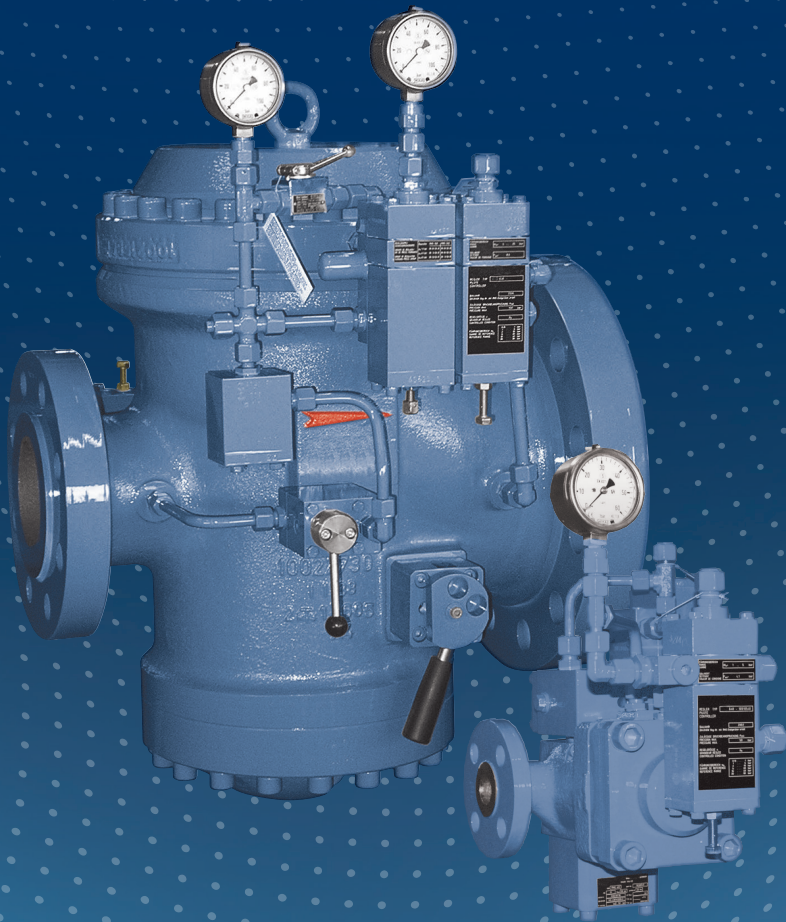


Gas Pressure Regulator HON 503



PRODUCT INFORMATION

**Serving the Gas Industry
Worldwide**

Honeywell

GAS PRESSURE REGULATOR HON 503


Application, properties, technical specifications

Application

- Device for local use at power plants and industrial facilities
- Suitable for use with natural gas and all non-aggressive gases

Properties

- Large inlet pressure range
- Diaphragm valve acts as actuator
- Made up of few parts, easy to maintain, and quiet operation
- With integrated safety shut-off valve

TECHNICAL SPECIFICATIONS			
Max. inlet pressure p_{max}		100 bar	
Outlet pressure range W_d optional with pilot HON 630 in two-stage design, for inlet pressure changes of >15 bar or pilot HON 640 (one-stage design, used for inlet pressure changes of up to 15 bar)		0.3 to 40 bar 20 to 90 bar (with metal harmonica measuring unit)	
Pressure difference between inlet and outlet	Min. pressure difference	$\Delta p_{min} = 2,0$ bar, $\Delta p_{min} = 4,0$ bar (at DN 25/25)	
	Max. pressure difference	$\Delta p_{max} = 90$ bar	
Nominal width and KG value		DN 25 / 25	KG = 250 m ³ /h
		DN 25 / 50	KG = 350 m ³ /h
		DN 50 / 100	KG = 1400 m ³ /h
		DN 80 / 150	KG = 3600 m ³ /h
		DN 100 / 200	KG = 5500 m ³ /h
		DN 150 / 300	KG = 12000 m ³ /h
Type of connection		DIN PN 40 flange and flanges according to ANSI 150 (DN 25/25 only), ANSI 300, ANSI 600	
Accuracy class and closing pressure category	outlet pressure range W_d	accuracy class	closing pressure category
with pilot HON 630	0.30 ... 0.50 bar	AC 20	SG 30
	> 0.50 ... 1.00 bar	AC 10	SG 20
	> 1.00 ... 5.00 bar	AC 2.5	SG 10
	> 5.00 ... 90.0 bar	AC 1	SG 5
with pilot HON 640	0.30 ... 1.00 bar	AC 20*/30	SG 30*/50
	> 1.00 ... 3.00 bar	AC 20	SG 30
	> 2.50 ... 5.00 bar	AC 10	SG 20
	> 5.00 ... 10.0 bar	AC 5	SG 10
	> 10.0 ... 90.0 bar	AC 2.5	SG 10
Closing pressure category		SZ 2,5	
Class II temperature range		-20 °C to +60 °C	
Operation and strength		according to DIN EN 334, DIN EN 14382	
CE mark according to PED			
Ex protection		Since the device is not fitted with potential ignition sources of its own, it is not subject to ATEX 95 regulations (all used electronic accessories meet ATEX requirements).	

