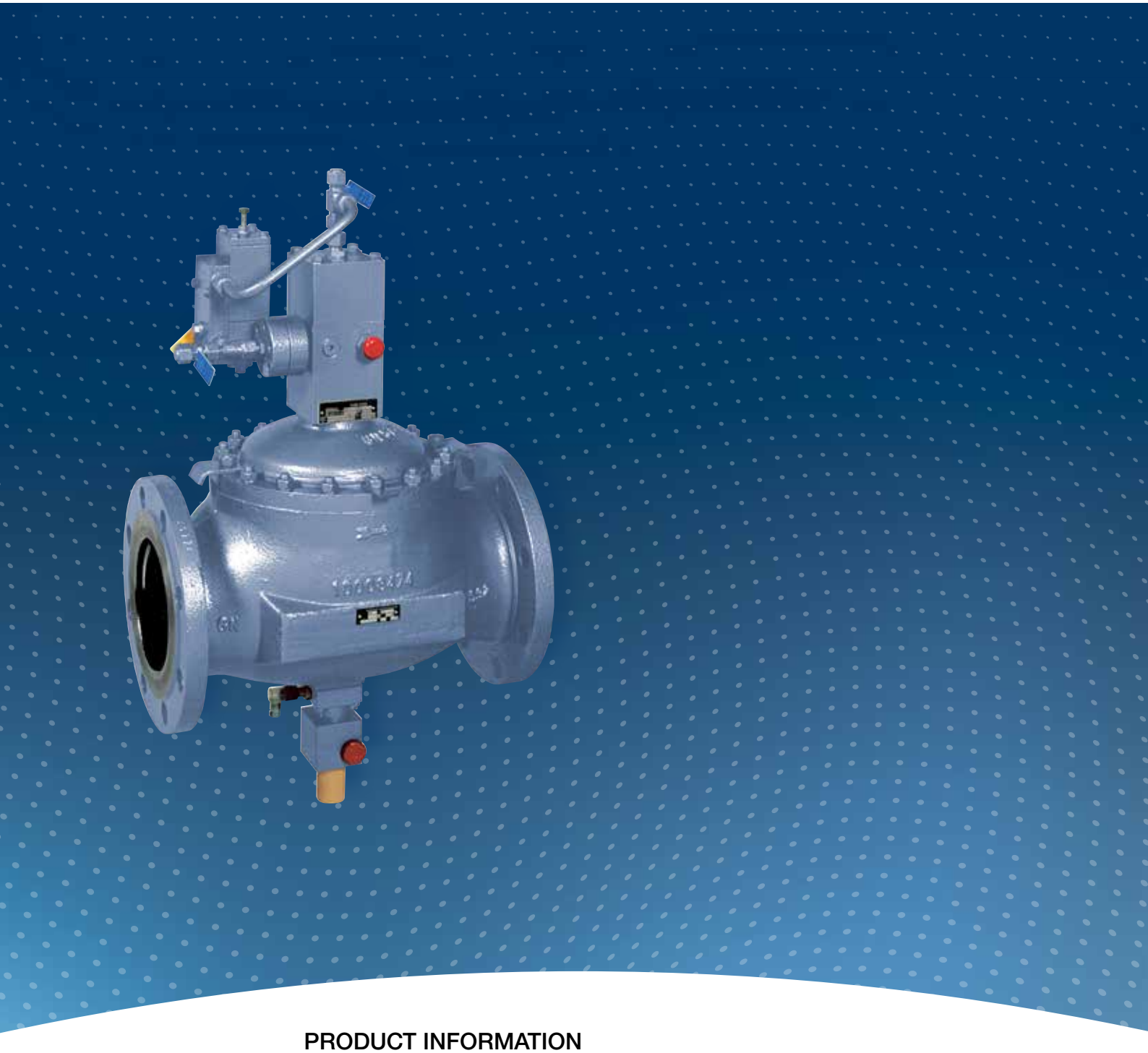
Safety Shut-Off Valve HON 721



PRODUCT INFORMATION

Serving the Gas Industry Worldwide

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Application

- 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 due to valve seat diameter equal to pipe size diameter
- easy maintenance due to interchangeable cartridge assemblies (plug-in system)
- four tripping facilities; manual release as standard feature
- can be provided with various measuring units for different response pressure ranges
- electromagnetic release and remote indication of valve position as special features
- automatic release in case of diaphragm-fracture acc. to DIN EN 14382 (DIN 3381)

