plate. This valve can easily be operated by hand under all pressure conditions, thus ensuring pressure balance at the valve plate before opening the main valve.

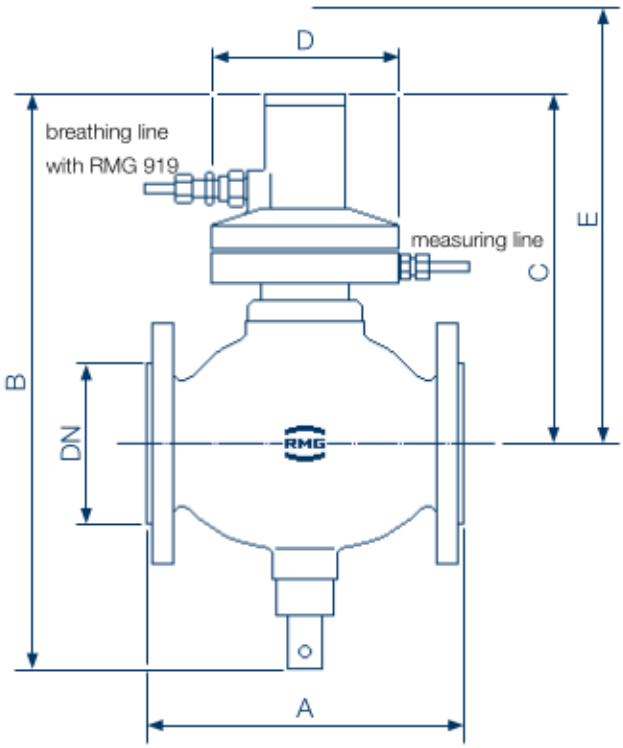
From size DN 50 upwards the valve stem is provided to go through the pressure chamber. This design feature guarantees a perfect pressure balance, and any changes of service pressure have no influence on the release accuracy.

The SSV control element shuts off the gas flow as soon as the pressure within the system to be protected rises above or falls below pre-set response points. This shut-off is effected by the measuring diaphragm and the tripping bush moving into the release position with the ball mechanism disengaging the valve stem to close the SSV control element. The valve can be re-set by hand only, after the outlet pressure at the measuring point has been decreased or increased to a value lying within the range of the pressure differentials to be observed for re-engagement.

SAFETY SHUT-OFF VALVE RMG 720

Dimensions, Connections and Weights





DIMENSIONS IN MM

size DN	main valve body	measuring unit															
		K1a and K2a				K3				K4				K5 und K6			
	A	B	C	D	E*	B	C	D	E	B	C	D	E*	B	C	D	E*
25	184	290	230	Ø 100	280												
50	254					480	310	236	535	485	315	Ø 178	540	485	315	Ø 128	540
80	298					565	355	236	670	570	355	Ø 178	670	570	355	Ø 128	670
100	352					565	355	236	670	570	355	Ø 178	670	570	355	Ø 128	670

CONNECTIONS

measuring lines and vent lines	pipe connection without brazing with compression joint acc. to DIN 2353 pipe 12 x 1.5 (screw joints M 16 x 1.5)

WEIGHTS

size	25	50	80	100
weight in kg*	8	19	43	49

*) approximate data, deviations depend on measuring unit

example **RMG 720 - 50 - K5 / E1 / HA / F - So**

type · size · SSV-measuring unit · electro magnetic release · manual release · electric remote control of valve position „closed" · special feature

SIZE OF BODY				
size DN	body with accessoires*			
	material EN-GJS400-18-LT flanges acc. to PN 16	material GS21Mn5N flanges acc. to		
		PN 16	ANSI 150 RF	PN 25
25	-	10 008 313	10 008 657	-
50	-	10 008 308	10 008 653	10 008 308
80	10 008 303	10 008 309	10 008 654	10 008 314
100	10 008 304	10 008 310	10 008 655	10 008 315

MEASURING UNIT			
size DN	setting range in bar		measuring unit
	upper cutoff W_{do}	lower cutoff W_{du}	
25	0,050 ... 1,500 0,400 ... 4,500	0,010 ... 0,120 0,060 ... 0,400	K1a K2a
50, 80, 100	0,020 ... 0,050 0,040 ... 0,500 0,200 ... 1,500 0,600 ... 4,500 1,000 ... 25,00	0,004 ... 0,020 0,005 ... 0,060 0,015 ... 0,120 0,040 ... 0,300	K3 K4 K5 K6 K16

ACCESSORIES	
release by current supply	E1
release by current drop	E2
manual release	HA
remote indication of valve position "closed"	F

SPECIAL FEATURE (TO BE SPECIFIED IN DETAIL)	
special feature	So

*) These RMG-part numbers are plotted to the identification plate