*) The lower accuracy class and closing pressure category is valid for inlet pressure changes < 8 bar.

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MATERIALS			
Actuator unit housing	Cast steel	SAV switching device	Steel, brass, aluminum wrought alloy
Interior parts of actuator unit	Steel, aluminum alloys	SAV controller	Aluminum wrought alloys
Controller	aluminum alloys		
Diaphragms	Rubber plastics (NBR, ECO)		
Gaskets	Rubber plastics (NBR)		

ADJUSTMENT RANGES OF SAV CONTROL UNITS USED FOR ACTUATORS WITH INTEGRATED SAVS (DN 50/100 TO DN 100/200)

Control unit	Setpoint spring			Upper response pressure p _{dso}		Lower response pressure p _{dsu}		Response pressure group **
	No.	Color	Wire ø in mm	Adjustment range W _{dso} (bar)	Smallest difference between response pressure and normal operating pressure* Δp _{w0} (bar)	Adjustment range W _{dsu} (bar)	Smallest difference between response pressure and normal operating pressure* Δp _{wu} (bar)	
K1a	1	yellow	2,50	0,05 ... 0,10	0,030			10 / 5,0
	2	light red	3,20	0,08 ... 0,25	0,050			10 / 5,0
	3	dark red	3,60	0,20 ... 0,50	0,100			5 / 2,5
	4	white	4,75	0,40 ... 1,50	0,250			5 / 2,5
	5	light blue	1,10			0,010 ... 0,015	0,012	20
	6	white	1,20			0,014 ... 0,040	0,030	10 / 5,0
	7	black	1,40			0,035 ... 0,120	0,060	5
K2a/1	1	light red	3,20	0,40 ... 0,80	0,100			10 / 5,0
	2	dark red	3,60	0,60 ... 1,60	0,200			10 / 5,0
	3	white	4,75	1,50 ... 4,50	0,300			5 / 2,5
	4	light blue	1,10			0,060 ... 0,150	0,050	10 / 5,0
	5	black	1,40			0,120 ... 0,400	0,080	5
K2a/2	3	white	4,75	2,50 ... 8,00	0,500			10 / 5,0
	6	red	2,25			0,800 ... 2,200	0,400	15 / 5,0
K10a	2	light red	3,20	0,08 ... 0,250	0,050			10 / 5,0
	3	dark red	3,60	0,20 ... 0,500	0,100			5 / 2,5
	4	white	4,75	0,40 ... 1,500	0,250			5 / 2,5
	6	white	1,20			0,010 ... 0,040	0,030	10 / 5,0
	7	black	1,40			0,035 ... 0,120	0,060	5
K11a/1	1	light red	3,20	0,4 ... 0,8	0,100			10 / 5,0
	2	dark red	3,60	0,6 ... 1,6	0,200			10 / 5,0
	3	white	4,75	1,5 ... 4,5	0,300			5 / 2,5
	4	light blue	1,10			0,060 ... 0,150	0,050	10 / 5,0
	5	black	1,40			0,120 ... 0,400	0,080	5
	6	red	2,25			0,350 ... 1,000	0,100	5
K11a/2	3	white	4,75	2,5 ... 8,0	0,500			10 / 5,0
	6	red	2,25			0,800 ... 2,200	0,400	10 / 5,0
K16	0	***blue	3,20	0,8 ... 1,5	0,100			2,5
	1	black	4,50	1,0 ... 5,0	0,200			2,5 / 1,0
	2	gray	5,00	2,0 ... 10	0,400			1
	3	brown	6,30	5,0 ... 20	0,800			1
K17	4	red	7,0	10 ... 40	1,200			1
	2	gray	5,00			2 ... 10	0,400	5
	3	brown	6,30			5 ... 20	0,800	5
K18	4	red	7,00			10 ... 40	1,200	5
	1		9,00	20 ... 90	1,500			1