TECHNICAL DATA		
max. inlet pressure p_{max}	50 bar (depending on connections)	
sizes	DN 50, DN 80, DN 100, DN 150	
connection	flanged to DIN PN 16, PN 25, PN 40 and to ANSI 150 RF and ANSI 300 RF	
valve seat diameter	same size as flange diameter	
adjustment ranges **(for setpoint spring ranges see page 3)**	for overpressure release: W_{do} 0.03 bar to 40 bar	for underpressure release: W_{du} 0.01 bar to 40 bar
optional features	electromagnetic release upon current pulse / current failure electric remote indication of valve position “closed” temperature release	
material	main valve body measuring unit housing internal parts steel diaphragms, O-rings	ductile iron / cast steel cast aluminium, aluminium forging aluminium, stainless steel, brass, rubber-like plastic material (NBR)
ambient temperature class 2	-20 °C to +60 °C	
function and strength	DIN EN 14382 (DIN 3381)	
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).	
CE-sign to PED	Honeywell CE 0085	

ADJUSTABLE TRIP RANGES

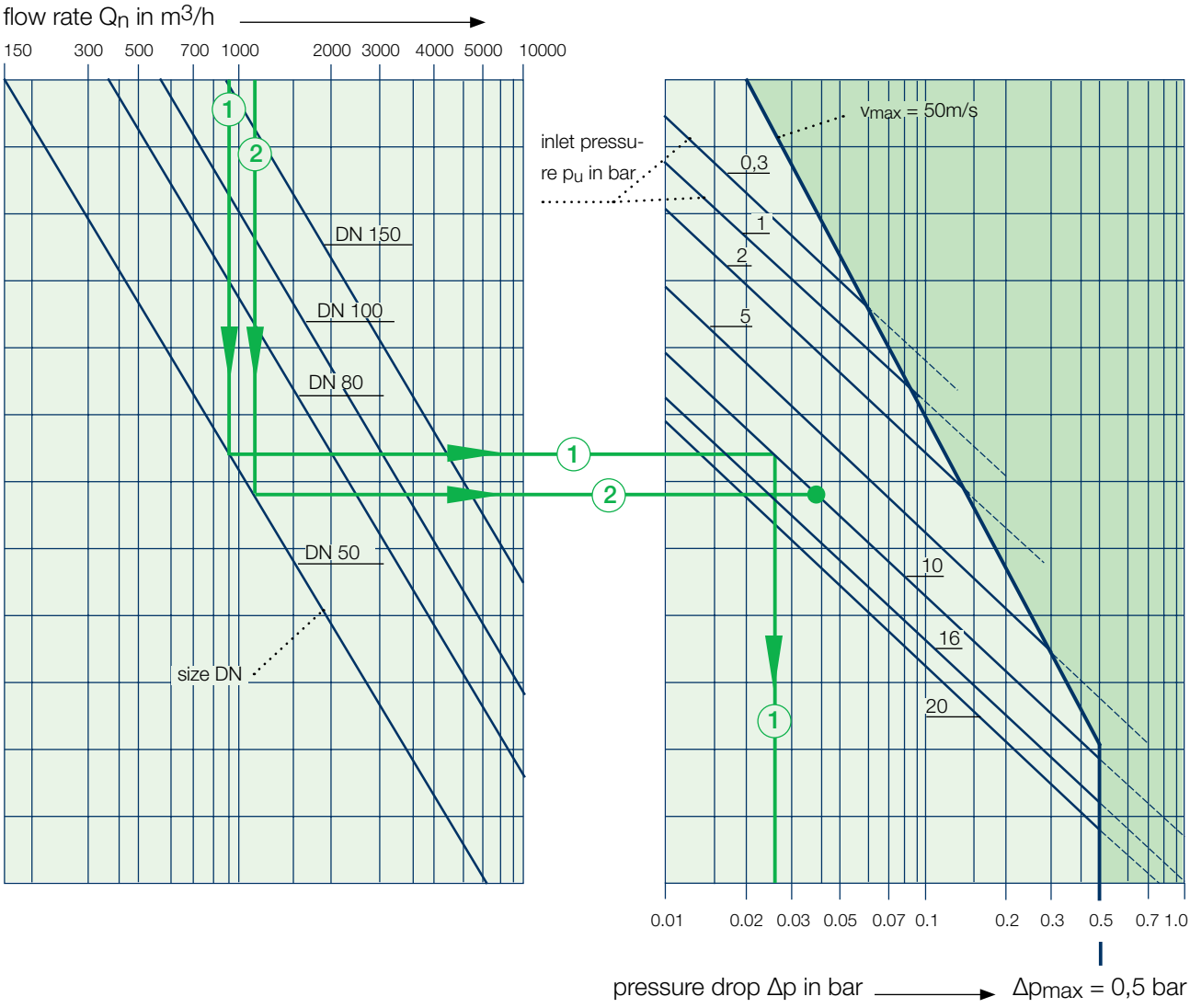
pilot	setpoint spring			overpressure cut-off		underpressure cut-off		actuating pressure class**
	No.	colour	wire-Ø in mm	upper adjusting range W_{dso} (bar)	re-engagement diff. between response pressure and normal service pressure* Δp_{wo} (bar)	lower adjusting range W_{dsu} (bar)	re-engagement diff. between response pressure and normal service pressure* Δp_{wu} (bar)	AG
K10a	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	4.8	0.400 ... 1.500	0.250			5/2.5
	5	yellow	1.0			0.010 ... 0.015	0.012	15
	6	white	1.2			0.014 ... 0.040	0.030	15/5
	7	black	1.4			0.035 ... 0.120	0.060	5
K12	1	bright green	5.0	0.500 ... 1.500	0.250			5/2.5
	2	yellow	6.3	1.000 ... 3.000	0.500			2.5/1
	3	bright red	8.0	2.000 ... 8.000	1.000			2.5/1
	4	white	2.0			0.100 ... 0.200	0.200	15
	5	bright blue	2.8			0.150 ... 0.800	0.400	15/5
	6	black	3.6			0.500 ... 2.000	0.800	15/5
K13	2	yellow	6.3	4.000 ... 14.00	2.000			2.5/1
	3	bright red	8.0	7.000 ... 30.00	4.000			2.5/1
	4	white	2.0			0.500 ... 1.200	0.800	15
	5	bright blue	2.8			0.700 ... 3.500	1.500	15/5
	6	black	3.6			1.500 ... 6.000	3.500	15/5
K15a	1	grey		0.030 ... 0.045	0.005			5
	2	yellow		0.035 ... 0.100	0.010			5/2.5
	3	ivory		0.080 ... 0.200	0.020			2.5/1
	4	bright red		0.150 ... 0.300	0.030			1
	5	dark red		0.250 ... 0.400	0.040			1
	6	bright lue		0.300 ... 0.500	0.050			1
	7	dark blue		0.450 ... 1.000	0.100			1
K16	0	bright blue		0.800 ... 1.300	0.100			2.5
	1	black		1.000 ... 5.000	0.200			2.5/1
	2	grey		2.000 ... 10.00	0.400			1
	3	brown		5.000 ... 20.00	0.800			1
	4	red		10.00 ... 40.00	1.200			1
K17	2	grey				2.000 ... 10.00	0.400	<5
	3	brown				5.000 ... 20.00	0.800	<5
	4	red				10.00 ... 40.00	1.200	<5