*) Please note: When using control units for both the upper and the lower response pressure, make sure that the difference between the two setpoints p_{dso} and p_{dsu} is at least 10 % greater than the sum of the two values Δp_{w0} and Δp_{wu}.

**) The higher AG group applies to the first half, while the lower AG group applies to the second half the adjustment range.

***) only DN 25/25

GAS PRESSURE REGULATOR HON 503

Setup and mode of operation

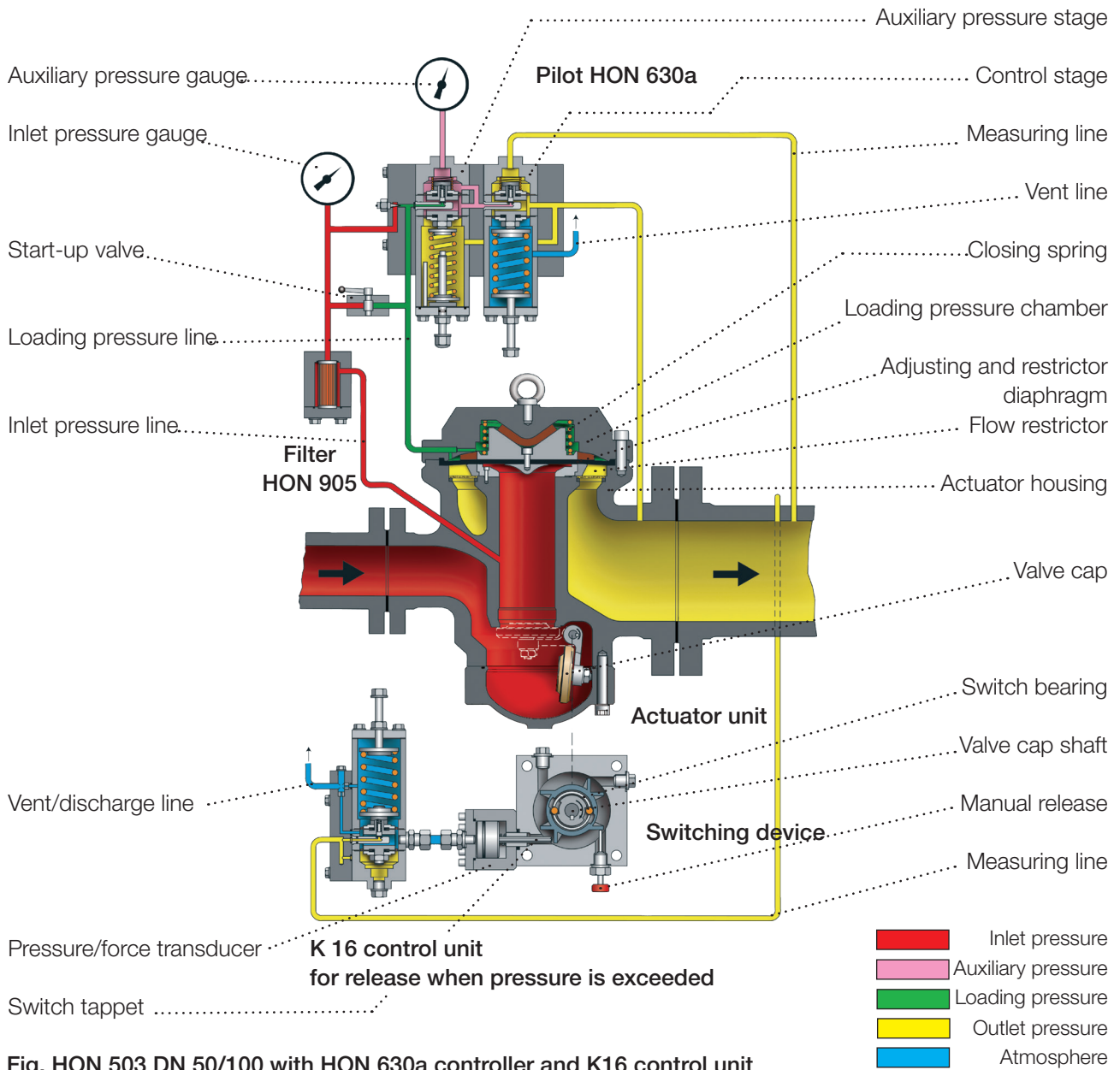


Fig. HON 503 DN 50/100 with HON 630a controller and K16 control unit

The gas pressure regulator HON 503 unit is used to keep the outlet pressure of a gaseous medium at a constant level independent of any disturbance variables such as changes in inlet and/or outlet pressure throughout the controlled system.

The HON 503 is composed of the actuator unit and the functional units "pilot" and "safety shut-off valve (SAV)." A fine filter is switched in front of the pilot to protect it against dirt.

Thanks to the fact that it is composed of only a few parts, the actuator unit is particularly easy to maintain: its only wearing part, the restrictor diaphragm, can be subjected to a quick inspection by simply removing the upper part of the housing without the need to remove the actuator housing from the controlled system.

The valve cap gasket (SAV) can also be serviced without the need to remove the unit from the system.

The actuator is designed as a diaphragm valve. The diaphragm supports itself on the flow restrictor, which is fitted with bores. An all-around sealing edge is located in front of the bores. A closing spring generates the necessary sealing force for zero shut-off.