*) 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 (Δp_{wo} and Δp_{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 ρn=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 Honeywell-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): Δp = 0.027 bar < Δp_{max} = 0.5 bar

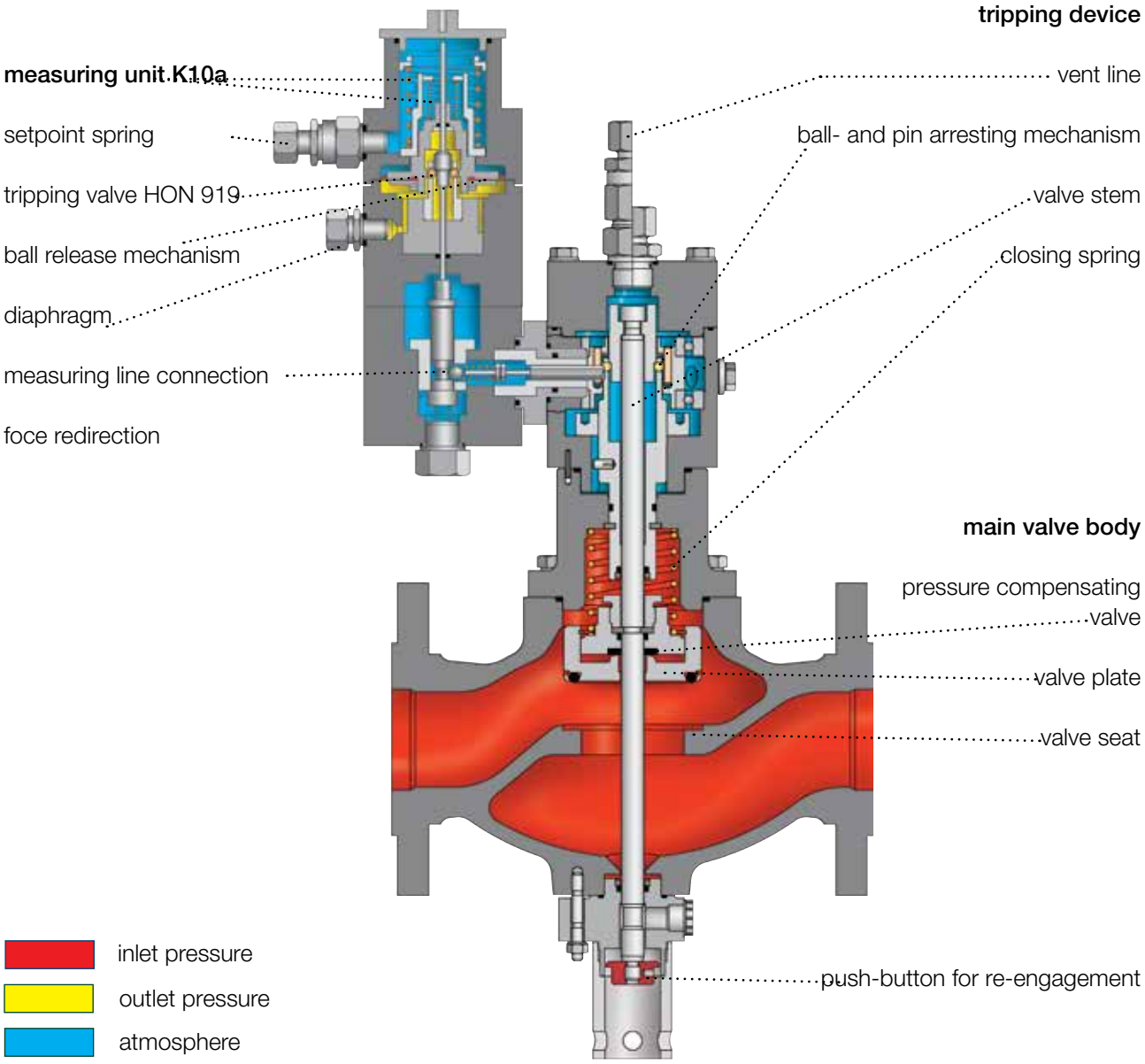
2.) permissible gas velocity v_{max}. It can be determined by using the nominal flow rate.