In contrast to a device operating with a valve disk/actuator, this standard version achieves a noise reduction of 10 to 15 dB(A) thanks to its integrated gas flow divider inside the flow restrictor. Installing additional noise-reducing components (nominal widths of DN 25/50 or more) below the flow restrictor will lower the noise level even further.

However, a KG value reduced by approx. 10 % is to be expected. The outlet pressure you want to control is fed to the controller via the measuring line. The double diaphragm system inside the controller captures the actual value of the outlet pressure as a force acting on the measuring diaphragm and compares it to the force of the setpoint spring, which serves as a set point. If this comparison reveals any deviations from the controlled pressure, the device will adjust the set pressure by changing the opening position of the restrictor diaphragm in an effort to bring the outlet pressure (actual value) in line with the set point. Thanks to its use of a diaphragm construction as an actuator, the HON 503 manages to operate soundly even when handling only low flow rates. The device will seal tightly when consumption is zero.

The gas pressure control unit will be equipped with a start-up valve for nominal widths of DN 25/50 or greater to allow the device to faster equalize the inlet pressure acting on the restrictor diaphragm.

The tried and tested HON 711 system or, for nominal widths of DN 25/25 or greater, the SAV HON 704 function as safety shut-off valves (SAV). The SAV will close every time the pressure exceeds or falls below the set response pressure. For a functional description of the SAV and information on how to adjust it and reset it, see the technical product information on the Honeywell devices 703/704/711, the associated operating and maintenance instructions of Honeywell devices 703/711 as well as the brochure sheets of the corresponding control units.

Fig. HON 503 DN 25/25 with HON 640-1 controller (view of the control unit)

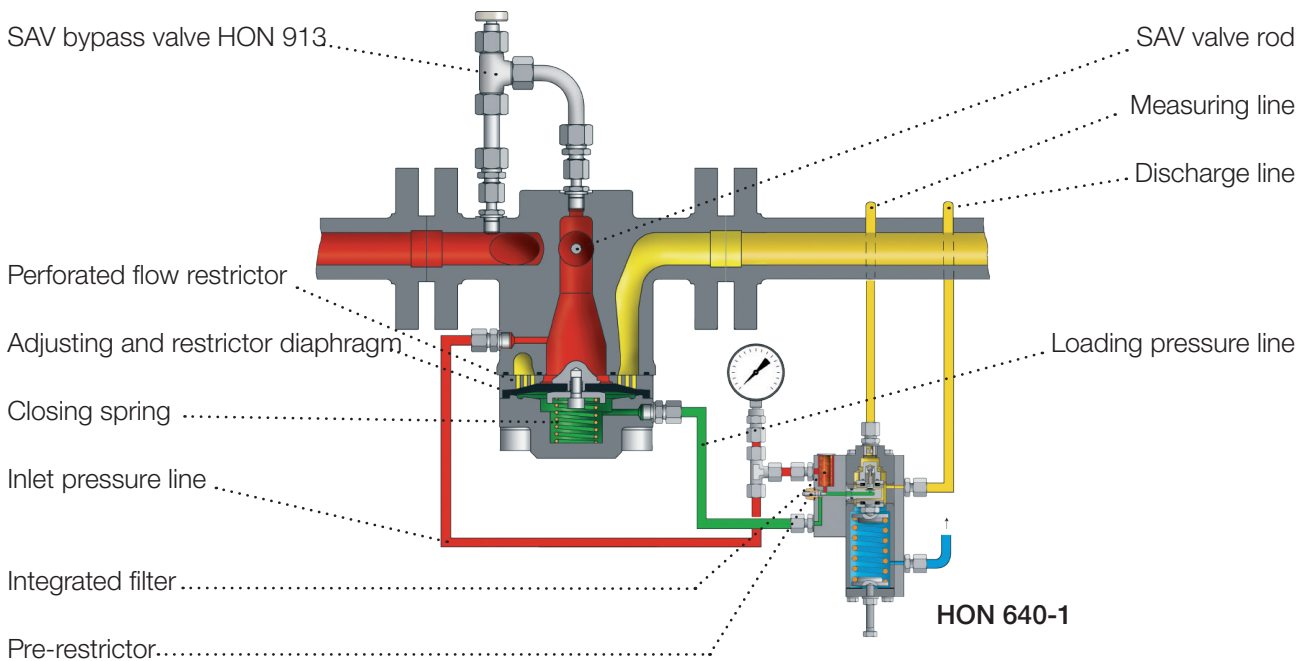
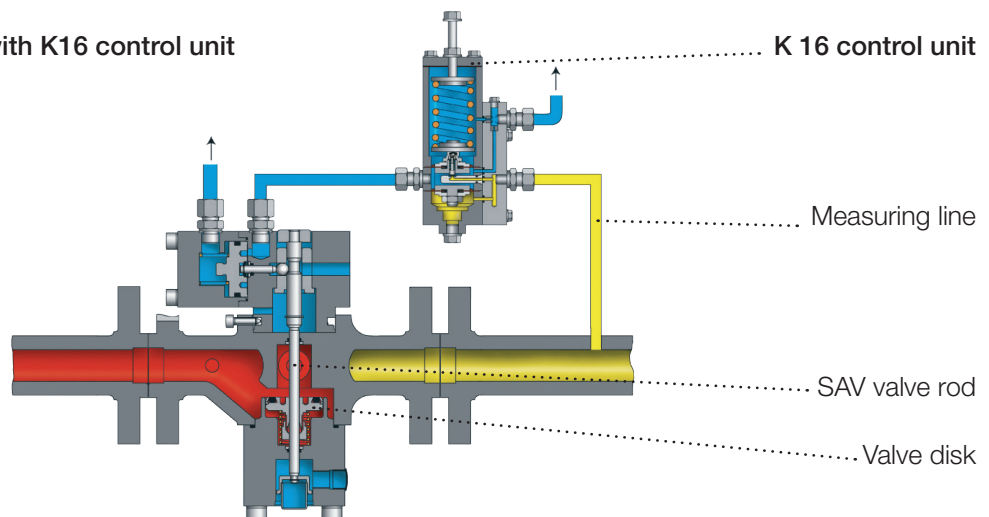
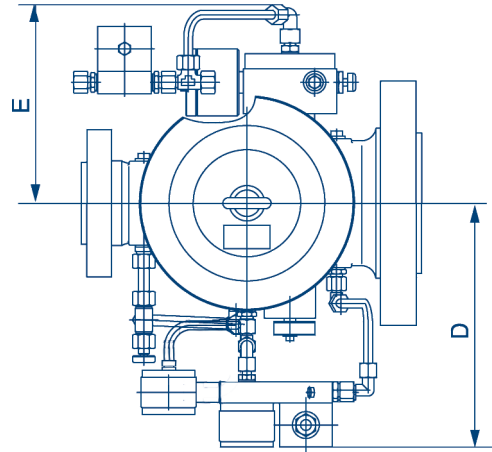
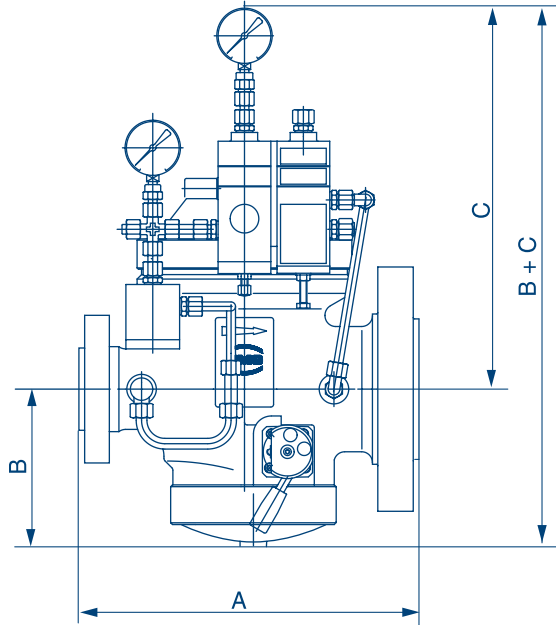