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

HON 721 with measuring unit

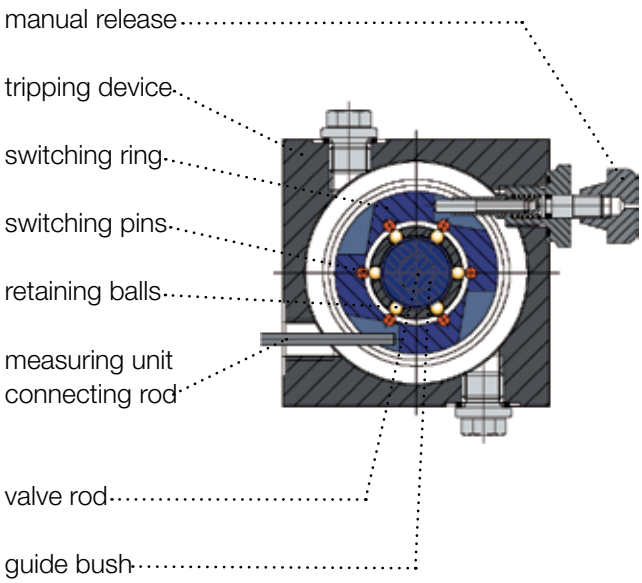
K10a



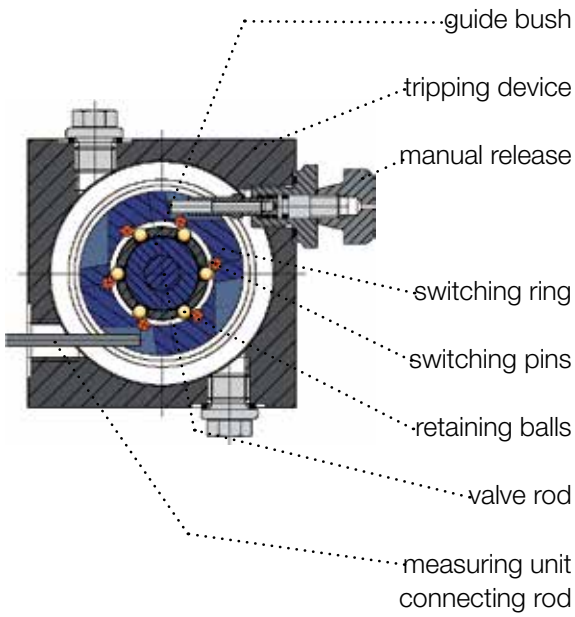
The safety shut-off valve HON 721 was designed to automatically shut off the gas flow of a gas pressure regulating station, as soon as the pressure within the system to be protected rises above or falls below preset limits. The HON 721 consists of a main valve body with the valve seat and an exchangeable functional unit for “safety shut-off”. This exchangeable shut-off unit comprises all functional elements, such as measuring unit, tripping device and valve plate with integrated pressure compensation valve. The functional unit can easily be removed from the main valve body by loosening the retaining screws.

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.

**ball-and-pin tripping device
in service position (valve open)**



**ball-and-pin tripping device
after manual release (valve is closed)**



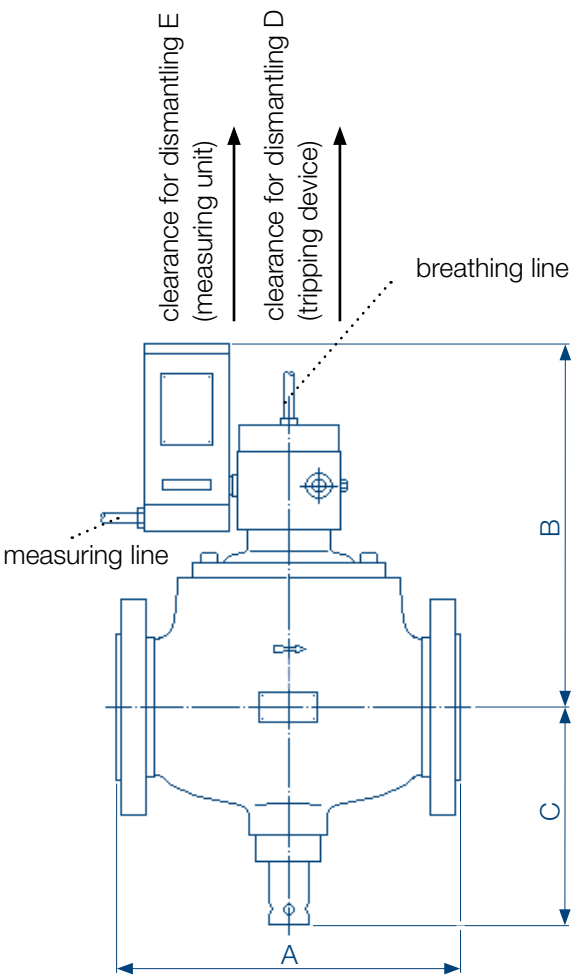
Measuring units K10a, K12 und K13:
As soon as the measuring diaphragm moves out of its neutral position, the ball is pressed out of the groove of the diaphragm rod. By this lateral movement the connecting rod is pushed into the tripping device and causes a turning motion of the switching ring.

Measuring units K15a, K16, K17:
These measuring units convey their response by exerting a pressure stroke to a piston with a connecting rod (pressure transformer) flanged to the tripping device. The motion of the rod will cause the switching ring to turn. For manual release the turning motion is effected by pressing the release button.

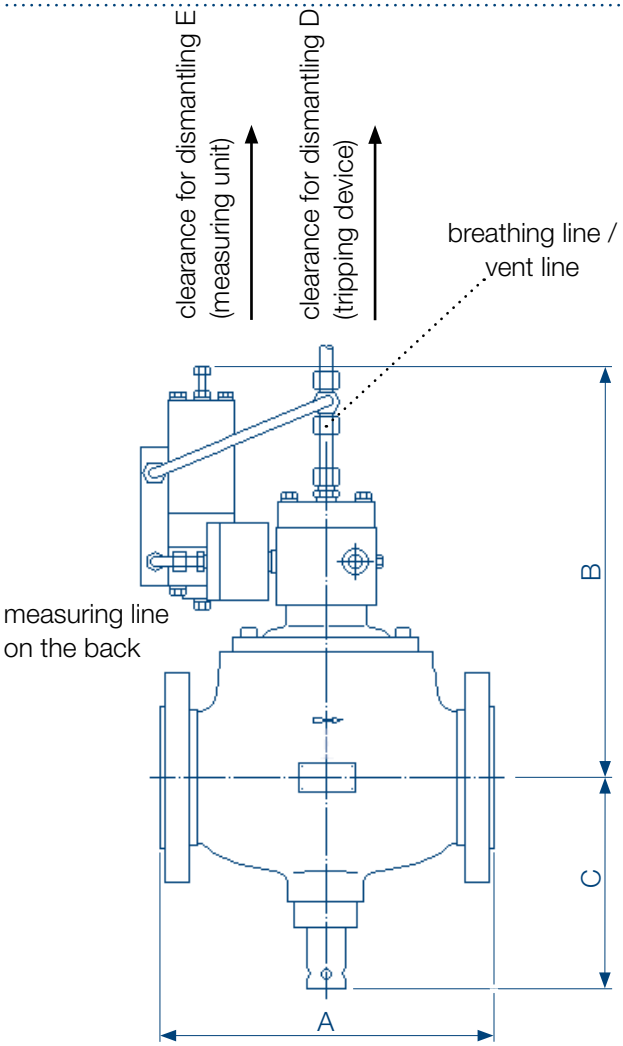
Tripping Device:
The internal part of the tripping device consists of a ball-and-pin release mechanism which is pivoted on bearings. In the service position the SSV valve plate is kept open by the valve stem being arrested within the tripping device. In the open position the valve stem rests upon the balls located in the bore holes of the guide bush. The rolls, which are located in the exterior switching ring running on bearings, are positioned in the same angle as the balls and prevent the balls from being pressed away towards the outside.
If the switching ring is turned anti-clockwise, the balls can evade towards the outside so as to release the valve stem. The force of the closing spring will press the SSV valve plate into its seat and shut off the gas flow. A re-engagement button is used for valves up to DN 100. A handwheel is provided for DN 150. An initial actuation of the reengagement element will open the pressure compensation valve to establish pressure balance within the main valve body, whereupon the main valve plate can be opened without extra force and the safety shut-off valve can be reset into its service position.