Fig. HON 503 DN 25/25 with K16 control unit (view of the SAV unit)



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Dimensions, weights, and connectors



DIMENSIONS					
Nominal width	Dimensions in mm				
Inlet/outlet	A	B	C	D	E
25 / 25	230	130	300	250	200
25 / 50	340	150	490	300	265
50 / 100	380	190	490	300	265
80 / 150	550	310	500	350	330
100 / 200	550	310	500	350	330
150 / 300	750	470	640	430	390

WEIGHTS	
Nominal width	Weights in kg
Inlet/outlet	Weights in kg
25 / 25	26
25 / 50	90
50 / 100	100
80 / 150	270
100 / 200	330
150 / 300	850

CONNECTIONS			
Pilot	SAV		
Inlet pressure line	E 10	Measuring line	E 12
Loading pressure line	E 10	Vent/ discharge line	E 12
Measuring line	E 12		
Discharge line	E 12		
Vent line	E 12		

Example

503 – 50/100 – K 16 / E2 / HA / F – 630a 2 – So

Type	Nominal width (inlet/outlet)	Control unit	Release unit	Remote control	Type of controller	Setpoint spring	Special design
NOMINAL WIDTH							
DN							
25 / 25							
25 / 50							
50 / 100							
80 / 150							
100 / 200							
150 / 300							
ADJUSTMENT RANGE IN BAR							
W _{do}	W _{du}		Control unit				
0,05 ... 1,50	0,01 ... 0,12	only DN 25/25	K 1a				
0,40 ... 4,50	0,06 ... 0,40	only DN 25/25	K 2a/1				
2,50 ... 8,00	0,80... 2,20	only DN 25/25	K 2a/2				
0,08 ... 1,50	0,01 ... 0,12	from DN 25/50	K 10a				
0,40 ... 4,50	0,06 ... 1,00	from DN 25/50	K 11a/1				
2,50 ... 8,00	0,80 ... 2,20	from DN 25/50	K 11a/2				
1,00 ... 40,0			K 16				
	2,00 ... 40,0		K 17				
20,0 ... 90,0			K 18				
RELEASE							
Current input			E1				
Power failure (DN 25/50 or greater)			E2				
Manual release			HA				
REMOTE CONTROL							
Electrical remote control of the valve position "CLOSE"			F				
PILOT TYPE							
Pilot			HON 630a				
			HON 640				
			HON 640-1				
OUTLET PRESSURE RANGE IN BAR							
W _d			Setpoint spring				
0,30 ... 1,00			1				
1,00 ... 5,00			2				
2,00 ... 10,0			3				
5,00 ... 20,0			4				
10,0 ... 40,0			5				
20,0 ... 90,0			Metal harmonica measuring unit				
SPECIAL DESIGN (TO BE SPECIFIED IN MORE DETAIL)							
			So				

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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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