(Attention: Observe the re-engagement differentials as explained on page 9 of our “General Operating Instructions for Gas Pressure Regulators and Safety Devices”.

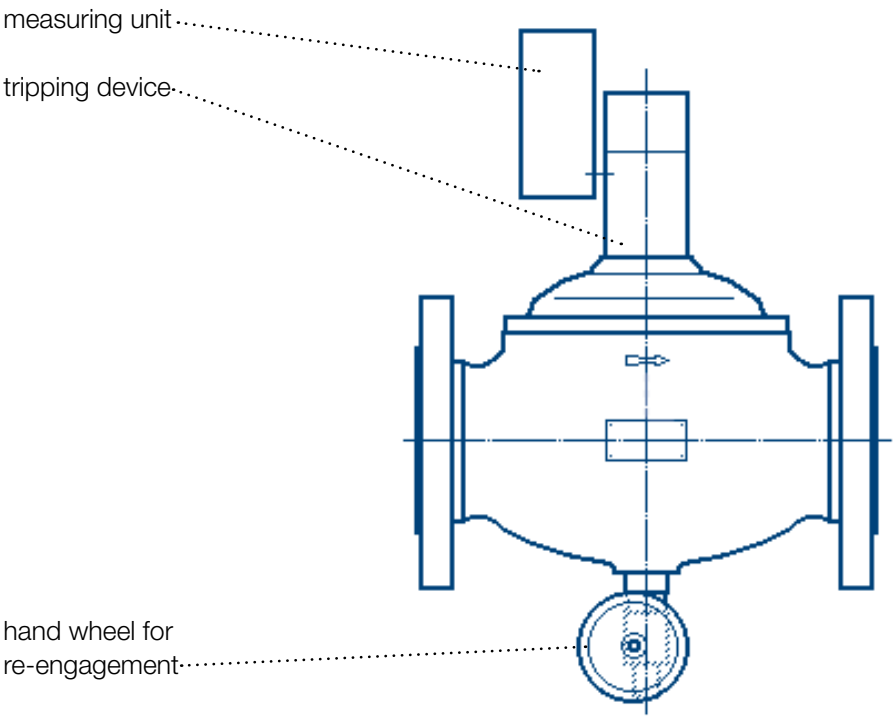
Dimensions and Connections



DN 80 with K12 or K13



DN 80 with K15a, K16 or K17



DN 150 with K10a, K12, K13, K15a, K16 or K17

DIMENSIONS IN MM

size DN	face to face dimension A		SSV with measuring unit	total height B	total height C	clearance for dismantling	
	flange acc. to DIN and ANSI 150 RF	flange acc. to ANSI 300 RF				D tripping device	E measuring unit
50	254	254	K10a K15a	420	170	460	600
			K12 K13	360	170	460	540
			K16 K17	360	170	460	540
80	298	318	K10a K15a	455	215	590	730
			K12 K13	400	215	590	670
			K16 K17	395	215	590	670
100	352	368	K10a K15a	455	215	590	730
			K12 K13	400	215	590	670
			K16 K17	395	215	590	670
150	451	473	K10a K15a	535	280	590	700
			K12 K13	465	280	590	640
			K16 K17	500	280	610	660

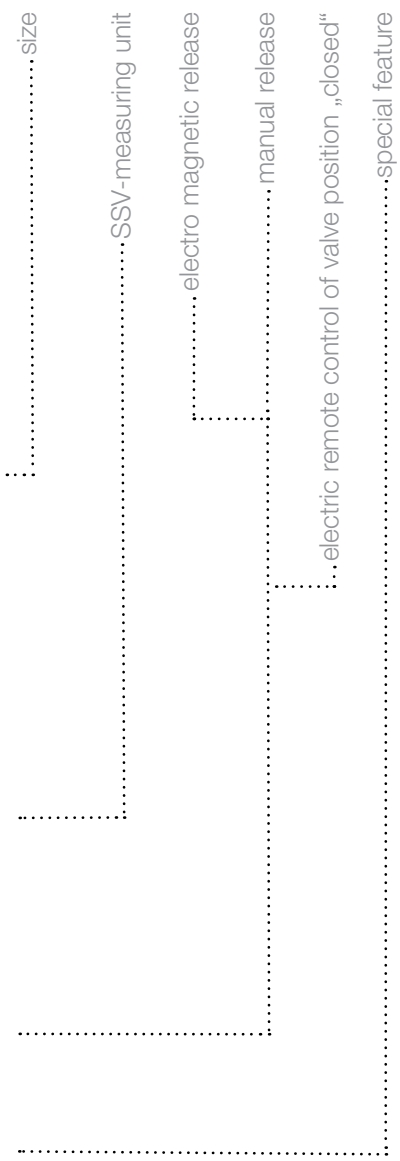
CONNECTIONS

measuring lines for measuring units: K10a, K12, K13, K15a	threaded connection for tube 12 x 1,5 connection thread M 16 x 1,5
measuring lines for measuring units: K16, K17	threaded connection for tube 12 x 1,5 connection thread M 14 x 1,5
breathing lines	threaded connection for tube 12 x 1,5 connection thread G 1/2

WEIGHTS

size DN	weight in kg
50	9
80	25
100	55
150	105

example **HON 721 - 50 - K12 / E1 / HA / F - So**



BODY SIZE					
size DN	**body with accessoires***				
	material EN-GJS400-18-LT flanges acc. to	material GS21Mn5N flanges acc. to			
	PN 16	PN 16	ANSI 150 RF	PN 25/40	ANSI 300 RF
50	-	10008462	10008463	10008462	10023430
80	10008427	10008464	10008466	10008465	10023431
100	10008437	10008467	10008469	10008468	10023433
150	-	10008473	10008478	10008476	10023435

MEASURING UNIT			
size DN	**setting range in bar**		**measuring unit**
	upper cutoff W_{do}	lower cutoff W_{du}	
	0.030 ... 1.000	-	K15a
50,	0.040 ... 1.500	0.010 ... 0.120	K10a
80,	0.500 ... 8.000	0.100 ... 2.000	K12
100,	4.000 ... 30.00	0.500 ... 6.000	K13
150	0.800 ... 40.00	-	K16
	-	2.000 ... 40.00	K17

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 Honeywell-part numbers are plotted to the identification plate

For More Information

To learn more about Honeywell's Advanced Gas Solutions, visit www.honeywellprocess.com or contact your Honeywell account manager

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